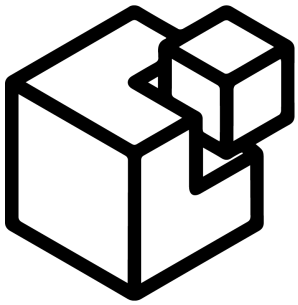

SALTSTACK

# Salt Documentation

*Release 2016.3.5*

**SaltStack, Inc.**

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CHAPTER 1

# Installation

This section contains instructions to install Salt. If you are setting up your environment for the first time, you should install a Salt master on a dedicated management server or VM, and then install a Salt minion on each system that you want to manage using Salt. For now you don't need to worry about your *architecture*, you can easily add components and modify your configuration later without needing to reinstall anything.

The general installation process is as follows:

1. Install a Salt master using the instructions for your platform or by running the Salt bootstrap script. If you use the bootstrap script, be sure to include the `-M` option to install the Salt master.
2. Make sure that your Salt minions can find the Salt master.
3. Install the Salt minion on each system that you want to manage.
4. Accept the Salt minion keys after the Salt minion connects.

After this, you should be able to run a simple command and receive returns from all connected Salt minions.

```
salt '*' test.ping
```

## 1.1 Quick Install

On most distributions, you can set up a **Salt Minion** with the *Salt bootstrap*.

## 1.2 Platform-specific Installation Instructions

These guides go into detail how to install Salt on a given platform.

### 1.2.1 Arch Linux

#### Installation

Salt (stable) is currently available via the Arch Linux Official repositories. There are currently -git packages available in the Arch User repositories (AUR) as well.

#### Stable Release

Install Salt stable releases from the Arch Linux Official repositories as follows:

```
pacman -S salt
```

#### Tracking develop

To install the bleeding edge version of Salt (**may include bugs!**), use the -git package. Installing the -git package as follows:

```
wget https://aur.archlinux.org/packages/sa/salt-git/salt-git.tar.gz
tar xf salt-git.tar.gz
cd salt-git/
makepkg -is
```

---

**Note**: yaourt

If a tool such as Yaourt is used, the dependencies will be gathered and built automatically.

The command to install salt using the yaourt tool is:

```
yaourt salt-git
```

---

#### Post-installation tasks

**systemd**

Activate the Salt Master and/or Minion via `systemctl` as follows:

```
systemctl enable salt-master.service
systemctl enable salt-minion.service
```

**Start the Master**

Once you've completed all of these steps you're ready to start your Salt Master. You should be able to start your Salt Master now using the command seen here:

```
systemctl start salt-master
```

Now go to the *Configuring Salt* page.

### 1.2.2 Debian GNU/Linux / Raspbian

Debian GNU/Linux distribution and some derivatives such as Raspbian already have included Salt packages to their repositories. However, current stable release codenamed ``Jessie'' contains old outdated Salt release. It is recommended to use SaltStack repository for Debian as described *below*.

Installation from official Debian and Raspbian repositories is described *here*.

### Installation from the Official SaltStack Repository

Packages for Debian 8 (Jessie) and Debian 7 (Wheezy) are available in the Official SaltStack repository.

Instructions are at https://repo.saltstack.com/#debian.

---

**Note:** Regular security support for Debian 7 ended on April 25th 2016. As a result, 2016.3.1 and 2015.8.10 will be the last Salt releases for which Debian 7 packages are created.

---

### Installation from the Debian / Raspbian Official Repository

Stretch (Testing) and Sid (Unstable) distributions are already contain mostly up-to-date Salt packages built by Debian Salt Team. You can install Salt components directly from Debian.

On Jessie (Stable) there is an option to install Salt minion from Stretch with *python-tornado* dependency from *jessie-backports* repositories.

To install fresh release of Salt minion on Jessie:

1. Add *jessie-backports* and *stretch* repositories:

   **Debian**:

   ```
   echo 'deb http://httpredir.debian.org/debian jessie-backports main' >> /etc/apt/
    ↪sources.list
   echo 'deb http://httpredir.debian.org/debian stretch main' >> /etc/apt/sources.list
   ```

   **Raspbian**:

   ```
   echo 'deb http://archive.raspbian.org/raspbian/ stretch main' >> /etc/apt/sources.
    ↪list
   ```

2. Make Jessie a default release:

   ```
   echo 'APT::Default-Release "jessie";' > /etc/apt/apt.conf.d/10apt
   ```

3. Install Salt dependencies:

   **Debian**:

   ```
   apt-get update
   apt-get install python-zmq python-tornado/jessie-backports salt-common/stretch
   ```

   **Raspbian**:

   ```
   apt-get update
   apt-get install python-zmq python-tornado/stretch salt-common/stretch
   ```

4. Install Salt minion package from Stretch:

   ```
   apt-get install salt-minion/stretch
   ```

### Install Packages

Install the Salt master, minion or other packages from the repository with the *apt-get* command. These examples each install one of Salt components, but more than one package name may be given at a time:

- `apt-get install salt-api`
- `apt-get install salt-cloud`
- `apt-get install salt-master`
- `apt-get install salt-minion`
- `apt-get install salt-ssh`
- `apt-get install salt-syndic`

#### Post-installation tasks

Now, go to the *Configuring Salt* page.

### 1.2.3 Fedora

Beginning with version 0.9.4, Salt has been available in the primary Fedora repositories and EPEL. It is installable using `yum` or `dnf`, depending on your version of Fedora.

---

**Note**: Released versions of Salt starting with `2015.5.2` through `2016.3.2` do not have Fedora packages available though EPEL. To install a version of Salt within this release array, please use SaltStack's Bootstrap Script and use the git method of installing Salt using the version's associated release tag.

Release `2016.3.3` and onward will have packaged versions available via EPEL.

---

**WARNING**: Fedora 19 comes with systemd 204. Systemd has known bugs fixed in later revisions that prevent the salt-master from starting reliably or opening the network connections that it needs to. It's not likely that a salt-master will start or run reliably on any distribution that uses systemd version 204 or earlier. Running salt-minions should be OK.

#### Installation

Salt can be installed using `yum` and is available in the standard Fedora repositories.

#### Stable Release

Salt is packaged separately for the minion and the master. It is necessary only to install the appropriate package for the role the machine will play. Typically, there will be one master and multiple minions.

```
yum install salt-master
yum install salt-minion
```

#### Installing from `updates-testing`

When a new Salt release is packaged, it is first admitted into the `updates-testing` repository, before being moved to the stable repo.

To install from `updates-testing`, use the `enablerepo` argument for yum:

```
yum --enablerepo=updates-testing install salt-master
yum --enablerepo=updates-testing install salt-minion
```

### Installation Using pip

Since Salt is on PyPI, it can be installed using pip, though most users prefer to install using a package manager.

Installing from pip has a few additional requirements:

- Install the group `Development Tools', `dnf groupinstall 'Development Tools'`
- Install the `zeromq-devel' package if it fails on linking against that afterwards as well.

A pip install does not make the init scripts or the /etc/salt directory, and you will need to provide your own systemd service unit.

Installation from pip:

```
pip install salt
```

**Warning**: If installing from pip (or from source using `setup.py install`), be advised that the `yum-utils` package is needed for Salt to manage packages. Also, if the Python dependencies are not already installed, then you will need additional libraries/tools installed to build some of them. More information on this can be found *here*.

### Post-installation tasks

#### Master

To have the Master start automatically at boot time:

```
systemctl enable salt-master.service
```

To start the Master:

```
systemctl start salt-master.service
```

#### Minion

To have the Minion start automatically at boot time:

```
systemctl enable salt-minion.service
```

To start the Minion:

```
systemctl start salt-minion.service
```

Now go to the *Configuring Salt* page.

### 1.2.4 FreeBSD

#### Installation

Salt is available in binary package form from both the FreeBSD pkgng repository or directly from SaltStack. The instructions below outline installation via both methods:

#### FreeBSD repo

The FreeBSD pkgng repository is preconfigured on systems 10.x and above. No configuration is needed to pull from these repositories.

```
pkg install py27-salt
```

These packages are usually available within a few days of upstream release.

#### SaltStack repo

SaltStack also hosts internal binary builds of the Salt package, available from https://repo.saltstack.com/freebsd/. To make use of this repository, add the following file to your system:

**/usr/local/etc/pkg/repos/saltstack.conf**:

```
saltstack: {
  url: "https://repo.saltstack.com/freebsd/${ABI}/",
  enabled: yes
}
```

You should now be able to install Salt from this new repository:

```
pkg install py27-salt
```

These packages are usually available earlier than upstream FreeBSD. Also available are release candidates and development releases. Use these pre-release packages with caution.

#### Post-installation tasks

**Master**

Copy the sample configuration file:

```
cp /usr/local/etc/salt/master.sample /usr/local/etc/salt/master
```

**rc.conf**

Activate the Salt Master in `/etc/rc.conf`:

```
sysrc salt_master_enable="YES"
```

**Start the Master**

Start the Salt Master as follows:

```
service salt_master start
```

**Minion**

Copy the sample configuration file:

```
cp /usr/local/etc/salt/minion.sample /usr/local/etc/salt/minion
```

**rc.conf**

Activate the Salt Minion in `/etc/rc.conf`:

```
sysrc salt_minion_enable="YES"
```

**Start the Minion**

Start the Salt Minion as follows:

```
service salt_minion start
```

Now go to the *Configuring Salt* page.

### 1.2.5 Gentoo

Salt can be easily installed on Gentoo via Portage:

```
emerge app-admin/salt
```

#### Post-installation tasks

Now go to the *Configuring Salt* page.

### 1.2.6 OpenBSD

Salt was added to the OpenBSD ports tree on Aug 10th 2013. It has been tested on OpenBSD 5.5 onwards.

Salt is dependent on the following additional ports. These will be installed as dependencies of the `sysutils/salt` port:

```
devel/py-futures
devel/py-progressbar
net/py-msgpack
net/py-zmq
security/py-crypto
security/py-M2Crypto
textproc/py-MarkupSafe
textproc/py-yaml
www/py-jinja2
www/py-requests
www/py-tornado
```

#### Installation

To install Salt from the OpenBSD pkg repo, use the command:

```
pkg_add salt
```

#### Post-installation tasks

**Master**

To have the Master start automatically at boot time:

```
rcctl enable salt_master
```

To start the Master:

```
rcctl start salt_master
```

**Minion**

To have the Minion start automatically at boot time:

```
rcctl enable salt_minion
```

To start the Minion:

```
rcctl start salt_minion
```

Now go to the *Configuring Salt* page.

### 1.2.7 OS X

#### Installation from the Official SaltStack Repository

**Latest stable build from the selected branch**:

The output of `md5 <salt pkg>` should match the contents of the corresponding md5 file.

Earlier builds from supported branches

Archived builds from unsupported branches

#### Installation from Homebrew

```
brew install saltstack
```

It should be noted that Homebrew explicitly discourages the use of sudo:

> Homebrew is designed to work without using sudo. You can decide to use it but we strongly recommend not to do so. If you have used sudo and run into a bug then it is likely to be the cause. Please don't file a bug report unless you can reproduce it after reinstalling Homebrew from scratch without using sudo

#### Installation from MacPorts

```
sudo port install salt
```

#### Installation from Pip

When only using the OS X system's pip, install this way:

```
sudo pip install salt
```

#### Salt-Master Customizations

**Note:** Salt master on OS X is not tested or supported by SaltStack. See SaltStack Platform Support for more information.

To run salt-master on OS X, sudo add this configuration option to the /etc/salt/master file:

```
max_open_files: 8192
```

On versions previous to OS X 10.10 (Yosemite), increase the root user maxfiles limit:

```
sudo launchctl limit maxfiles 4096 8192
```

**Note:** On OS X 10.10 (Yosemite) and higher, maxfiles should not be adjusted. The default limits are sufficient in all but the most extreme scenarios. Overriding these values with the setting below will cause system instability!

Now the salt-master should run without errors:

```
sudo salt-master --log-level=all
```

#### Post-installation tasks

Now go to the *Configuring Salt* page.

### 1.2.8 RHEL / CentOS / Scientific Linux / Amazon Linux / Oracle Linux

Salt should work properly with all mainstream derivatives of Red Hat Enterprise Linux, including CentOS, Scientific Linux, Oracle Linux, and Amazon Linux. Report any bugs or issues on the issue tracker.

#### Installation from the Official SaltStack Repository

Packages for Redhat, CentOS, and Amazon Linux are available in the SaltStack Repository.

- Red Hat / CentOS
- Amazon Linux

**Note:** As of 2015.8.0, EPEL repository is no longer required for installing on RHEL systems. SaltStack repository provides all needed dependencies.

**Warning**: If installing on Red Hat Enterprise Linux 7 with disabled (not subscribed on) `RHEL Server Releases' or `RHEL Server Optional Channel' repositories, append CentOS 7 GPG key URL to SaltStack yum repository configuration to install required base packages:

```
[saltstack-repo]
name=SaltStack repo for Red Hat Enterprise Linux $releasever
baseurl=https://repo.saltstack.com/yum/redhat/$releasever/$basearch/latest
enabled=1
gpgcheck=1
gpgkey=https://repo.saltstack.com/yum/redhat/$releasever/$basearch/latest/SALTSTACK-
 ↪GPG-KEY.pub
       https://repo.saltstack.com/yum/redhat/$releasever/$basearch/latest/base/RPM-
 ↪GPG-KEY-CentOS-7
```

**Note**: `systemd` and `systemd-python` are required by Salt, but are not installed by the Red Hat 7 `@base` installation or by the Salt installation. These dependencies might need to be installed before Salt.

### Installation from the Community-Maintained Repository

Beginning with version 0.9.4, Salt has been available in EPEL. For RHEL/CentOS 5, Fedora COPR is a single community repository that provides Salt packages due to the removal from EPEL5.

**Note**: Packages in these repositories are built by community, and it can take a little while until the latest stable SaltStack release become available.

### RHEL/CentOS 6 and 7, Scientific Linux, etc.

**Warning**: Salt 2015.8 is currently not available in EPEL due to unsatisfied dependencies: `python-crypto` 2.6.1 or higher, and `python-tornado` version 4.2.1 or higher. These packages are not currently available in EPEL for Red Hat Enterprise Linux 6 and 7.

#### Enabling EPEL

If the EPEL repository is not installed on your system, you can download the RPM for RHEL/CentOS 6 or for RHEL/CentOS 7 and install it using the following command:

```
rpm -Uvh epel-release-X-Y.rpm
```

Replace `epel-release-X-Y.rpm` with the appropriate filename.

#### Installing Stable Release

Salt is packaged separately for the minion and the master. It is necessary to install only the appropriate package for the role the machine will play. Typically, there will be one master and multiple minions.

- `yum install salt-master`

- `yum install salt-minion`
- `yum install salt-ssh`
- `yum install salt-syndic`
- `yum install salt-cloud`

### Installing from `epel-testing`

When a new Salt release is packaged, it is first admitted into the `epel-testing` repository, before being moved to the stable EPEL repository.

To install from `epel-testing`, use the `enablerepo` argument for `yum`:

```
yum --enablerepo=epel-testing install salt-minion
```

### Installation Using pip

Since Salt is on PyPI, it can be installed using pip, though most users prefer to install using RPM packages (which can be installed from EPEL).

Installing from pip has a few additional requirements:

- Install the group `Development Tools', `yum groupinstall 'Development Tools'`
- Install the `zeromq-devel' package if it fails on linking against that afterwards as well.

A pip install does not make the init scripts or the /etc/salt directory, and you will need to provide your own systemd service unit.

Installation from pip:

```
pip install salt
```

**Warning**: If installing from pip (or from source using `setup.py install`), be advised that the `yum-utils` package is needed for Salt to manage packages. Also, if the Python dependencies are not already installed, then you will need additional libraries/tools installed to build some of them. More information on this can be found *here*.

### ZeroMQ 4

We recommend using ZeroMQ 4 where available. SaltStack provides ZeroMQ 4.0.5 and pyzmq 14.5.0 in the *SaltStack Repository* as well as a separate zeromq4 COPR repository.

If this repository is added *before* Salt is installed, then installing either `salt-master` or `salt-minion` will automatically pull in ZeroMQ 4.0.5, and additional steps to upgrade ZeroMQ and pyzmq are unnecessary.

**Warning**: RHEL/CentOS 5 Users Using COPR repos on RHEL/CentOS 5 requires that the `python-hashlib` package be installed. Not having it present will result in checksum errors because YUM will not be able to process the SHA256 checksums used by COPR.

**Note:** For RHEL/CentOS 5 installations, if using the SaltStack repo or Fedora COPR to install Salt (as described *above*), then it is not necessary to enable the zeromq4 COPR, because those repositories already include ZeroMQ 4.

### Package Management

Salt's interface to *yum* makes heavy use of the **repoquery** utility, from the yum-utils package. This package will be installed as a dependency if salt is installed via EPEL. However, if salt has been installed using pip, or a host is being managed using salt-ssh, then as of version 2014.7.0 yum-utils will be installed automatically to satisfy this dependency.

### Post-installation tasks

#### Master

To have the Master start automatically at boot time:

**RHEL/CentOS 5 and 6**

```
chkconfig salt-master on
```

**RHEL/CentOS 7**

```
systemctl enable salt-master.service
```

To start the Master:

**RHEL/CentOS 5 and 6**

```
service salt-master start
```

**RHEL/CentOS 7**

```
systemctl start salt-master.service
```

#### Minion

To have the Minion start automatically at boot time:

**RHEL/CentOS 5 and 6**

```
chkconfig salt-minion on
```

**RHEL/CentOS 7**

```
systemctl enable salt-minion.service
```

To start the Minion:

**RHEL/CentOS 5 and 6**

```
service salt-minion start
```

**RHEL/CentOS 7**

```
systemctl start salt-minion.service
```

Now go to the *Configuring Salt* page.

### 1.2.9 Solaris

Salt was added to the OpenCSW package repository in September of 2012 by Romeo Theriault <romeot@hawaii.edu> at version 0.10.2 of Salt. It has mainly been tested on Solaris 10 (sparc), though it is built for and has been tested minimally on Solaris 10 (x86), Solaris 9 (sparc/x86) and 11 (sparc/x86). (Please let me know if you're using it on these platforms!) Most of the testing has also just focused on the minion, though it has verified that the master starts up successfully on Solaris 10.

Comments and patches for better support on these platforms is very welcome.

As of version 0.10.4, Solaris is well supported under salt, with all of the following working well:

1. remote execution
2. grain detection
3. service control with SMF
4. `pkg' states with `pkgadd' and `pkgutil' modules
5. cron modules/states
6. user and group modules/states
7. shadow password management modules/states

Salt is dependent on the following additional packages. These will automatically be installed as dependencies of the `py_salt` package:

- py_yaml
- py_pyzmq
- py_jinja2
- py_msgpack_python
- py_m2crypto
- py_crypto
- python

#### Installation

To install Salt from the OpenCSW package repository you first need to install pkgutil assuming you don't already have it installed:

On Solaris 10:

```
pkgadd -d http://get.opencsw.org/now
```

On Solaris 9:

```
wget http://mirror.opencsw.org/opencsw/pkgutil.pkg
pkgadd -d pkgutil.pkg all
```

Once pkgutil is installed you'll need to edit it's config file `/etc/opt/csw/pkgutil.conf` to point it at the unstable catalog:

```
- #mirror=http://mirror.opencsw.org/opencsw/testing
+ mirror=http://mirror.opencsw.org/opencsw/unstable
```

OK, time to install salt.

```
# Update the catalog
root> /opt/csw/bin/pkgutil -U
# Install salt
root> /opt/csw/bin/pkgutil -i -y py_salt
```

### Minion Configuration

Now that salt is installed you can find it's configuration files in `/etc/opt/csw/salt/`.

You'll want to edit the minion config file to set the name of your salt master server:

```
- #master: salt
+ master: your-salt-server
```

If you would like to use pkgutil as the default package provider for your Solaris minions, you can do so using the *providers* option in the minion config file.

You can now start the salt minion like so:

On Solaris 10:

```
svcadm enable salt-minion
```

On Solaris 9:

```
/etc/init.d/salt-minion start
```

You should now be able to log onto the salt master and check to see if the salt-minion key is awaiting acceptance:

```
salt-key -l un
```

Accept the key:

```
salt-key -a <your-salt-minion>
```

Run a simple test against the minion:

```
salt '<your-salt-minion>' test.ping
```

### Troubleshooting

Logs are in `/var/log/salt`

### 1.2.10 Ubuntu

#### Installation from the Official SaltStack Repository

Packages for Ubuntu 16 (Xenial), Ubuntu 14 (Trusty), and Ubuntu 12 (Precise) are available in the SaltStack repository.

Instructions are at https://repo.saltstack.com/#ubuntu.

#### Install Packages

Install the Salt master, minion or other packages from the repository with the *apt-get* command. These examples each install one of Salt components, but more than one package name may be given at a time:

- `apt-get install salt-api`
- `apt-get install salt-cloud`
- `apt-get install salt-master`
- `apt-get install salt-minion`
- `apt-get install salt-ssh`
- `apt-get install salt-syndic`

#### Post-installation tasks

Now go to the *Configuring Salt* page.

### 1.2.11 Windows

Salt has full support for running the Salt Minion on Windows.

You must connect Windows Salt minions to a Salt master on a supported operating system to control your Salt Minions.

Many of the standard Salt modules have been ported to work on Windows and many of the Salt States currently work on Windows as well.

#### Installation from the Official SaltStack Repository

**Latest stable build from the selected branch**:

The output of `md5sum <salt minion exe>` should match the contents of the corresponding md5 file.

Earlier builds from supported branches

Archived builds from unsupported branches

---

**Note:** The installation executable installs dependencies that the Salt minion requires.

---

The 64bit installer has been tested on Windows 7 64bit and Windows Server 2008R2 64bit. The 32bit installer has been tested on Windows 2008 Server 32bit. Please file a bug report on our GitHub repo if issues for other platforms are found.

The installer asks for 2 bits of information; the master hostname and the minion name. The installer will update the minion config with these options and then start the minion.

The `salt-minion` service will appear in the Windows Service Manager and can be started and stopped there or with the command line program `sc` like any other Windows service.

```
sc start salt-minion
net start salt-minion
```

If the minion won't start, try installing the Microsoft Visual C++ 2008 x64 SP1 redistributable. Allow all Windows updates to run salt-minion smoothly.

### Installation Prerequisites

Most Salt functionality should work just fine right out of the box. A few Salt modules rely on PowerShell. The minimum version of PowerShell required for Salt is version 3. If you intend to work with DSC then Powershell version 5 is the minimum.

### Silent Installer Options

The installer can be run silently by providing the `/S` option at the command line. The installer also accepts the following options for configuring the Salt Minion silently:

| Option | Description |
|---|---|
| `/minion-name=` | A string value to set the minion name. Default is `hostname' |
| `/master=` | A string value to set the IP address or host name of the master. Default value is `salt`. |
| `/start-service=` | Either a 1 or 0. `1' will start the service, `0' will not. Default is to start the service after installation. |

Here's an example of using the silent installer:

```
Salt-Minion-2016.3.3-Setup-amd64.exe /S /master=yoursaltmaster /minion-
↪name=yourminionname /start-service=0
```

### Running the Salt Minion on Windows as an Unprivileged User

Notes:

- These instructions were tested with Windows Server 2008 R2
- They are generalizable to any version of Windows that supports a salt-minion

### Create the Unprivileged User that the Salt Minion will Run As

1. Click `Start` > `Control Panel` > `User Accounts`.
2. Click `Add or remove user accounts`.
3. Click `Create new account`.
4. Enter `salt-user` (or a name of your preference) in the `New account name` field.
5. Select the `Standard user` radio button.
6. Click the `Create Account` button.

7. Click on the newly created user account.
8. Click the `Create a password` link.
9. In the `New password` and `Confirm new password` fields, provide a password (e.g ``SuperSecretMinionPassword4Me!'').
10. In the `Type a password hint` field, provide appropriate text (e.g. ``My Salt Password'').
11. Click the `Create password` button.
12. Close the `Change an Account` window.

#### Add the New User to the Access Control List for the Salt Folder

1. In a File Explorer window, browse to the path where Salt is installed (the default path is `C:\Salt`).
2. Right-click on the `Salt` folder and select `Properties`.
3. Click on the `Security` tab.
4. Click the `Edit` button.
5. Click the `Add` button.
6. Type the name of your designated Salt user and click the `OK` button.
7. Check the box to `Allow` the `Modify` permission.
8. Click the `OK` button.
9. Click the `OK` button to close the `Salt Properties` window.

#### Update the Windows Service User for the `salt-minion` Service

1. Click `Start` > `Administrative Tools` > `Services`.
2. In the Services list, right-click on `salt-minion` and select `Properties`.
3. Click the `Log On` tab.
4. Click the `This account` radio button.
5. Provide the account credentials created in section A.
6. Click the `OK` button.
7. Click the `OK` button to the prompt confirming that the user `has been granted the Log On As A Service right`.
8. Click the `OK` button to the prompt confirming that `The new logon name will not take effect until you stop and restart the service`.
9. Right-Click on `salt-minion` and select `Stop`.
10. Right-Click on `salt-minion` and select `Start`.

### Building and Developing on Windows

This document will explain how to set up a development environment for Salt on Windows. The development environment allows you to work with the source code to customize or fix bugs. It will also allow you to build your own installation.

There are several scripts to automate creating a Windows installer as well as setting up an environment that facilitates developing and troubleshooting Salt code. They are located in the `pkg\windows` directory in the Salt repo (here).

#### Scripts:

| Script | Description |
|---|---|
| `build_env.ps1` | A PowerShell script that sets up the build environment |
| `build_pkg.bat` | A batch file that builds a Windows installer based on the contents of the `C:\Python27` directory |
| `build.bat` | A batch file that fully automates the building of the Windows installer using the above two scripts |

**Note**: The `build.bat` and `build_pkg.bat` scripts both accept a single parameter to specify the version of Salt that will be displayed in the Windows installer. If no version is passed, the version will be determined using git.

#### Prerequisite Software

The only prerequisite is Git for Windows.

#### Create a Build Environment

##### 1. Working Directory

Create a `Salt-Dev` directory on the root of `C:`. This will be our working directory. Navigate to `Salt-Dev` and clone the Salt repo from GitHub.

Open a command line and type:

```
cd \
md Salt-Dev
cd Salt-Dev
git clone https://github.com/saltstack/salt
```

Go into the `salt` directory and checkout the version of salt to work with (2016.3 or higher).

```
cd salt
git checkout 2016.3
```

##### 2. Setup the Python Environment

Navigate to the `pkg\windows` directory and execute the **build_env.ps1** PowerShell script.

```
cd pkg\windows
powershell -file build_env.ps1
```

**Note**: You can also do this from Explorer by navigating to the `pkg\windows` directory, right clicking the **build_env.ps1** powershell script and selecting **Run with PowerShell**

This will download and install Python with all the dependencies needed to develop and build Salt.

**Note**: If you get an error or the script fails to run you may need to change the execution policy. Open a powershell window and type the following command:

```
Set-ExecutionPolicy RemoteSigned
```

#### 3. Salt in Editable Mode

Editable mode allows you to more easily modify and test the source code. For more information see the Pip documentation.

Navigate to the root of the `salt` directory and install Salt in editable mode with `pip`

```
cd \Salt-Dev\salt
pip install -e .
```

**Note**: The `.` is important

**Note**: If `pip` is not recognized, you may need to restart your shell to get the updated path

#### 4. Setup Salt Configuration

Salt requires a minion configuration file and a few other directories. The default config file is named `minion` located in `C:\salt\conf`. The easiest way to set this up is to copy the contents of the `salt\pkg\windows\buildenv` directory to `C:\salt`.

```
cd \
md salt
xcopy /s /e \Salt-Dev\salt\pkg\windows\buildenv\* \salt\
```

Now go into the `C:\salt\conf` directory and edit the file name `minion` (no extension). You need to configure the master and id parameters in this file. Edit the following lines:

```
master: <ip or name of your master>
id: <name of your minion>
```

### Create a Windows Installer

To create a Windows installer, follow steps 1 and 2 from *Create a Build Environment* above. Then proceed to 3 below:

#### 3. Install Salt

To create the installer for Window we install Salt using Python instead of pip. Navigate to the root `salt` directory and install Salt.

```
cd \Salt-Dev\salt
python setup.py install
```

#### 4. Create the Windows Installer

Navigate to the `pkg\windows` directory and run the `build_pkg.bat` with the build version (2016.3) script.

```
cd pkg\windows
build_pkg.bat 2016.3
```

**Note**: If no version is passed, the `build_pkg.bat` will guess the version number using git.

### Creating a Windows Installer: Alternate Method (Easier)

Clone the Salt repo from GitHub into the directory of your choice. We're going to use `Salt-Dev`.

```
cd \
md Salt-Dev
cd Salt-Dev
git clone https://github.com/saltstack/salt
```

Go into the `salt` directory and checkout the version of Salt you want to build.

```
cd salt
git checkout 2016.3
```

Then navigate to `pkg\windows` and run the `build.bat` script with the version you're building.

```
cd pkg\windows
build.bat 2016.3
```

This will install everything needed to build a Windows installer for Salt. The binary will be in the `salt\pkg\windows\installer` directory.

### Testing the Salt minion

1. Create the directory `C:\salt` (if it doesn't exist already)
2. **Copy the example `conf` and `var` directories from** `pkg\windows\buildenv` into `C:\salt`
3. Edit `C:\salt\conf\minion`

   ```
   master: ipaddress or hostname of your salt-master
   ```

4. Start the salt-minion

```
cd C:\Python27\Scripts
python salt-minion -l debug
```

5. On the salt-master accept the new minion's key

```
sudo salt-key -A
```

   This accepts all unaccepted keys. If you're concerned about security just accept the key for this specific minion.

6. Test that your minion is responding

   On the salt-master run:

```
sudo salt '*' test.ping
```

You should get the following response: `{'your minion hostname': True}`

#### Packages Management Under Windows 2003

Windows Server 2003 and Windows XP have both reached End of Support. Though Salt is not officially supported on operating systems that are EoL, some functionality may continue to work.

On Windows Server 2003, you need to install optional component ``WMI Windows Installer Provider'' to get a full list of installed packages. If you don't have this, salt-minion can't report some installed software.

### 1.2.12 SUSE

#### Installation from the Official SaltStack Repository

Packages for SUSE 12 SP1, SUSE 12, SUSE 11, openSUSE 13 and openSUSE Leap 42.1 are available in the SaltStack Repository.

Instructions are at https://repo.saltstack.com/#suse.

#### Installation from the SUSE Repository

Since openSUSE 13.2, Salt 2014.1.11 is available in the primary repositories. With the release of SUSE manager 3 a new repository setup has been created. The new repo will by systemsmanagement:saltstack, which is the source for newer stable packages. For backward compatibility a linkpackage will be created to the old devel:language:python repo. All development of suse packages will be done in systemsmanagement:saltstack:testing. This will ensure that salt will be in mainline suse repo's, a stable release repo and a testing repo for further enhancements.

#### Installation

Salt can be installed using `zypper` and is available in the standard openSUSE/SLES repositories.

#### Stable Release

Salt is packaged separately for the minion and the master. It is necessary only to install the appropriate package for the role the machine will play. Typically, there will be one master and multiple minions.

```
zypper install salt-master
zypper install salt-minion
```

### Post-installation tasks openSUSE

**Master**

To have the Master start automatically at boot time:

```
systemctl enable salt-master.service
```

To start the Master:

```
systemctl start salt-master.service
```

**Minion**

To have the Minion start automatically at boot time:

```
systemctl enable salt-minion.service
```

To start the Minion:

```
systemctl start salt-minion.service
```

### Post-installation tasks SLES

**Master**

To have the Master start automatically at boot time:

```
chkconfig salt-master on
```

To start the Master:

```
rcsalt-master start
```

**Minion**

To have the Minion start automatically at boot time:

```
chkconfig salt-minion on
```

To start the Minion:

```
rcsalt-minion start
```

### Unstable Release

#### openSUSE

For openSUSE Tumbleweed run the following as root:

```
zypper addrepo http://download.opensuse.org/repositories/systemsmanagement:/saltstack/
 ↪openSUSE_Tumbleweed/systemsmanagement:saltstack.repo
zypper refresh
zypper install salt salt-minion salt-master
```

For openSUSE 42.1 Leap run the following as root:

```
zypper addrepo http://download.opensuse.org/repositories/systemsmanagement:/saltstack/
 ↪openSUSE_Leap_42.1/systemsmanagement:saltstack.repo
zypper refresh
zypper install salt salt-minion salt-master
```

For openSUSE 13.2 run the following as root:

```
zypper addrepo http://download.opensuse.org/repositories/systemsmanagement:/saltstack/
 ↪openSUSE_13.2/systemsmanagement:saltstack.repo
zypper refresh
zypper install salt salt-minion salt-master
```

#### Suse Linux Enterprise

For SLE 12 run the following as root:

```
zypper addrepo http://download.opensuse.org/repositories/systemsmanagement:/saltstack/
 ↪SLE_12/systemsmanagement:saltstack.repo
zypper refresh
zypper install salt salt-minion salt-master
```

For SLE 11 SP4 run the following as root:

```
zypper addrepo http://download.opensuse.org/repositories/systemsmanagement:/saltstack/
 ↪SLE_11_SP4/systemsmanagement:saltstack.repo
zypper refresh
zypper install salt salt-minion salt-master
```

Now go to the *Configuring Salt* page.

## 1.3 Initial Configuration

### 1.3.1 Configuring Salt

Salt configuration is very simple. The default configuration for the master will work for most installations and the only requirement for setting up a minion is to set the location of the master in the minion configuration file.

The configuration files will be installed to `/etc/salt` and are named after the respective components, `/etc/salt/master`, and `/etc/salt/minion`.

#### Master Configuration

By default the Salt master listens on ports 4505 and 4506 on all interfaces (0.0.0.0). To bind Salt to a specific IP, redefine the ``interface'' directive in the master configuration file, typically `/etc/salt/master`, as follows:

```
- #interface: 0.0.0.0
+ interface: 10.0.0.1
```

After updating the configuration file, restart the Salt master. See the *master configuration reference* for more details about other configurable options.

### Minion Configuration

Although there are many Salt Minion configuration options, configuring a Salt Minion is very simple. By default a Salt Minion will try to connect to the DNS name ``salt''; if the Minion is able to resolve that name correctly, no configuration is needed.

If the DNS name ``salt'' does not resolve to point to the correct location of the Master, redefine the ``master'' directive in the minion configuration file, typically `/etc/salt/minion`, as follows:

```
- #master: salt
+ master: 10.0.0.1
```

After updating the configuration file, restart the Salt minion. See the *minion configuration reference* for more details about other configurable options.

### Running Salt

1. Start the master in the foreground (to daemonize the process, pass the *`-d flag`*):

   ```
   salt-master
   ```

2. Start the minion in the foreground (to daemonize the process, pass the *`-d flag`*):

   ```
   salt-minion
   ```

---

**Having trouble?**

The simplest way to troubleshoot Salt is to run the master and minion in the foreground with *`log level`* set to `debug`:

```
salt-master --log-level=debug
```

For information on salt's logging system please see the *logging document*.

---

**Run as an unprivileged (non-root) user**

To run Salt as another user, set the *`user`* parameter in the master config file.

Additionally, ownership, and permissions need to be set such that the desired user can read from and write to the following directories (and their subdirectories, where applicable):

- /etc/salt
- /var/cache/salt
- /var/log/salt
- /var/run/salt

More information about running salt as a non-privileged user can be found *here*.

There is also a full *troubleshooting guide* available.

### Key Identity

Salt provides commands to validate the identity of your Salt master and Salt minions before the initial key exchange. Validating key identity helps avoid inadvertently connecting to the wrong Salt master, and helps prevent a potential MiTM attack when establishing the initial connection.

### Master Key Fingerprint

Print the master key fingerprint by running the following command on the Salt master:

```
salt-key -F master
```

Copy the `master.pub` fingerprint from the *Local Keys* section, and then set this value as the *master_finger* in the minion configuration file. Save the configuration file and then restart the Salt minion.

### Minion Key Fingerprint

Run the following command on each Salt minion to view the minion key fingerprint:

```
salt-call --local key.finger
```

Compare this value to the value that is displayed when you run the `salt-key --finger <MINION_ID>` command on the Salt master.

### Key Management

Salt uses AES encryption for all communication between the Master and the Minion. This ensures that the commands sent to the Minions cannot be tampered with, and that communication between Master and Minion is authenticated through trusted, accepted keys.

Before commands can be sent to a Minion, its key must be accepted on the Master. Run the `salt-key` command to list the keys known to the Salt Master:

```
[root@master ~]# salt-key -L
Unaccepted Keys:
alpha
bravo
charlie
delta
Accepted Keys:
```

This example shows that the Salt Master is aware of four Minions, but none of the keys has been accepted. To accept the keys and allow the Minions to be controlled by the Master, again use the `salt-key` command:

```
[root@master ~]# salt-key -A
[root@master ~]# salt-key -L
Unaccepted Keys:
Accepted Keys:
```

```
alpha
bravo
charlie
delta
```

The `salt-key` command allows for signing keys individually or in bulk. The example above, using `-A` bulk-accepts all pending keys. To accept keys individually use the lowercase of the same option, `-a keyname`.

**See also:**

*salt-key manpage*

#### Sending Commands

Communication between the Master and a Minion may be verified by running the `test.ping` command:

```
[root@master ~]# salt alpha test.ping
alpha:
    True
```

Communication between the Master and all Minions may be tested in a similar way:

```
[root@master ~]# salt '*' test.ping
alpha:
    True
bravo:
    True
charlie:
    True
delta:
    True
```

Each of the Minions should send a `True` response as shown above.

#### What's Next?

Understanding *targeting* is important. From there, depending on the way you wish to use Salt, you should also proceed to learn about *Remote Execution* and *Configuration Management*.

## 1.4 Additional Installation Guides

### 1.4.1 Salt Bootstrap

The Salt Bootstrap script allows for a user to install the Salt Minion or Master on a variety of system distributions and versions. This shell script known as `bootstrap-salt.sh` runs through a series of checks to determine the operating system type and version. It then installs the Salt binaries using the appropriate methods. The Salt Bootstrap script installs the minimum number of packages required to run Salt. This means that in the event you run the bootstrap to install via package, Git will not be installed. Installing the minimum number of packages helps ensure the script stays as lightweight as possible, assuming the user will install any other required packages after the Salt binaries are present on the system. The script source is available on GitHub: https://github.com/saltstack/salt-bootstrap

### Supported Operating Systems

**Note:** In the event you do not see your distribution or version available please review the develop branch on GitHub as it main contain updates that are not present in the stable release: https://github.com/saltstack/salt-bootstrap/tree/develop

#### Debian and derivatives

- Debian GNU/Linux 7/8
- Linux Mint Debian Edition 1 (based on Debian 8)
- Kali Linux 1.0 (based on Debian 7)

#### Red Hat family

- Amazon Linux 2012.09/2013.03/2013.09/2014.03/2014.09
- CentOS 5/6/7
- Fedora 17/18/20/21/22
- Oracle Linux 5/6/7
- Red Hat Enterprise Linux 5/6/7
- Scientific Linux 5/6/7

#### SUSE family

- openSUSE 12/13
- openSUSE Leap 42
- openSUSE Tumbleweed 2015
- SUSE Linux Enterprise Server 11 SP1/11 SP2/11 SP3/12

#### Ubuntu and derivatives

- Elementary OS 0.2 (based on Ubuntu 12.04)
- Linaro 12.04
- Linux Mint 13/14/16/17
- Trisquel GNU/Linux 6 (based on Ubuntu 12.04)
- Ubuntu 10.x/11.x/12.x/13.x/14.x/15.x/16.x

#### Other Linux distro

- Arch Linux
- Gentoo

### UNIX systems

**BSD**:

- OpenBSD (`pip` installation)
- FreeBSD 9/10/11

**SunOS**:

- SmartOS

### Example Usage

If you're looking for the *one-liner* to install Salt, please scroll to the bottom and use the instructions for *Installing via an Insecure One-Liner*

---

**Note**: In every two-step example, you would be well-served to examine the downloaded file and examine it to ensure that it does what you expect.

---

The Salt Bootstrap script has a wide variety of options that can be passed as well as several ways of obtaining the bootstrap script itself.

---

**Note**: These examples below show how to bootstrap Salt directly from GitHub or other Git repository. Run the script without any parameters to get latest stable Salt packages for your system from SaltStack corporate repository. See first example in the *Install using wget* section.

---

### Install using curl

Using `curl` to install latest development version from GitHub:

```
curl -o bootstrap_salt.sh -L https://bootstrap.saltstack.com
sudo sh bootstrap_salt.sh git develop
```

If you want to install a specific release version (based on the Git tags):

```
curl -o bootstrap_salt.sh -L https://bootstrap.saltstack.com
sudo sh bootstrap_salt.sh git v2015.8.8
```

To install a specific branch from a Git fork:

```
curl -o bootstrap_salt.sh -L https://bootstrap.saltstack.com
sudo sh bootstrap_salt.sh -g https://github.com/myuser/salt.git git mybranch
```

If all you want is to install a `salt-master` using latest Git:

```
curl -o bootstrap_salt.sh -L https://bootstrap.saltstack.com
sudo sh bootstrap_salt.sh -M -N git develop
```

If your host has Internet access only via HTTP proxy:

```
PROXY='http://user:password@myproxy.example.com:3128'
curl -o bootstrap_salt.sh -L -x "$PROXY" https://bootstrap.saltstack.com
sudo sh bootstrap_salt.sh -G -H "$PROXY" git
```

### Install using wget

Using `wget` to install your distribution's stable packages:

```
wget -O bootstrap_salt.sh https://bootstrap.saltstack.com
sudo sh bootstrap_salt.sh
```

Downloading the script from develop branch:

```
wget -O bootstrap_salt.sh https://bootstrap.saltstack.com/develop
sudo sh bootstrap_salt.sh
```

Installing a specific version from git using `wget`:

```
wget -O bootstrap_salt.sh https://bootstrap.saltstack.com
sudo sh bootstrap_salt.sh -P git v2015.8.8
```

---

**Note**: On the above example we added *-P* which will allow PIP packages to be installed if required but it's not a necessary flag for Git based bootstraps.

---

### Install using Python

If you already have Python installed, `python 2.6`, then it's as easy as:

```
python -m urllib "https://bootstrap.saltstack.com" > bootstrap_salt.sh
sudo sh bootstrap_salt.sh git develop
```

All Python versions should support the following in-line code:

```
python -c 'import urllib; print urllib.urlopen("https://bootstrap.saltstack.com").
 ↪read()' > bootstrap_salt.sh
sudo sh bootstrap_salt.sh git develop
```

### Install using fetch

On a FreeBSD base system you usually don't have either of the above binaries available. You **do** have `fetch` available though:

```
fetch -o bootstrap_salt.sh https://bootstrap.saltstack.com
sudo sh bootstrap_salt.sh
```

If you have any SSL issues install `ca_root_nssp`:

```
pkg install ca_root_nssp
```

And either copy the certificates to the place where fetch can find them:

```
cp /usr/local/share/certs/ca-root-nss.crt /etc/ssl/cert.pem
```

Or link them to the right place:

```
ln -s /usr/local/share/certs/ca-root-nss.crt /etc/ssl/cert.pem
```

### Installing via an Insecure One-Liner

The following examples illustrate how to install Salt via a one-liner.

**Note**: Warning! These methods do not involve a verification step and assume that the delivered file is trustworthy.

Any of the example above which use two-lines can be made to run in a single-line configuration with minor modifications.

For example, using `curl` to install your distribution's stable packages:

```
curl -L https://bootstrap.saltstack.com | sudo sh
```

Using `wget` to install your distribution's stable packages:

```
wget -O - https://bootstrap.saltstack.com | sudo sh
```

Installing the latest develop branch of Salt:

```
curl -L https://bootstrap.saltstack.com | sudo sh -s -- git develop
```

### Command Line Options

Here's a summary of the command line options:

```
$ sh bootstrap-salt.sh -h

  Usage :  bootstrap-salt.sh [options] <install-type> <install-type-args>

  Installation types:
    - stable (default)
    - stable [version] (ubuntu specific)
    - daily  (ubuntu specific)
    - testing (redhat specific)
    - git

  Examples:
    - bootstrap-salt.sh
    - bootstrap-salt.sh stable
    - bootstrap-salt.sh stable 2014.7
    - bootstrap-salt.sh daily
    - bootstrap-salt.sh testing
    - bootstrap-salt.sh git
    - bootstrap-salt.sh git develop
    - bootstrap-salt.sh git v0.17.0
    - bootstrap-salt.sh git 8c3fadf15ec183e5ce8c63739850d543617e4357

  Options:
```

```
  -h  Display this message
  -v  Display script version
  -n  No colours.
  -D  Show debug output.
  -c  Temporary configuration directory
  -g  Salt repository URL. (default: git://github.com/saltstack/salt.git)
  -G  Instead of cloning from git://github.com/saltstack/salt.git, clone from https://
↪github.com/saltstack/salt.git (Usually necessary on systems which have the regular
↪git protocol port blocked, where https usually is not)
  -k  Temporary directory holding the minion keys which will pre-seed
      the master.
  -s  Sleep time used when waiting for daemons to start, restart and when checking
      for the services running. Default: 3
  -M  Also install salt-master
  -S  Also install salt-syndic
  -N  Do not install salt-minion
  -X  Do not start daemons after installation
  -C  Only run the configuration function. This option automatically
      bypasses any installation.
  -P  Allow pip based installations. On some distributions the required salt
      packages or its dependencies are not available as a package for that
      distribution. Using this flag allows the script to use pip as a last
      resort method. NOTE: This only works for functions which actually
      implement pip based installations.
  -F  Allow copied files to overwrite existing(config, init.d, etc)
  -U  If set, fully upgrade the system prior to bootstrapping salt
  -K  If set, keep the temporary files in the temporary directories specified
      with -c and -k.
  -I  If set, allow insecure connections while downloading any files. For
      example, pass '--no-check-certificate' to 'wget' or '--insecure' to 'curl'
  -A  Pass the salt-master DNS name or IP. This will be stored under
      ${BS_SALT_ETC_DIR}/minion.d/99-master-address.conf
  -i  Pass the salt-minion id. This will be stored under
      ${BS_SALT_ETC_DIR}/minion_id
  -L  Install the Apache Libcloud package if possible(required for salt-cloud)
  -p  Extra-package to install while installing salt dependencies. One package
      per -p flag. You're responsible for providing the proper package name.
  -d  Disable check_service functions. Setting this flag disables the
      'install_<distro>_check_services' checks. You can also do this by
      touching /tmp/disable_salt_checks on the target host. Defaults ${BS_FALSE}
  -H  Use the specified http proxy for the installation
  -Z  Enable external software source for newer ZeroMQ(Only available for RHEL/CentOS/
↪Fedora/Ubuntu based distributions)
  -b  Assume that dependencies are already installed and software sources are set up.
      If git is selected, git tree is still checked out as dependency step.
```

### 1.4.2 Opening the Firewall up for Salt

The Salt master communicates with the minions using an AES-encrypted ZeroMQ connection. These communications are done over TCP ports **4505** and **4506**, which need to be accessible on the master only. This document outlines suggested firewall rules for allowing these incoming connections to the master.

**Note**: No firewall configuration needs to be done on Salt minions. These changes refer to the master only.

### Fedora 18 and beyond / RHEL 7 / CentOS 7

Starting with Fedora 18 FirewallD is the tool that is used to dynamically manage the firewall rules on a host. It has support for IPv4/6 settings and the separation of runtime and permanent configurations. To interact with FirewallD use the command line client `firewall-cmd`.

**firewall-cmd example**:

```
firewall-cmd --permanent --zone=<zone> --add-port=4505-4506/tcp
```

Please choose the desired zone according to your setup. Don't forget to reload after you made your changes.

```
firewall-cmd --reload
```

### RHEL 6 / CentOS 6

The `lokkit` command packaged with some Linux distributions makes opening iptables firewall ports very simple via the command line. Just be careful to not lock out access to the server by neglecting to open the ssh port.

**lokkit example**:

```
lokkit -p 22:tcp -p 4505:tcp -p 4506:tcp
```

The `system-config-firewall-tui` command provides a text-based interface to modifying the firewall.

**system-config-firewall-tui**:

```
system-config-firewall-tui
```

### openSUSE

Salt installs firewall rules in /etc/sysconfig/SuSEfirewall2.d/services/salt. Enable with:

```
SuSEfirewall2 open
SuSEfirewall2 start
```

If you have an older package of Salt where the above configuration file is not included, the `SuSEfirewall2` command makes opening iptables firewall ports very simple via the command line.

**SuSEfirewall example**:

```
SuSEfirewall2 open EXT TCP 4505
SuSEfirewall2 open EXT TCP 4506
```

The firewall module in YaST2 provides a text-based interface to modifying the firewall.

**YaST2**:

```
yast2 firewall
```

### iptables

Different Linux distributions store their *iptables* (also known as netfilter) rules in different places, which makes it difficult to standardize firewall documentation. Included are some of the more common locations, but your mileage may vary.

**Fedora / RHEL / CentOS**:

```
/etc/sysconfig/iptables
```

**Arch Linux**:

```
/etc/iptables/iptables.rules
```

**Debian**

Follow these instructions: https://wiki.debian.org/iptables

Once you've found your firewall rules, you'll need to add the two lines below to allow traffic on `tcp/4505` and `tcp/4506`:

```
-A INPUT -m state --state new -m tcp -p tcp --dport 4505 -j ACCEPT
-A INPUT -m state --state new -m tcp -p tcp --dport 4506 -j ACCEPT
```

**Ubuntu**

Salt installs firewall rules in /etc/ufw/applications.d/salt.ufw. Enable with:

```
ufw allow salt
```

#### pf.conf

The BSD-family of operating systems uses packet filter (pf). The following example describes the additions to `pf.conf` needed to access the Salt master.

```
pass in on $int_if proto tcp from any to $int_if port 4505
pass in on $int_if proto tcp from any to $int_if port 4506
```

Once these additions have been made to the `pf.conf` the rules will need to be reloaded. This can be done using the `pfctl` command.

```
pfctl -vf /etc/pf.conf
```

### 1.4.3 Whitelist communication to Master

There are situations where you want to selectively allow Minion traffic from specific hosts or networks into your Salt Master. The first scenario which comes to mind is to prevent unwanted traffic to your Master out of security concerns, but another scenario is to handle Minion upgrades when there are backwards incompatible changes between the installed Salt versions in your environment.

Here is an example *Linux iptables* ruleset to be set on the Master:

```
# Allow Minions from these networks
-I INPUT -s 10.1.2.0/24 -p tcp -m multiport --dports 4505,4506 -j ACCEPT
-I INPUT -s 10.1.3.0/24 -p tcp -m multiport --dports 4505,4506 -j ACCEPT
# Allow Salt to communicate with Master on the loopback interface
-A INPUT -i lo -p tcp -m multiport --dports 4505,4506 -j ACCEPT
# Reject everything else
-A INPUT -p tcp -m multiport --dports 4505,4506 -j REJECT
```

**Note:** The important thing to note here is that the `salt` command needs to communicate with the listening network socket of `salt-master` on the *loopback* interface. Without this you will see no outgoing Salt traffic from the master, even for a simple `salt '*' test.ping`, because the `salt` client never reached the `salt-master` to tell it to carry out the execution.

### 1.4.4 Preseed Minion with Accepted Key

In some situations, it is not convenient to wait for a minion to start before accepting its key on the master. For instance, you may want the minion to bootstrap itself as soon as it comes online. You may also want to to let your developers provision new development machines on the fly.

**See also:**

Many ways to preseed minion keys

Salt has other ways to generate and pre-accept minion keys in addition to the manual steps outlined below.

salt-cloud performs these same steps automatically when new cloud VMs are created (unless instructed not to).

salt-api exposes an HTTP call to Salt's REST API to *generate and download the new minion keys as a tarball*.

There is a general four step process to do this:

1. Generate the keys on the master:

```
root@saltmaster# salt-key --gen-keys=[key_name]
```

Pick a name for the key, such as the minion's id.

2. Add the public key to the accepted minion folder:

```
root@saltmaster# cp key_name.pub /etc/salt/pki/master/minions/[minion_id]
```

It is necessary that the public key file has the same name as your minion id. This is how Salt matches minions with their keys. Also note that the pki folder could be in a different location, depending on your OS or if specified in the master config file.

3. Distribute the minion keys.

There is no single method to get the keypair to your minion. The difficulty is finding a distribution method which is secure. For Amazon EC2 only, an AWS best practice is to use IAM Roles to pass credentials. (See blog post, http://blogs.aws.amazon.com/security/post/Tx610S2MLVZWEA/Using-IAM-roles-to-distribute-non-AWS-credentials-to-your-EC2-instances )

**Security Warning**

Since the minion key is already accepted on the master, distributing the private key poses a potential security risk. A malicious party will have access to your entire state tree and other sensitive data if they gain access to a preseeded minion key.

4. Preseed the Minion with the keys

You will want to place the minion keys before starting the salt-minion daemon:

```
/etc/salt/pki/minion/minion.pem
/etc/salt/pki/minion/minion.pub
```

Once in place, you should be able to start salt-minion and run `salt-call state.apply` or any other salt commands that require master authentication.

### 1.4.5 The MacOS X (Maverick) Developer Step By Step Guide To Salt Installation

This document provides a step-by-step guide to installing a Salt cluster consisting of one master, and one minion running on a local VM hosted on Mac OS X.

---

**Note:** This guide is aimed at developers who wish to run Salt in a virtual machine. The official (Linux) walkthrough can be found here.

---

#### The 5 Cent Salt Intro

Since you're here you've probably already heard about Salt, so you already know Salt lets you configure and run commands on hordes of servers easily. Here's a brief overview of a Salt cluster:

- Salt works by having a ``master'' server sending commands to one or multiple ``minion'' servers [1]. The master server is the ``command center''. It is going to be the place where you store your configuration files, aka: ``which server is the db, which is the web server, and what libraries and software they should have installed''. The minions receive orders from the master. Minions are the servers actually performing work for your business.
- Salt has two types of configuration files:

  1. the ``salt communication channels'' or ``meta'' or ``config'' configuration files (not official names): one for the master (usually is /etc/salt/master , **on the master server**), and one for minions (default is /etc/salt/minion or /etc/salt/minion.conf, **on the minion servers**). Those files are used to determine things like the Salt Master IP, port, Salt folder locations, etc.. If these are configured incorrectly, your minions will probably be unable to receive orders from the master, or the master will not know which software a given minion should install.

  2. the ``business'' or ``service'' configuration files (once again, not an official name): these are configuration files, ending with ".sls" extension, that describe which software should run on which server, along with particular configuration properties for the software that is being installed. These files should be created in the /srv/salt folder by default, but their location can be changed using ... /etc/salt/master configuration file!

---

**Note:** This tutorial contains a third important configuration file, not to be confused with the previous two: the virtual machine provisioning configuration file. This in itself is not specifically tied to Salt, but it also contains some Salt configuration. More on that in step 3. Also note that all configuration files are YAML files. So indentation matters.

---

#### Before Digging In, The Architecture Of The Salt Cluster

#### Salt Master

The ``Salt master'' server is going to be the Mac OS machine, directly. Commands will be run from a terminal app, so Salt will need to be installed on the Mac. This is going to be more convenient for toying around with configuration files.

[1] Salt also works with ``masterless'' configuration where a minion is autonomous (in which case salt can be seen as a local configuration tool), or in ``multiple master'' configuration. See the documentation for more on that.

### Salt Minion

We'll only have one ``Salt minion'' server. It is going to be running on a Virtual Machine running on the Mac, using VirtualBox. It will run an Ubuntu distribution.

### Step 1 - Configuring The Salt Master On Your Mac

official documentation

Because Salt has a lot of dependencies that are not built in Mac OS X, we will use Homebrew to install Salt. Homebrew is a package manager for Mac, it's great, use it (for this tutorial at least!). Some people spend a lot of time installing libs by hand to better understand dependencies, and then realize how useful a package manager is once they're configuring a brand new machine and have to do it all over again. It also lets you *uninstall* things easily.

---

**Note**: Brew is a Ruby program (Ruby is installed by default with your Mac). Brew downloads, compiles, and links software. The linking phase is when compiled software is deployed on your machine. It may conflict with manually installed software, especially in the /usr/local directory. It's ok, remove the manually installed version then refresh the link by typing `brew link 'packageName'`. Brew has a `brew doctor` command that can help you troubleshoot. It's a great command, use it often. Brew requires xcode command line tools. When you run brew the first time it asks you to install them if they're not already on your system. Brew installs software in /usr/local/bin (system bins are in /usr/bin). In order to use those bins you need your $PATH to search there first. Brew tells you if your $PATH needs to be fixed.

---

---

**Tip**: Use the keyboard shortcut `cmd + shift + period` in the ``open'' Mac OS X dialog box to display hidden files and folders, such as .profile.

---

### Install Homebrew

Install Homebrew here http://brew.sh/ Or just type

```
ruby -e "$(curl -fsSL https://raw.githubusercontent.com/Homebrew/install/master/
 ↪install)"
```

Now type the following commands in your terminal (you may want to type `brew doctor` after each to make sure everything's fine):

```
brew install python
brew install swig
brew install zmq
```

---

**Note**: zmq is ZeroMQ. It's a fantastic library used for server to server network communication and is at the core of Salt efficiency.

---

### Install Salt

You should now have everything ready to launch this command:

```
pip install salt
```

**Note**: There should be no need for `sudo pip install salt`. Brew installed Python for your user, so you should have all the access. In case you would like to check, type `which python` to ensure that it's /usr/local/bin/python, and `which pip` which should be /usr/local/bin/pip.

Now type `python` in a terminal then, `import salt`. There should be no errors. Now exit the Python terminal using `exit()`.

### Create The Master Configuration

If the default /etc/salt/master configuration file was not created, copy-paste it from here: http://docs.saltstack.com/ref/configuration/examples.html#configuration-examples-master

**Note**: `/etc/salt/master` is a file, not a folder.

Salt Master configuration changes. The Salt master needs a few customization to be able to run on Mac OS X:

```
sudo launchctl limit maxfiles 4096 8192
```

In the /etc/salt/master file, change max_open_files to 8192 (or just add the line: `max_open_files: 8192` (no quote) if it doesn't already exists).

You should now be able to launch the Salt master:

```
sudo salt-master --log-level=all
```

There should be no errors when running the above command.

**Note**: This command is supposed to be a daemon, but for toying around, we'll keep it running on a terminal to monitor the activity.

Now that the master is set, let's configure a minion on a VM.

The Salt minion is going to run on a Virtual Machine. There are a lot of software options that let you run virtual machines on a mac, But for this tutorial we're going to use VirtualBox. In addition to virtualBox, we will use Vagrant, which allows you to create the base VM configuration.

Vagrant lets you build ready to use VM images, starting from an OS image and customizing it using ``provisioners''. In our case, we'll use it to:

- Download the base Ubuntu image
- Install salt on that Ubuntu image (Salt is going to be the ``provisioner'' for the VM).
- Launch the VM
- SSH into the VM to debug
- Stop the VM once you're done.

### Install VirtualBox

Go get it here: https://www.virtualBox.org/wiki/Downloads (click on VirtualBox for OS X hosts => x86/amd64)

### Install Vagrant

Go get it here: http://downloads.vagrantup.com/ and choose the latest version (1.3.5 at time of writing), then the .dmg file. Double-click to install it. Make sure the `vagrant` command is found when run in the terminal. Type `vagrant`. It should display a list of commands.

### Create The Minion VM Folder

Create a folder in which you will store your minion's VM. In this tutorial, it's going to be a minion folder in the $home directory.

```
cd $home
mkdir minion
```

### Initialize Vagrant

From the minion folder, type

```
vagrant init
```

This command creates a default Vagrantfile configuration file. This configuration file will be used to pass configuration parameters to the Salt provisioner in Step 3.

### Import Precise64 Ubuntu Box

```
vagrant box add precise64 http://files.vagrantup.com/precise64.box
```

**Note**: This box is added at the global Vagrant level. You only need to do it once as each VM will use this same file.

### Modify the Vagrantfile

Modify ./minion/Vagrantfile to use th precise64 box. Change the `config.vm.box` line to:

```
config.vm.box = "precise64"
```

Uncomment the line creating a host-only IP. This is the ip of your minion (you can change it to something else if that IP is already in use):

```
config.vm.network :private_network, ip: "192.168.33.10"
```

At this point you should have a VM that can run, although there won't be much in it. Let's check that.

### Checking The VM

From the $home/minion folder type:

```
vagrant up
```

A log showing the VM booting should be present. Once it's done you'll be back to the terminal:

```
ping 192.168.33.10
```

The VM should respond to your ping request.

Now log into the VM in ssh using Vagrant again:

```
vagrant ssh
```

You should see the shell prompt change to something similar to `vagrant@precise64:~$` meaning you're inside the VM. From there, enter the following:

```
ping 10.0.2.2
```

---

**Note**: That ip is the ip of your VM host (the Mac OS X OS). The number is a VirtualBox default and is displayed in the log after the Vagrant ssh command. We'll use that IP to tell the minion where the Salt master is. Once you're done, end the ssh session by typing `exit`.

---

It's now time to connect the VM to the salt master

### Creating The Minion Configuration File

Create the `/etc/salt/minion` file. In that file, put the following lines, giving the ID for this minion, and the IP of the master:

```
master: 10.0.2.2
id: 'minion1'
file_client: remote
```

Minions authenticate with the master using keys. Keys are generated automatically if you don't provide one and can accept them later on. However, this requires accepting the minion key every time the minion is destroyed or created (which could be quite often). A better way is to create those keys in advance, feed them to the minion, and authorize them once.

### Preseed minion keys

From the minion folder on your Mac run:

```
sudo salt-key --gen-keys=minion1
```

This should create two files: minion1.pem, and minion1.pub. Since those files have been created using sudo, but will be used by vagrant, you need to change ownership:

```
sudo chown youruser:yourgroup minion1.pem
sudo chown youruser:yourgroup minion1.pub
```

Then copy the .pub file into the list of accepted minions:

```
sudo cp minion1.pub /etc/salt/pki/master/minions/minion1
```

### Modify Vagrantfile to Use Salt Provisioner

Let's now modify the Vagrantfile used to provision the Salt VM. Add the following section in the Vagrantfile (note: it should be at the same indentation level as the other properties):

```
# salt-vagrant config
config.vm.provision :salt do |salt|
    salt.run_highstate = true
    salt.minion_config = "/etc/salt/minion"
    salt.minion_key = "./minion1.pem"
    salt.minion_pub = "./minion1.pub"
end
```

Now destroy the vm and recreate it from the /minion folder:

```
vagrant destroy
vagrant up
```

If everything is fine you should see the following message:

```
"Bootstrapping Salt... (this may take a while)
Salt successfully configured and installed!"
```

### Checking Master-Minion Communication

To make sure the master and minion are talking to each other, enter the following:

```
sudo salt '*' test.ping
```

You should see your minion answering the ping. It's now time to do some configuration.

In this step we'll use the Salt master to instruct our minion to install Nginx.

### Checking the system's original state

First, make sure that an HTTP server is not installed on our minion. When opening a browser directed at `http://192.168.33.10/` You should get an error saying the site cannot be reached.

### Initialize the top.sls file

System configuration is done in `/srv/salt/top.sls` (and subfiles/folders), and then applied by running the `state.apply` function to have the Salt master order its minions to update their instructions and run the associated commands.

First Create an empty file on your Salt master (Mac OS X machine):

```
touch /srv/salt/top.sls
```

When the file is empty, or if no configuration is found for our minion an error is reported:

```
sudo salt 'minion1' state.apply
```

This should return an error stating: **No Top file or external nodes data matches found**.

#### Create The Nginx Configuration

Now is finally the time to enter the real meat of our server's configuration. For this tutorial our minion will be treated as a web server that needs to have Nginx installed.

Insert the following lines into `/srv/salt/top.sls` (which should current be empty).

```
base:
  'minion1':
    - bin.nginx
```

Now create `/srv/salt/bin/nginx.sls` containing the following:

```
nginx:
  pkg.installed:
    - name: nginx
  service.running:
    - enable: True
    - reload: True
```

#### Check Minion State

Finally, run the `state.apply` function again:

```
sudo salt 'minion1' state.apply
```

You should see a log showing that the Nginx package has been installed and the service configured. To prove it, open your browser and navigate to http://192.168.33.10/, you should see the standard Nginx welcome page.

Congratulations!

#### Where To Go From Here

A full description of configuration management within Salt (sls files among other things) is available here: http://docs.saltstack.com/en/latest/index.html#configuration-management

### 1.4.6 running salt as normal user tutorial

**Before continuing** make sure you have a working Salt installation by following the *Installation* and the *configuration* instructions.

---

**Stuck?**

There are many ways to get help from the Salt community including our mailing list and our IRC channel #salt.

---

### Running Salt functions as non root user

If you don't want to run salt cloud as root or even install it you can configure it to have a virtual root in your working directory.

The salt system uses the `salt.syspath` module to find the variables

If you run the salt-build, it will generated in:

```
./build/lib.linux-x86_64-2.7/salt/_syspaths.py
```

To generate it, run the command:

```
python setup.py build
```

Copy the generated module into your salt directory

```
cp ./build/lib.linux-x86_64-2.7/salt/_syspaths.py salt/_syspaths.py
```

Edit it to include needed variables and your new paths

```
# you need to edit this
ROOT_DIR = *your current dir* + '/salt/root'

# you need to edit this
INSTALL_DIR = *location of source code*

CONFIG_DIR =  ROOT_DIR + '/etc/salt'
CACHE_DIR = ROOT_DIR + '/var/cache/salt'
SOCK_DIR = ROOT_DIR + '/var/run/salt'
SRV_ROOT_DIR= ROOT_DIR + '/srv'
BASE_FILE_ROOTS_DIR = ROOT_DIR + '/srv/salt'
BASE_PILLAR_ROOTS_DIR = ROOT_DIR + '/srv/pillar'
BASE_MASTER_ROOTS_DIR = ROOT_DIR + '/srv/salt-master'
LOGS_DIR = ROOT_DIR + '/var/log/salt'
PIDFILE_DIR = ROOT_DIR + '/var/run'
CLOUD_DIR = INSTALL_DIR + '/cloud'
BOOTSTRAP = CLOUD_DIR + '/deploy/bootstrap-salt.sh'
```

Create the directory structure

```
mkdir -p root/etc/salt root/var/cache/run root/run/salt root/srv
root/srv/salt root/srv/pillar root/srv/salt-master root/var/log/salt root/var/run
```

Populate the configuration files:

```
cp -r conf/* root/etc/salt/
```

Edit your `root/etc/salt/master` configuration that is used by salt-cloud:

```
user: *your user name*
```

Run like this:

```
PYTHONPATH=`pwd` scripts/salt-cloud
```

### 1.4.7 Standalone Minion

Since the Salt minion contains such extensive functionality it can be useful to run it standalone. A standalone minion can be used to do a number of things:

- Use salt-call commands on a system without connectivity to a master
- Masterless States, run states entirely from files local to the minion

---

**Note:** When running Salt in masterless mode, do not run the salt-minion daemon. Otherwise, it will attempt to connect to a master and fail. The salt-call command stands on its own and does not need the salt-minion daemon.

---

#### Minion Configuration

Throughout this document there are several references to setting different options to configure a masterless Minion. Salt Minions are easy to configure via a configuration file that is located, by default, in `/etc/salt/minion`. Note, however, that on FreeBSD systems, the minion configuration file is located in `/usr/local/etc/salt/minion`.

You can learn more about minion configuration options in the *Configuring the Salt Minion* docs.

#### Telling Salt Call to Run Masterless

The salt-call command is used to run module functions locally on a minion instead of executing them from the master. Normally the salt-call command checks into the master to retrieve file server and pillar data, but when running standalone salt-call needs to be instructed to not check the master for this data. To instruct the minion to not look for a master when running salt-call the *file_client* configuration option needs to be set. By default the *file_client* is set to `remote` so that the minion knows that file server and pillar data are to be gathered from the master. When setting the *file_client* option to `local` the minion is configured to not gather this data from the master.

```
file_client: local
```

Now the salt-call command will not look for a master and will assume that the local system has all of the file and pillar resources.

#### Running States Masterless

The state system can be easily run without a Salt master, with all needed files local to the minion. To do this the minion configuration file needs to be set up to know how to return file_roots information like the master. The file_roots setting defaults to /srv/salt for the base environment just like on the master:

```
file_roots:
  base:
    - /srv/salt
```

Now set up the Salt State Tree, top file, and SLS modules in the same way that they would be set up on a master. Now, with the *file_client* option set to `local` and an available state tree then calls to functions in the state module will use the information in the file_roots on the minion instead of checking in with the master.

Remember that when creating a state tree on a minion there are no syntax or path changes needed, SLS modules written to be used from a master do not need to be modified in any way to work with a minion.

This makes it easy to ``script'' deployments with Salt states without having to set up a master, and allows for these SLS modules to be easily moved into a Salt master as the deployment grows.

The declared state can now be executed with:

```
salt-call state.apply
```

Or the salt-call command can be executed with the `--local` flag, this makes it unnecessary to change the configuration file:

```
salt-call state.apply --local
```

#### External Pillars

*External pillars* are supported when running in masterless mode.

### 1.4.8 Salt Masterless Quickstart

Running a masterless salt-minion lets you use Salt's configuration management for a single machine without calling out to a Salt master on another machine.

Since the Salt minion contains such extensive functionality it can be useful to run it standalone. A standalone minion can be used to do a number of things:

- Stand up a master server via States (Salting a Salt Master)
- Use salt-call commands on a system without connectivity to a master
- Masterless States, run states entirely from files local to the minion

It is also useful for testing out state trees before deploying to a production setup.

#### Bootstrap Salt Minion

The salt-bootstrap script makes bootstrapping a server with Salt simple for any OS with a Bourne shell:

```
curl -L https://bootstrap.saltstack.com -o bootstrap_salt.sh
sudo sh bootstrap_salt.sh
```

See the salt-bootstrap documentation for other one liners. When using Vagrant to test out salt, the Vagrant salt provisioner will provision the VM for you.

#### Telling Salt to Run Masterless

To instruct the minion to not look for a master, the *file_client* configuration option needs to be set in the minion configuration file. By default the *file_client* is set to `remote` so that the minion gathers file server and pillar data from the salt master. When setting the *file_client* option to `local` the minion is configured to not gather this data from the master.

```
file_client: local
```

Now the salt minion will not look for a master and will assume that the local system has all of the file and pillar resources.

Configuration which resided in the *master configuration* (e.g. `/etc/salt/master`) should be moved to the *minion configuration* since the minion does not read the master configuration.

---

**Note**: When running Salt in masterless mode, do not run the salt-minion daemon. Otherwise, it will attempt to connect to a master and fail. The salt-call command stands on its own and does not need the salt-minion daemon.

---

### Create State Tree

Following the successful installation of a salt-minion, the next step is to create a state tree, which is where the SLS files that comprise the possible states of the minion are stored.

The following example walks through the steps necessary to create a state tree that ensures that the server has the Apache webserver installed.

---

**Note**: For a complete explanation on Salt States, see the tutorial.

---

1. Create the `top.sls` file:

`/srv/salt/top.sls:`

```
base:
  '*':
    - webserver
```

2. Create the webserver state tree:

`/srv/salt/webserver.sls:`

```
apache:               # ID declaration
  pkg:                # state declaration
    - installed       # function declaration
```

---

**Note**: The apache package has different names on different platforms, for instance on Debian/Ubuntu it is apache2, on Fedora/RHEL it is httpd and on Arch it is apache

---

The only thing left is to provision our minion using `salt-call`.

### Salt-call

The salt-call command is used to run remote execution functions locally on a minion instead of executing them from the master. Normally the salt-call command checks into the master to retrieve file server and pillar data, but when running standalone salt-call needs to be instructed to not check the master for this data:

```
salt-call --local state.apply
```

The `--local` flag tells the salt-minion to look for the state tree in the local file system and not to contact a Salt Master for instructions.

To provide verbose output, use `-l debug`:

```
salt-call --local state.apply -l debug
```

The minion first examines the `top.sls` file and determines that it is a part of the group matched by `*` glob and that the `webserver` SLS should be applied.

It then examines the `webserver.sls` file and finds the `apache` state, which installs the Apache package.

The minion should now have Apache installed, and the next step is to begin learning how to write *more complex states*.

## 1.5 Dependencies

Salt should run on any Unix-like platform so long as the dependencies are met.

- Python 2.6 >= 2.6 <3.0
- msgpack-python - High-performance message interchange format
- YAML - Python YAML bindings
- Jinja2 - parsing Salt States (configurable in the master settings)
- MarkupSafe - Implements a XML/HTML/XHTML Markup safe string for Python
- apache-libcloud - Python lib for interacting with many of the popular cloud service providers using a unified API
- Requests - HTTP library
- Tornado - Web framework and asynchronous networking library
- futures - Backport of the concurrent.futures package from Python 3.2

Depending on the chosen Salt transport, ZeroMQ or RAET, dependencies vary:

- ZeroMQ:
  - ZeroMQ >= 3.2.0
  - pyzmq >= 2.2.0 - ZeroMQ Python bindings
  - PyCrypto - The Python cryptography toolkit
- RAET:
  - libnacl - Python bindings to libsodium
  - ioflo - The flo programming interface raet and salt-raet is built on
  - RAET - The worlds most awesome UDP protocol

Salt defaults to the ZeroMQ transport, and the choice can be made at install time, for example:

```
python setup.py --salt-transport=raet install
```

This way, only the required dependencies are pulled by the setup script if need be.

If installing using pip, the `--salt-transport` install option can be provided like:

```
pip install --install-option="--salt-transport=raet" salt
```

**Note:** Salt does not bundle dependencies that are typically distributed as part of the base OS. If you have unmet dependencies and are using a custom or minimal installation, you might need to install some additional packages from your OS vendor.

## 1.6 Optional Dependencies

- mako - an optional parser for Salt States (configurable in the master settings)
- gcc - dynamic Cython module compiling

## 1.7 Upgrading Salt

When upgrading Salt, the master(s) should always be upgraded first. Backward compatibility for minions running newer versions of salt than their masters is not guaranteed.

Whenever possible, backward compatibility between new masters and old minions will be preserved. Generally, the only exception to this policy is in case of a security vulnerability.

**See also**:

*Installing Salt for development* and contributing to the project.

## 1.8 Building Packages using Salt Pack

Salt-pack is an open-source package builder for most commonly used Linux platforms, for example: Redhat/CentOS and Debian/Ubuntu families, utilizing SaltStack states and execution modules to build Salt and a specified set of dependencies, from which a platform specific repository can be built.

https://github.com/saltstack/salt-pack

CHAPTER 2

# Configuring Salt

This section explains how to configure user access, view and store job results, secure and troubleshoot, and how to perform many other administrative tasks.

## 2.1 Configuring the Salt Master

The Salt system is amazingly simple and easy to configure, the two components of the Salt system each have a respective configuration file. The **salt-master** is configured via the master configuration file, and the **salt-minion** is configured via the minion configuration file.

**See also**:

*Example master configuration file*.

The configuration file for the salt-master is located at `/etc/salt/master` by default. A notable exception is FreeBSD, where the configuration file is located at `/usr/local/etc/salt`. The available options are as follows:

### 2.1.1 Primary Master Configuration

#### interface

Default: `0.0.0.0` (all interfaces)

The local interface to bind to, must be an IP address.

```
interface: 192.168.0.1
```

#### ipv6

Default: `False`

Whether the master should listen for IPv6 connections. If this is set to True, the interface option must be adjusted too (for example: `interface: '::'`)

```
ipv6: True
```

### publish_port

Default: 4505

The network port to set up the publication interface.

```
publish_port: 4505
```

### master_id

Default: None

The id to be passed in the publish job to minions. This is used for MultiSyndics to return the job to the requesting master.

**Note**: This must be the same string as the syndic is configured with.

```
master_id: MasterOfMaster
```

### user

Default: root

The user to run the Salt processes

```
user: root
```

### max_open_files

Default: 100000

Each minion connecting to the master uses AT LEAST one file descriptor, the master subscription connection. If enough minions connect you might start seeing on the console(and then salt-master crashes):

```
Too many open files (tcp_listener.cpp:335)
Aborted (core dumped)
```

```
max_open_files: 100000
```

By default this value will be the one of *ulimit -Hn*, i.e., the hard limit for max open files.

To set a different value than the default one, uncomment, and configure this setting. Remember that this value CANNOT be higher than the hard limit. Raising the hard limit depends on the OS and/or distribution, a good way to find the limit is to search the internet for something like this:

```
raise max open files hard limit debian
```

### worker_threads

Default: 5

The number of threads to start for receiving commands and replies from minions. If minions are stalling on replies because you have many minions, raise the worker_threads value.

Worker threads should not be put below 3 when using the peer system, but can drop down to 1 worker otherwise.

**Note:** When the master daemon starts, it is expected behaviour to see multiple salt-master processes, even if `worker_threads' is set to `1'. At a minimum, a controlling process will start along with a Publisher, an EventPublisher, and a number of MWorker processes will be started. The number of MWorker processes is tuneable by the `worker_threads' configuration value while the others are not.

```
worker_threads: 5
```

### ret_port

Default: `4506`

The port used by the return server, this is the server used by Salt to receive execution returns and command executions.

```
ret_port: 4506
```

### pidfile

Default: `/var/run/salt-master.pid`

Specify the location of the master pidfile.

```
pidfile: /var/run/salt-master.pid
```

### root_dir

Default: `/`

The system root directory to operate from, change this to make Salt run from an alternative root.

```
root_dir: /
```

**Note:** This directory is prepended to the following options: *pki_dir*, *cachedir*, *sock_dir*, *log_file*, *autosign_file*, *autoreject_file*, *pidfile*.

### conf_file

Default: `/etc/salt/master`

The path to the master's configuration file.

```
conf_file: /etc/salt/master
```

### pki_dir

Default: `/etc/salt/pki/master`

The directory to store the pki authentication keys.

```
pki_dir: /etc/salt/pki/master
```

### extension_modules

Changed in version 2016.3.0: The default location for this directory has been moved. Prior to this version, the location was a directory named `extmods` in the Salt cachedir (on most platforms, `/var/cache/salt/extmods`). It has been moved into the master cachedir (on most platforms, `/var/cache/salt/master/extmods`).

Directory for custom modules. This directory can contain subdirectories for each of Salt's module types such as `runners`, `output`, `wheel`, `modules`, `states`, `returners`, `engines`, etc. This path is appended to *root_dir*.

```
extension_modules: /root/salt_extmods
```

### module_dirs

Default: `[]`

Like `extension_modules`, but a list of extra directories to search for Salt modules.

```
module_dirs:
  - /var/cache/salt/minion/extmods
```

### cachedir

Default: `/var/cache/salt/master`

The location used to store cache information, particularly the job information for executed salt commands.

This directory may contain sensitive data and should be protected accordingly.

```
cachedir: /var/cache/salt/master
```

### verify_env

Default: `True`

Verify and set permissions on configuration directories at startup.

```
verify_env: True
```

### keep_jobs

Default: `24`

Set the number of hours to keep old job information. Note that setting this option to `0` disables the cache cleaner.

```
keep_jobs: 24
```

### gather_job_timeout

New in version 2014.7.0.

Default: `10`

The number of seconds to wait when the client is requesting information about running jobs.

```
gather_job_timeout: 10
```

### timeout

Default: `5`

Set the default timeout for the salt command and api.

### loop_interval

Default: `60`

The loop_interval option controls the seconds for the master's maintenance process check cycle. This process updates file server backends, cleans the job cache and executes the scheduler.

### output

Default: `nested`

Set the default outputter used by the salt command.

### output_file

Default: None

Set the default output file used by the salt command. Default is to output to the CLI and not to a file. Functions the same way as the ``--out-file'' CLI option, only sets this to a single file for all salt commands.

```
output_file: /path/output/file
```

### color

Default: `True`

By default output is colored, to disable colored output set the color value to False.

```
color: False
```

### cli_summary

Default: `False`

When set to `True`, displays a summary of the number of minions targeted, the number of minions returned, and the number of minions that did not return.

```
cli_summary: False
```

### sock_dir

Default: `/var/run/salt/master`

Set the location to use for creating Unix sockets for master process communication.

```
sock_dir: /var/run/salt/master
```

### enable_gpu_grains

Default: `True`

Enable GPU hardware data for your master. Be aware that the master can take a while to start up when lspci and/or dmidecode is used to populate the grains for the master.

### job_cache

Default: `True`

The master maintains a temporary job cache. While this is a great addition, it can be a burden on the master for larger deployments (over 5000 minions). Disabling the job cache will make previously executed jobs unavailable to the jobs system and is not generally recommended. Normally it is wise to make sure the master has access to a faster IO system or a tmpfs is mounted to the jobs dir.

```
job_cache: True
```

---

**Note**: Setting the `job_cache` to `False` will not cache minion returns, but the JID directory for each job is still created. The creation of the JID directories is necessary because Salt uses those directories to check for JID collisions. By setting this option to `False`, the job cache directory, which is `/var/cache/salt/master/jobs/` by default, will be smaller, but the JID directories will still be present.

Note that the *`keep_jobs`* option can be set to a lower value, such as `1`, to limit the number of hours jobs are stored in the job cache. (The default is 24 hours.)

Please see the *Managing the Job Cache* documentation for more information.

---

### minion_data_cache

Default: `True`

The minion data cache is a cache of information about the minions stored on the master, this information is primarily the pillar and grains data. The data is cached in the Master cachedir under the name of the minion and used to predetermine what minions are expected to reply from executions.

```
minion_data_cache: True
```

### ext_job_cache

Default: ''

Used to specify a default returner for all minions. When this option is set, the specified returner needs to be properly configured and the minions will always default to sending returns to this returner. This will also disable the local job cache on the master.

```
ext_job_cache: redis
```

### event_return

New in version 2015.5.0.

Default: ''

Specify the returner to use to log events. A returner may have installation and configuration requirements. Read the returner's documentation.

---

**Note**: Not all returners support event returns. Verify that a returner has an `event_return()` function before configuring this option with a returner.

---

```
event_return: cassandra_cql
```

### event_return_queue

New in version 2015.5.0.

Default: 0

On busy systems, enabling event_returns can cause a considerable load on the storage system for returners. Events can be queued on the master and stored in a batched fashion using a single transaction for multiple events. By default, events are not queued.

```
event_return_queue: 0
```

### event_return_whitelist

New in version 2015.5.0.

Default: []

Only return events matching tags in a whitelist.

```
event_return_whitelist:
  - salt/master/a_tag
  - salt/master/another_tag
```

### event_return_blacklist

New in version 2015.5.0.

Default: `[]`

Store all event returns _except_ the tags in a blacklist.

```
event_return_blacklist:
  - salt/master/not_this_tag
  - salt/master/or_this_one
```

### max_event_size

New in version 2014.7.0.

Default: `1048576`

Passing very large events can cause the minion to consume large amounts of memory. This value tunes the maximum size of a message allowed onto the master event bus. The value is expressed in bytes.

```
max_event_size: 1048576
```

### master_job_cache

New in version 2014.7.0.

Default: `local_cache`

Specify the returner to use for the job cache. The job cache will only be interacted with from the salt master and therefore does not need to be accessible from the minions.

```
master_job_cache: redis
```

### enforce_mine_cache

Default: False

By-default when disabling the minion_data_cache mine will stop working since it is based on cached data, by enabling this option we explicitly enabling only the cache for the mine system.

```
enforce_mine_cache: False
```

### max_minions

Default: 0

The maximum number of minion connections allowed by the master. Use this to accommodate the number of minions per master if you have different types of hardware serving your minions. The default of `0` means unlimited connections. Please note that this can slow down the authentication process a bit in large setups.

```
max_minions: 100
```

#### con_cache

Default: False

If max_minions is used in large installations, the master might experience high-load situations because of having to check the number of connected minions for every authentication. This cache provides the minion-ids of all connected minions to all MWorker-processes and greatly improves the performance of max_minions.

```
con_cache: True
```

#### presence_events

Default: False

Causes the master to periodically look for actively connected minions. *Presence events* are fired on the event bus on a regular interval with a list of connected minions, as well as events with lists of newly connected or disconnected minions. This is a master-only operation that does not send executions to minions. Note, this does not detect minions that connect to a master via localhost.

```
presence_events: False
```

#### transport

Default: `zeromq`

Changes the underlying transport layer. ZeroMQ is the recommended transport while additional transport layers are under development. Supported values are `zeromq`, `raet` (experimental), and `tcp` (experimental). This setting has a significant impact on performance and should not be changed unless you know what you are doing! Transports are explained in Salt Transports.

```
transport: zeromq
```

#### transport_opts

Default: {}

(experimental) Starts multiple transports and overrides options for each transport with the provided dictionary This setting has a significant impact on performance and should not be changed unless you know what you are doing! Transports are explained in Salt Transports. The following example shows how to start a TCP transport alongside a ZMQ transport.

```
transport_opts:
  tcp:
    publish_port: 4605
    ret_port: 4606
  zeromq: []
```

### 2.1.2 Salt-SSH Configuration

#### roster_file

Default: `/etc/salt/roster`

Pass in an alternative location for the salt-ssh roster file.

```
roster_file: /root/roster
```

#### ssh_log_file

New in version 2016.3.5.

Default: `/var/log/salt/ssh`

Specify the log file of the `salt-ssh` command.

```
ssh_log_file: /var/log/salt/ssh
```

#### ssh_minion_opts

Default: None

Pass in minion option overrides that will be inserted into the SHIM for salt-ssh calls. The local minion config is not used for salt-ssh. Can be overridden on a per-minion basis in the roster (`minion_opts`)

```
minion_opts:
  gpg_keydir: /root/gpg
```

#### thin_extra_mods

Default: None

List of additional modules, needed to be included into the Salt Thin. Pass a list of importable Python modules that are typically located in the *site-packages* Python directory so they will be also always included into the Salt Thin, once generated.

### 2.1.3 Master Security Settings

#### open_mode

Default: `False`

Open mode is a dangerous security feature. One problem encountered with pki authentication systems is that keys can become ``mixed up'' and authentication begins to fail. Open mode turns off authentication and tells the master to accept all authentication. This will clean up the pki keys received from the minions. Open mode should not be turned on for general use. Open mode should only be used for a short period of time to clean up pki keys. To turn on open mode set this value to `True`.

```
open_mode: False
```

#### auto_accept

Default: `False`

Enable auto_accept. This setting will automatically accept all incoming public keys from minions.

```
auto_accept: False
```

### autosign_timeout

New in version 2014.7.0.

Default: `120`

Time in minutes that a incoming public key with a matching name found in pki_dir/minion_autosign/keyid is automatically accepted. Expired autosign keys are removed when the master checks the minion_autosign directory. This method to auto accept minions can be safer than an autosign_file because the keyid record can expire and is limited to being an exact name match. This should still be considered a less than secure option, due to the fact that trust is based on just the requesting minion id.

### autosign_file

Default: `not defined`

If the `autosign_file` is specified incoming keys specified in the autosign_file will be automatically accepted. Matches will be searched for first by string comparison, then by globbing, then by full-string regex matching. This should still be considered a less than secure option, due to the fact that trust is based on just the requesting minion id.

### autoreject_file

New in version 2014.1.0.

Default: `not defined`

Works like *`autosign_file`*, but instead allows you to specify minion IDs for which keys will automatically be rejected. Will override both membership in the *`autosign_file`* and the *`auto_accept`* setting.

### publisher_acl

Default: {}

Enable user accounts on the master to execute specific modules. These modules can be expressed as regular expressions. Note that client_acl option is deprecated by publisher_acl option and will be removed in future releases.

```
publisher_acl:
  fred:
    - test.ping
    - pkg.*
```

### publisher_acl_blacklist

Default: {}

Blacklist users or modules

This example would blacklist all non sudo users, including root from running any commands. It would also blacklist any use of the ``cmd'' module. Note that client_acl_blacklist option is deprecated by publisher_acl_blacklist option and will be removed in future releases.

This is completely disabled by default.

```
publisher_acl_blacklist:
  users:
    - root
    - '^(?!sudo_).*$'   #  all non sudo users
  modules:
    - cmd
```

### external_auth

Default: {}

The external auth system uses the Salt auth modules to authenticate and validate users to access areas of the Salt system.

```
external_auth:
  pam:
    fred:
      - test.*
```

### token_expire

Default: 43200

Time (in seconds) for a newly generated token to live.

Default: 12 hours

```
token_expire: 43200
```

### file_recv

Default: False

Allow minions to push files to the master. This is disabled by default, for security purposes.

```
file_recv: False
```

### file_recv_max_size

New in version 2014.7.0.

Default: 100

Set a hard-limit on the size of the files that can be pushed to the master. It will be interpreted as megabytes.

```
file_recv_max_size: 100
```

#### master_sign_pubkey

Default: `False`

Sign the master auth-replies with a cryptographic signature of the master's public key. Please see the tutorial how to use these settings in the Multimaster-PKI with Failover Tutorial

```
master_sign_pubkey: True
```

#### master_sign_key_name

Default: `master_sign`

The customizable name of the signing-key-pair without suffix.

```
master_sign_key_name: <filename_without_suffix>
```

#### master_pubkey_signature

Default: `master_pubkey_signature`

The name of the file in the master's pki-directory that holds the pre-calculated signature of the master's public-key.

```
master_pubkey_signature: <filename>
```

#### master_use_pubkey_signature

Default: `False`

Instead of computing the signature for each auth-reply, use a pre-calculated signature. The *master_pubkey_signature* must also be set for this.

```
master_use_pubkey_signature: True
```

#### rotate_aes_key

Default: `True`

Rotate the salt-masters AES-key when a minion-public is deleted with salt-key. This is a very important security-setting. Disabling it will enable deleted minions to still listen in on the messages published by the salt-master. Do not disable this unless it is absolutely clear what this does.

```
rotate_aes_key: True
```

### 2.1.4 Master Module Management

#### runner_dirs

Default: `[]`

Set additional directories to search for runner modules.

```
runner_dirs:
  - /var/lib/salt/runners
```

#### cython_enable

Default: `False`

Set to true to enable Cython modules (.pyx files) to be compiled on the fly on the Salt master.

```
cython_enable: False
```

### 2.1.5 Master State System Settings

#### state_top

Default: `top.sls`

The state system uses a ``top'' file to tell the minions what environment to use and what modules to use. The state_top file is defined relative to the root of the base environment.

```
state_top: top.sls
```

#### master_tops

Default: `{}`

The master_tops option replaces the external_nodes option by creating a pluggable system for the generation of external top data. The external_nodes option is deprecated by the master_tops option. To gain the capabilities of the classic external_nodes system, use the following configuration:

```
master_tops:
  ext_nodes: <Shell command which returns yaml>
```

#### external_nodes

Default: None

The external_nodes option allows Salt to gather data that would normally be placed in a top file from and external node controller. The external_nodes option is the executable that will return the ENC data. Remember that Salt will look for external nodes AND top files and combine the results if both are enabled and available!

```
external_nodes: cobbler-ext-nodes
```

#### renderer

Default: `yaml_jinja`

The renderer to use on the minions to render the state data.

```
renderer: yaml_jinja
```

### jinja_trim_blocks

New in version 2014.1.0.

Default: `False`

If this is set to `True`, the first newline after a Jinja block is removed (block, not variable tag!). Defaults to `False` and corresponds to the Jinja environment init variable `trim_blocks`.

```
jinja_trim_blocks: False
```

### jinja_lstrip_blocks

New in version 2014.1.0.

Default: `False`

If this is set to `True`, leading spaces and tabs are stripped from the start of a line to a block. Defaults to `False` and corresponds to the Jinja environment init variable `lstrip_blocks`.

```
jinja_lstrip_blocks: False
```

### failhard

Default: `False`

Set the global failhard flag. This informs all states to stop running states at the moment a single state fails.

```
failhard: False
```

### state_verbose

Default: `True`

Controls the verbosity of state runs. By default, the results of all states are returned, but setting this value to `False` will cause salt to only display output for states that failed or states that have changes.

```
state_verbose: False
```

### state_output

Default: `full`

The state_output setting changes if the output is the full multi line output for each changed state if set to `full', but if set to `terse' the output will be shortened to a single line. If set to `mixed', the output will be terse unless a state failed, in which case that output will be full. If set to `changes', the output will be full unless the state didn't change.

```
state_output: full
```

#### state_aggregate

Default: `False`

Automatically aggregate all states that have support for mod_aggregate by setting to `True`. Or pass a list of state module names to automatically aggregate just those types.

```
state_aggregate:
  - pkg
```

```
state_aggregate: True
```

#### state_events

Default: `False`

Send progress events as each function in a state run completes execution by setting to `True`. Progress events are in the format `salt/job/<JID>/prog/<MID>/<RUN NUM>`.

```
state_events: True
```

#### yaml_utf8

Default: `False`

Enable extra routines for YAML renderer used states containing UTF characters.

```
yaml_utf8: False
```

#### test

Default: `False`

Set all state calls to only test if they are going to actually make changes or just post what changes are going to be made.

```
test: False
```

### 2.1.6 Master File Server Settings

#### fileserver_backend

Default: `['roots']`

Salt supports a modular fileserver backend system, this system allows the salt master to link directly to third party systems to gather and manage the files available to minions. Multiple backends can be configured and will be searched for the requested file in the order in which they are defined here. The default setting only enables the standard backend `roots`, which is configured using the *`file_roots`* option.

Example:

```
fileserver_backend:
  - roots
  - git
```

**Note**: For masterless Salt, this parameter must be specified in the minion config file.

### fileserver_followsymlinks

New in version 2014.1.0.

Default: `True`

By default, the file_server follows symlinks when walking the filesystem tree. Currently this only applies to the default roots fileserver_backend.

```
fileserver_followsymlinks: True
```

### fileserver_ignoresymlinks

New in version 2014.1.0.

Default: `False`

If you do not want symlinks to be treated as the files they are pointing to, set `fileserver_ignoresymlinks` to `True`. By default this is set to False. When set to `True`, any detected symlink while listing files on the Master will not be returned to the Minion.

```
fileserver_ignoresymlinks: False
```

### fileserver_limit_traversal

New in version 2014.1.0.

Default: `False`

By default, the Salt fileserver recurses fully into all defined environments to attempt to find files. To limit this behavior so that the fileserver only traverses directories with SLS files and special Salt directories like _modules, set `fileserver_limit_traversal` to `True`. This might be useful for installations where a file root has a very large number of files and performance is impacted.

```
fileserver_limit_traversal: False
```

### hash_type

Default: `md5`

The hash_type is the hash to use when discovering the hash of a file on the master server. The default is md5, but sha1, sha224, sha256, sha384, and sha512 are also supported.

```
hash_type: md5
```

### file_buffer_size

Default: 1048576

The buffer size in the file server in bytes.

```
file_buffer_size: 1048576
```

### file_ignore_regex

Default: ''

A regular expression (or a list of expressions) that will be matched against the file path before syncing the modules and states to the minions. This includes files affected by the file.recurse state. For example, if you manage your custom modules and states in subversion and don't want all the `.svn' folders and content synced to your minions, you could set this to `/.svn($|/)'. By default nothing is ignored.

```
file_ignore_regex:
  - '/\.svn($|/)'
  - '/\.git($|/)'
```

### file_ignore_glob

Default ''

A file glob (or list of file globs) that will be matched against the file path before syncing the modules and states to the minions. This is similar to file_ignore_regex above, but works on globs instead of regex. By default nothing is ignored.

```
file_ignore_glob:
  - '\*.pyc'
  - '\*/somefolder/\*.bak'
  - '\*.swp'
```

---

**Note**: Vim's .swp files are a common cause of Unicode errors in *file.recurse* states which use templating. Unless there is a good reason to distribute them via the fileserver, it is good practice to include '*.swp' in the *file_ignore_glob*.

---

#### roots: Master's Local File Server

### file_roots

Default:

```
base:
  - /srv/salt
```

Salt runs a lightweight file server written in ZeroMQ to deliver files to minions. This file server is built into the master daemon and does not require a dedicated port.

The file server works on environments passed to the master. Each environment can have multiple root directories. The subdirectories in the multiple file roots cannot match, otherwise the downloaded files will not be able to be reliably ensured. A base environment is required to house the top file.

Example:

```
file_roots:
  base:
    - /srv/salt
  dev:
    - /srv/salt/dev/services
    - /srv/salt/dev/states
  prod:
    - /srv/salt/prod/services
    - /srv/salt/prod/states
```

**Note**: For masterless Salt, this parameter must be specified in the minion config file.

### git: Git Remote File Server Backend

#### gitfs_remotes

Default: `[]`

When using the `git` fileserver backend at least one git remote needs to be defined. The user running the salt master will need read access to the repo.

The repos will be searched in order to find the file requested by a client and the first repo to have the file will return it. Branches and tags are translated into salt environments.

```
gitfs_remotes:
  - git://github.com/saltstack/salt-states.git
  - file:///var/git/saltmaster
```

**Note**: `file://` repos will be treated as a remote and copied into the master's gitfs cache, so only the *local* refs for those repos will be exposed as fileserver environments.

As of 2014.7.0, it is possible to have per-repo versions of several of the gitfs configuration parameters. For more information, see the *GitFS Walkthrough*.

#### gitfs_provider

New in version 2014.7.0.

Optional parameter used to specify the provider to be used for gitfs. More information can be found in the *GitFS Walkthrough*.

Must be one of the following: `pygit2`, `gitpython`, or `dulwich`. If unset, then each will be tried in that same order, and the first one with a compatible version installed will be the provider that is used.

```
gitfs_provider: dulwich
```

### gitfs_ssl_verify

Default: `False`

Specifies whether or not to ignore SSL certificate errors when contacting the remote repository. The `False` setting is useful if you're using a git repo that uses a self-signed certificate. However, keep in mind that setting this to anything other `True` is a considered insecure, and using an SSH-based transport (if available) may be a better option.

```
gitfs_ssl_verify: True
```

### gitfs_mountpoint

New in version 2014.7.0.

Default: `''`

Specifies a path on the salt fileserver which will be prepended to all files served by gitfs. This option can be used in conjunction with *gitfs_root*. It can also be configured on a per-remote basis, see *here* for more info.

```
gitfs_mountpoint: salt://foo/bar
```

---

**Note**: The `salt://` protocol designation can be left off (in other words, `foo/bar` and `salt://foo/bar` are equivalent). Assuming a file `baz.sh` in the root of a gitfs remote, and the above example mountpoint, this file would be served up via `salt://foo/bar/baz.sh`.

---

### gitfs_root

Default: `''`

Relative path to a subdirectory within the repository from which Salt should begin to serve files. This is useful when there are files in the repository that should not be available to the Salt fileserver. Can be used in conjunction with *gitfs_mountpoint*. If used, then from Salt's perspective the directories above the one specified will be ignored and the relative path will (for the purposes of gitfs) be considered as the root of the repo.

```
gitfs_root: somefolder/otherfolder
```

Changed in version 2014.7.0: Ability to specify gitfs roots on a per-remote basis was added. See *here* for more info.

### gitfs_base

Default: `master`

Defines which branch/tag should be used as the `base` environment.

```
gitfs_base: salt
```

Changed in version 2014.7.0: Ability to specify the base on a per-remote basis was added. See *here* for more info.

### gitfs_env_whitelist

New in version 2014.7.0.

Default: `[]`

Used to restrict which environments are made available. Can speed up state runs if the repos in *gitfs_remotes* contain many branches/tags. More information can be found in the *GitFS Walkthrough*.

```
gitfs_env_whitelist:
  - base
  - v1.*
  - 'mybranch\d+'
```

### gitfs_env_blacklist

New in version 2014.7.0.

Default: `[]`

Used to restrict which environments are made available. Can speed up state runs if the repos in *gitfs_remotes* contain many branches/tags. More information can be found in the *GitFS Walkthrough*.

```
gitfs_env_blacklist:
  - base
  - v1.*
  - 'mybranch\d+'
```

### gitfs_global_lock

New in version 2015.8.9.

Default: `True`

When set to `False`, if there is an update lock for a gitfs remote and the pid written to it is not running on the master, the lock file will be automatically cleared and a new lock will be obtained. When set to `True`, Salt will simply log a warning when there is an update lock present.

On single-master deployments, disabling this option can help automatically deal with instances where the master was shutdown/restarted during the middle of a gitfs update, leaving a update lock in place.

However, on multi-master deployments with the gitfs cachedir shared via GlusterFS, nfs, or another network filesystem, it is strongly recommended not to disable this option as doing so will cause lock files to be removed if they were created by a different master.

```
# Disable global lock
gitfs_global_lock: False
```

#### GitFS Authentication Options

These parameters only currently apply to the pygit2 gitfs provider. Examples of how to use these can be found in the *GitFS Walkthrough*.

### gitfs_user

New in version 2014.7.0.

Default: `''`

Along with *gitfs_password*, is used to authenticate to HTTPS remotes.

```
gitfs_user: git
```

### gitfs_password

New in version 2014.7.0.

Default: `''`

Along with *gitfs_user*, is used to authenticate to HTTPS remotes. This parameter is not required if the repository does not use authentication.

```
gitfs_password: mypassword
```

### gitfs_insecure_auth

New in version 2014.7.0.

Default: `False`

By default, Salt will not authenticate to an HTTP (non-HTTPS) remote. This parameter enables authentication over HTTP. **Enable this at your own risk**.

```
gitfs_insecure_auth: True
```

### gitfs_pubkey

New in version 2014.7.0.

Default: `''`

Along with *gitfs_privkey* (and optionally *gitfs_passphrase*), is used to authenticate to SSH remotes. This parameter (or its *per-remote counterpart*) is required for SSH remotes.

```
gitfs_pubkey: /path/to/key.pub
```

### gitfs_privkey

New in version 2014.7.0.

Default: `''`

Along with *gitfs_pubkey* (and optionally *gitfs_passphrase*), is used to authenticate to SSH remotes. This parameter (or its *per-remote counterpart*) is required for SSH remotes.

```
gitfs_privkey: /path/to/key
```

### gitfs_passphrase

New in version 2014.7.0.

Default: ''

This parameter is optional, required only when the SSH key being used to authenticate is protected by a passphrase.

```
gitfs_passphrase: mypassphrase
```

## hg: Mercurial Remote File Server Backend

### hgfs_remotes

New in version 0.17.0.

Default: []

When using the hg fileserver backend at least one mercurial remote needs to be defined. The user running the salt master will need read access to the repo.

The repos will be searched in order to find the file requested by a client and the first repo to have the file will return it. Branches and/or bookmarks are translated into salt environments, as defined by the *hgfs_branch_method* parameter.

```
hgfs_remotes:
  - https://username@bitbucket.org/username/reponame
```

---

**Note**: As of 2014.7.0, it is possible to have per-repo versions of the *hgfs_root*, *hgfs_mountpoint*, *hgfs_base*, and *hgfs_branch_method* parameters. For example:

```
hgfs_remotes:
  - https://username@bitbucket.org/username/repo1
    - base: saltstates
  - https://username@bitbucket.org/username/repo2:
    - root: salt
    - mountpoint: salt://foo/bar/baz
  - https://username@bitbucket.org/username/repo3:
    - root: salt/states
    - branch_method: mixed
```

---

### hgfs_branch_method

New in version 0.17.0.

Default: branches

Defines the objects that will be used as fileserver environments.

- branches - Only branches and tags will be used
- bookmarks - Only bookmarks and tags will be used
- mixed - Branches, bookmarks, and tags will be used

```
hgfs_branch_method: mixed
```

**Note**: Starting in version 2014.1.0, the value of the *hgfs_base* parameter defines which branch is used as the `base` environment, allowing for a `base` environment to be used with an *hgfs_branch_method* of `bookmarks`.

Prior to this release, the `default` branch will be used as the `base` environment.

### hgfs_mountpoint

New in version 2014.7.0.

Default: `''`

Specifies a path on the salt fileserver which will be prepended to all files served by hgfs. This option can be used in conjunction with *hgfs_root*. It can also be configured on a per-remote basis, see *here* for more info.

```
hgfs_mountpoint: salt://foo/bar
```

**Note**: The `salt://` protocol designation can be left off (in other words, `foo/bar` and `salt://foo/bar` are equivalent). Assuming a file `baz.sh` in the root of an hgfs remote, this file would be served up via `salt://foo/bar/baz.sh`.

### hgfs_root

New in version 0.17.0.

Default: `''`

Relative path to a subdirectory within the repository from which Salt should begin to serve files. This is useful when there are files in the repository that should not be available to the Salt fileserver. Can be used in conjunction with *hgfs_mountpoint*. If used, then from Salt's perspective the directories above the one specified will be ignored and the relative path will (for the purposes of hgfs) be considered as the root of the repo.

```
hgfs_root: somefolder/otherfolder
```

Changed in version 2014.7.0: Ability to specify hgfs roots on a per-remote basis was added. See *here* for more info.

### hgfs_base

New in version 2014.1.0.

Default: `default`

Defines which branch should be used as the `base` environment. Change this if *hgfs_branch_method* is set to `bookmarks` to specify which bookmark should be used as the `base` environment.

```
hgfs_base: salt
```

### hgfs_env_whitelist

New in version 2014.7.0.

Default: []

Used to restrict which environments are made available. Can speed up state runs if your hgfs remotes contain many branches/bookmarks/tags. Full names, globs, and regular expressions are supported. If using a regular expression, the expression must match the entire minion ID.

If used, only branches/bookmarks/tags which match one of the specified expressions will be exposed as fileserver environments.

If used in conjunction with *hgfs_env_blacklist*, then the subset of branches/bookmarks/tags which match the whitelist but do *not* match the blacklist will be exposed as fileserver environments.

```
hgfs_env_whitelist:
  - base
  - v1.*
  - 'mybranch\d+'
```

### hgfs_env_blacklist

New in version 2014.7.0.

Default: []

Used to restrict which environments are made available. Can speed up state runs if your hgfs remotes contain many branches/bookmarks/tags. Full names, globs, and regular expressions are supported. If using a regular expression, the expression must match the entire minion ID.

If used, branches/bookmarks/tags which match one of the specified expressions will *not* be exposed as fileserver environments.

If used in conjunction with *hgfs_env_whitelist*, then the subset of branches/bookmarks/tags which match the whitelist but do *not* match the blacklist will be exposed as fileserver environments.

```
hgfs_env_blacklist:
  - base
  - v1.*
  - 'mybranch\d+'
```

#### svn: Subversion Remote File Server Backend

### svnfs_remotes

New in version 0.17.0.

Default: []

When using the `svn` fileserver backend at least one subversion remote needs to be defined. The user running the salt master will need read access to the repo.

The repos will be searched in order to find the file requested by a client and the first repo to have the file will return it. The trunk, branches, and tags become environments, with the trunk being the `base` environment.

```
svnfs_remotes:
  - svn://foo.com/svn/myproject
```

**Note**: As of 2014.7.0, it is possible to have per-repo versions of the following configuration parameters:

- *svnfs_root*
- *svnfs_mountpoint*
- *svnfs_trunk*
- *svnfs_branches*
- *svnfs_tags*

For example:

```
svnfs_remotes:
  - svn://foo.com/svn/project1
  - svn://foo.com/svn/project2:
    - root: salt
    - mountpoint: salt://foo/bar/baz
  - svn//foo.com/svn/project3:
    - root: salt/states
    - branches: branch
    - tags: tag
```

### svnfs_mountpoint

New in version 2014.7.0.

Default: `''`

Specifies a path on the salt fileserver which will be prepended to all files served by hgfs. This option can be used in conjunction with *svnfs_root*. It can also be configured on a per-remote basis, see *here* for more info.

```
svnfs_mountpoint: salt://foo/bar
```

**Note**: The `salt://` protocol designation can be left off (in other words, `foo/bar` and `salt://foo/bar` are equivalent). Assuming a file `baz.sh` in the root of an svnfs remote, this file would be served up via `salt://foo/bar/baz.sh`.

### svnfs_root

New in version 0.17.0.

Default: `''`

Relative path to a subdirectory within the repository from which Salt should begin to serve files. This is useful when there are files in the repository that should not be available to the Salt fileserver. Can be used in conjunction with *svnfs_mountpoint*. If used, then from Salt's perspective the directories above the one specified will be ignored and the relative path will (for the purposes of svnfs) be considered as the root of the repo.

```
svnfs_root: somefolder/otherfolder
```

Changed in version 2014.7.0: Ability to specify svnfs roots on a per-remote basis was added. See *here* for more info.

### svnfs_trunk

New in version 2014.7.0.

Default: `trunk`

Path relative to the root of the repository where the trunk is located. Can also be configured on a per-remote basis, see *here* for more info.

```
svnfs_trunk: trunk
```

### svnfs_branches

New in version 2014.7.0.

Default: `branches`

Path relative to the root of the repository where the branches are located. Can also be configured on a per-remote basis, see *here* for more info.

```
svnfs_branches: branches
```

### svnfs_tags

New in version 2014.7.0.

Default: `tags`

Path relative to the root of the repository where the tags are located. Can also be configured on a per-remote basis, see *here* for more info.

```
svnfs_tags: tags
```

### svnfs_env_whitelist

New in version 2014.7.0.

Default: `[]`

Used to restrict which environments are made available. Can speed up state runs if your svnfs remotes contain many branches/tags. Full names, globs, and regular expressions are supported. If using a regular expression, the expression must match the entire minion ID.

If used, only branches/tags which match one of the specified expressions will be exposed as fileserver environments.

If used in conjunction with *svnfs_env_blacklist*, then the subset of branches/tags which match the whitelist but do *not* match the blacklist will be exposed as fileserver environments.

```
svnfs_env_whitelist:
  - base
  - v1.*
  - 'mybranch\d+'
```

### svnfs_env_blacklist

New in version 2014.7.0.

Default: []

Used to restrict which environments are made available. Can speed up state runs if your svnfs remotes contain many branches/tags. Full names, globs, and regular expressions are supported. If using a regular expression, the expression must match the entire minion ID.

If used, branches/tags which match one of the specified expressions will *not* be exposed as fileserver environments.

If used in conjunction with *svnfs_env_whitelist*, then the subset of branches/tags which match the whitelist but do *not* match the blacklist will be exposed as fileserver environments.

```
svnfs_env_blacklist:
  - base
  - v1.*
  - 'mybranch\d+'
```

## minion: MinionFS Remote File Server Backend

### minionfs_env

New in version 2014.7.0.

Default: base

Environment from which MinionFS files are made available.

```
minionfs_env: minionfs
```

### minionfs_mountpoint

New in version 2014.7.0.

Default: ''

Specifies a path on the salt fileserver from which minionfs files are served.

```
minionfs_mountpoint: salt://foo/bar
```

**Note**: The salt:// protocol designation can be left off (in other words, foo/bar and salt://foo/bar are equivalent).

#### minionfs_whitelist

New in version 2014.7.0.

Default: []

Used to restrict which minions' pushed files are exposed via minionfs. If using a regular expression, the expression must match the entire minion ID.

If used, only the pushed files from minions which match one of the specified expressions will be exposed.

If used in conjunction with *minionfs_blacklist*, then the subset of hosts which match the whitelist but do *not* match the blacklist will be exposed.

```
minionfs_whitelist:
  - server01
  - dev*
  - 'mail\d+.mydomain.tld'
```

#### minionfs_blacklist

New in version 2014.7.0.

Default: []

Used to restrict which minions' pushed files are exposed via minionfs. If using a regular expression, the expression must match the entire minion ID.

If used, only the pushed files from minions which match one of the specified expressions will *not* be exposed.

If used in conjunction with *minionfs_whitelist*, then the subset of hosts which match the whitelist but do *not* match the blacklist will be exposed.

```
minionfs_blacklist:
  - server01
  - dev*
  - 'mail\d+.mydomain.tld'
```

### 2.1.7 Pillar Configuration

#### pillar_roots

Default:

```
base:
  - /srv/pillar
```

Set the environments and directories used to hold pillar sls data. This configuration is the same as *file_roots*:

```
pillar_roots:
  base:
    - /srv/pillar
  dev:
    - /srv/pillar/dev
  prod:
    - /srv/pillar/prod
```

### on_demand_ext_pillar

New in version 2016.3.6,2016.11.3,Nitrogen.

Default: `['libvirt','virtkey']`

The external pillars permitted to be used on-demand using *pillar.ext*.

```
on_demand_ext_pillar:
  - libvirt
  - virtkey
  - git
```

**Warning**: This will allow minions to request specific pillar data via *pillar.ext*, and may be considered a security risk. However, pillar data generated in this way will not affect the *in-memory pillar data*, so this risk is limited to instances in which states/modules/etc. (built-in or custom) rely upon pillar data generated by *pillar.ext*.

### pillar_opts

Default: `False`

The `pillar_opts` option adds the master configuration file data to a dict in the pillar called `master`. This can be used to set simple configurations in the master config file that can then be used on minions.

Note that setting this option to `True` means the master config file will be included in all minion's pillars. While this makes global configuration of services and systems easy, it may not be desired if sensitive data is stored in the master configuration.

```
pillar_opts: False
```

### ext_pillar

The ext_pillar option allows for any number of external pillar interfaces to be called when populating pillar data. The configuration is based on ext_pillar functions. The available ext_pillar functions can be found herein:

https://github.com/saltstack/salt/blob/develop/salt/pillar

By default, the ext_pillar interface is not configured to run.

Default: `[]`

```
ext_pillar:
  - hiera: /etc/hiera.yaml
  - cmd_yaml: cat /etc/salt/yaml
  - reclass:
      inventory_base_uri: /etc/reclass
```

There are additional details at salt-pillars

### ext_pillar_first

New in version 2015.5.0.

Default: `False`

This option allows for external pillar sources to be evaluated before *pillar_roots*. External pillar data is evaluated separately from *pillar_roots* pillar data, and then both sets of pillar data are merged into a single pillar dictionary, so the value of this config option will have an impact on which key ``wins'' when there is one of the same name in both the external pillar data and *pillar_roots* pillar data. By setting this option to `True`, ext_pillar keys will be overridden by *pillar_roots*, while leaving it as `False` will allow ext_pillar keys to override those from *pillar_roots*.

---

**Note:** For a while, this config option did not work as specified above, because of a bug in Pillar compilation. This bug has been resolved in version 2016.3.4 and later.

---

```
ext_pillar_first: False
```

#### Git External Pillar (git_pillar) Configuration Options

### git_pillar_provider

New in version 2015.8.0.

Specify the provider to be used for git_pillar. Must be either `pygit2` or `gitpython`. If unset, then both will be tried in that same order, and the first one with a compatible version installed will be the provider that is used.

```
git_pillar_provider: gitpython
```

### git_pillar_base

New in version 2015.8.0.

Default: `master`

If the desired branch matches this value, and the environment is omitted from the git_pillar configuration, then the environment for that git_pillar remote will be `base`. For example, in the configuration below, the `foo` branch/tag would be assigned to the `base` environment, while `bar` would be mapped to the `bar` environment.

```
git_pillar_base: foo

ext_pillar:
  - git:
    - foo https://mygitserver/git-pillar.git
    - bar https://mygitserver/git-pillar.git
```

### git_pillar_branch

New in version 2015.8.0.

Default: `master`

If the branch is omitted from a git_pillar remote, then this branch will be used instead. For example, in the configuration below, the first two remotes would use the `pillardata` branch/tag, while the third would use the `foo` branch/tag.

```
git_pillar_branch: pillardata

ext_pillar:
  - git:
    - https://mygitserver/pillar1.git
    - https://mygitserver/pillar2.git:
      - root: pillar
    - foo https://mygitserver/pillar3.git
```

### git_pillar_env

New in version 2015.8.0.

Default: `''` (unset)

Environment to use for git_pillar remotes. This is normally derived from the branch/tag (or from a per-remote `env` parameter), but if set this will override the process of deriving the env from the branch/tag name. For example, in the configuration below the `foo` branch would be assigned to the `base` environment, while the `bar` branch would need to explicitly have `bar` configured as it's environment to keep it from also being mapped to the `base` environment.

```
git_pillar_env: base

ext_pillar:
  - git:
    - foo https://mygitserver/git-pillar.git
    - bar https://mygitserver/git-pillar.git:
      - env: bar
```

For this reason, this option is recommended to be left unset, unless the use case calls for all (or almost all) of the git_pillar remotes to use the same environment irrespective of the branch/tag being used.

### git_pillar_root

New in version 2015.8.0.

Default: `''`

Path relative to the root of the repository where the git_pillar top file and SLS files are located. In the below configuration, the pillar top file and SLS files would be looked for in a subdirectory called `pillar`.

```
git_pillar_root: pillar

ext_pillar:
  - git:
    - master https://mygitserver/pillar1.git
    - master https://mygitserver/pillar2.git
```

---

**Note**: This is a global option. If only one or two repos need to have their files sourced from a subdirectory, then *git_pillar_root* can be omitted and the root can be specified on a per-remote basis, like so:

```
ext_pillar:
  - git:
    - master https://mygitserver/pillar1.git
    - master https://mygitserver/pillar2.git:
      - root: pillar
```

In this example, for the first remote the top file and SLS files would be looked for in the root of the repository, while in the second remote the pillar data would be retrieved from the `pillar` subdirectory.

### git_pillar_ssl_verify

New in version 2015.8.0.

Default: `False`

Specifies whether or not to ignore SSL certificate errors when contacting the remote repository. The `False` setting is useful if you're using a git repo that uses a self-signed certificate. However, keep in mind that setting this to anything other `True` is a considered insecure, and using an SSH-based transport (if available) may be a better option.

```
git_pillar_ssl_verify: True
```

### git_pillar_global_lock

New in version 2015.8.9.

Default: `True`

When set to `False`, if there is an update/checkout lock for a git_pillar remote and the pid written to it is not running on the master, the lock file will be automatically cleared and a new lock will be obtained. When set to `True`, Salt will simply log a warning when there is an lock present.

On single-master deployments, disabling this option can help automatically deal with instances where the master was shutdown/restarted during the middle of a git_pillar update/checkout, leaving a lock in place.

However, on multi-master deployments with the git_pillar cachedir shared via GlusterFS, nfs, or another network filesystem, it is strongly recommended not to disable this option as doing so will cause lock files to be removed if they were created by a different master.

```
# Disable global lock
git_pillar_global_lock: False
```

#### Git External Pillar Authentication Options

These parameters only currently apply to the `pygit2` *`git_pillar_provider`*. Authentication works the same as it does in gitfs, as outlined in the *GitFS Walkthrough*, though the global configuration options are named differently to reflect that they are for git_pillar instead of gitfs.

### git_pillar_user

New in version 2015.8.0.

Default: `''`

Along with *`git_pillar_password`*, is used to authenticate to HTTPS remotes.

```
git_pillar_user: git
```

### git_pillar_password

New in version 2015.8.0.

Default: ''

Along with *git_pillar_user*, is used to authenticate to HTTPS remotes. This parameter is not required if the repository does not use authentication.

```
git_pillar_password: mypassword
```

### git_pillar_insecure_auth

New in version 2015.8.0.

Default: False

By default, Salt will not authenticate to an HTTP (non-HTTPS) remote. This parameter enables authentication over HTTP. **Enable this at your own risk.**

```
git_pillar_insecure_auth: True
```

### git_pillar_pubkey

New in version 2015.8.0.

Default: ''

Along with *git_pillar_privkey* (and optionally *git_pillar_passphrase*), is used to authenticate to SSH remotes.

```
git_pillar_pubkey: /path/to/key.pub
```

### git_pillar_privkey

New in version 2015.8.0.

Default: ''

Along with *git_pillar_pubkey* (and optionally *git_pillar_passphrase*), is used to authenticate to SSH remotes.

```
git_pillar_privkey: /path/to/key
```

### git_pillar_passphrase

New in version 2015.8.0.

Default: ''

This parameter is optional, required only when the SSH key being used to authenticate is protected by a passphrase.

```
git_pillar_passphrase: mypassphrase
```

### Pillar Merging Options

#### pillar_source_merging_strategy

New in version 2014.7.0.

Default: `smart`

The pillar_source_merging_strategy option allows you to configure merging strategy between different sources. It accepts 5 values:

- `none`:

New in version 2016.3.4: It will not do any merging at all and only parse the pillar data from the passed environment and `base' if no environment was specified.

- `recurse`:

  it will merge recursively mapping of data. For example, theses 2 sources:

```
foo: 42
bar:
    element1: True
```

```
bar:
    element2: True
baz: quux
```

  will be merged as:

```
foo: 42
bar:
    element1: True
    element2: True
baz: quux
```

- `aggregate`:

  instructs aggregation of elements between sources that use the #!yamlex renderer.

  For example, these two documents:

```
#!yamlex
foo: 42
bar: !aggregate {
  element1: True
}
baz: !aggregate quux
```

```
#!yamlex
bar: !aggregate {
  element2: True
}
baz: !aggregate quux2
```

  will be merged as:

```
foo: 42
bar:
  element1: True
```

```
  element2: True
baz:
  - quux
  - quux2
```

- `overwrite`:

  Will use the behaviour of the 2014.1 branch and earlier.

  Overwrites elements according the order in which they are processed.

  First pillar processed:

```
A:
  first_key: blah
  second_key: blah
```

  Second pillar processed:

```
A:
  third_key: blah
  fourth_key: blah
```

  will be merged as:

```
A:
  third_key: blah
  fourth_key: blah
```

- `smart` (default):

  Guesses the best strategy based on the ``renderer'' setting.

### pillar_merge_lists

New in version 2015.8.0.

Default: `False`

Recursively merge lists by aggregating them instead of replacing them.

```
pillar_merge_lists: False
```

#### Pillar Cache Options

### pillar_cache

New in version 2015.8.8.

Default: `False`

A master can cache pillars locally to bypass the expense of having to render them for each minion on every request. This feature should only be enabled in cases where pillar rendering time is known to be unsatisfactory and any attendant security concerns about storing pillars in a master cache have been addressed.

When enabling this feature, be certain to read through the additional `pillar_cache_*` configuration options to fully understand the tunable parameters and their implications.

```
pillar_cache: False
```

**Note**: Setting `pillar_cache: True` has no effect on *targeting minions with pillar*.

#### pillar_cache_ttl

New in version 2015.8.8.

Default: `3600`

If and only if a master has set `pillar_cache: True`, the cache TTL controls the amount of time, in seconds, before the cache is considered invalid by a master and a fresh pillar is recompiled and stored.

#### pillar_cache_backend

New in version 2015.8.8.

Default: `disk`

If an only if a master has set `pillar_cache: True`, one of several storage providers can be utilized:

- `disk` (default):

  The default storage backend. This caches rendered pillars to the master cache. Rendered pillars are serialized and deserialized as `msgpack` structures for speed. Note that pillars are stored UNENCRYPTED. Ensure that the master cache has permissions set appropriately (sane defaults are provided).

- `memory` [EXPERIMENTAL]:

  An optional backend for pillar caches which uses a pure-Python in-memory data structure for maximal performance. There are several caveats, however. First, because each master worker contains its own in-memory cache, there is no guarantee of cache consistency between minion requests. This works best in situations where the pillar rarely if ever changes. Secondly, and perhaps more importantly, this means that unencrypted pillars will be accessible to any process which can examine the memory of the `salt-master`! This may represent a substantial security risk.

```
pillar_cache_backend: disk
```

### 2.1.8 Syndic Server Settings

A Salt syndic is a Salt master used to pass commands from a higher Salt master to minions below the syndic. Using the syndic is simple. If this is a master that will have syndic servers(s) below it, set the `order_masters` setting to `True`.

If this is a master that will be running a syndic daemon for passthrough the `syndic_master` setting needs to be set to the location of the master server.

Do not forget that, in other words, it means that it shares with the local minion its ID and PKI directory.

### order_masters

Default: `False`

Extra data needs to be sent with publications if the master is controlling a lower level master via a syndic minion. If this is the case the order_masters value must be set to True

```
order_masters: False
```

### syndic_master

Changed in version 2016.3.5,2016.11.1: Set default higher level master address.

Default: `masterofmasters`

If this master will be running the `salt-syndic` to connect to a higher level master, specify the higher level master with this configuration value.

```
syndic_master: masterofmasters
```

You can optionally connect a syndic to multiple higher level masters by setting the `syndic_master` value to a list:

```
syndic_master:
  - masterofmasters1
  - masterofmasters2
```

Each higher level master must be set up in a multi-master configuration.

### syndic_master_port

Default: `4506`

If this master will be running the `salt-syndic` to connect to a higher level master, specify the higher level master port with this configuration value.

```
syndic_master_port: 4506
```

### syndic_pidfile

Default: `/var/run/salt-syndic.pid`

If this master will be running the `salt-syndic` to connect to a higher level master, specify the pidfile of the syndic daemon.

```
syndic_pidfile: /var/run/syndic.pid
```

### syndic_log_file

Default: `/var/log/salt/syndic`

If this master will be running the `salt-syndic` to connect to a higher level master, specify the log file of the syndic daemon.

```
syndic_log_file: /var/log/salt-syndic.log
```

#### syndic_failover

New in version 2016.3.0.

Default: `random`

The behaviour of the multi-syndic when connection to a master of masters failed. Can specify `random` (default) or `ordered`. If set to `random`, masters will be iterated in random order. If `ordered` is specified, the configured order will be used.

```
syndic_failover: random
```

#### syndic_wait

Default: `5`

The number of seconds for the salt client to wait for additional syndics to check in with their lists of expected minions before giving up.

```
syndic_wait: 5
```

### 2.1.9 Peer Publish Settings

Salt minions can send commands to other minions, but only if the minion is allowed to. By default ``Peer Publication'' is disabled, and when enabled it is enabled for specific minions and specific commands. This allows secure compartmentalization of commands based on individual minions.

#### peer

Default: `{}`

The configuration uses regular expressions to match minions and then a list of regular expressions to match functions. The following will allow the minion authenticated as foo.example.com to execute functions from the test and pkg modules.

```
peer:
  foo.example.com:
      - test.*
      - pkg.*
```

This will allow all minions to execute all commands:

```
peer:
  .*:
      - .*
```

This is not recommended, since it would allow anyone who gets root on any single minion to instantly have root on all of the minions!

By adding an additional layer you can limit the target hosts in addition to the accessible commands:

```
peer:
  foo.example.com:
    'db*':
      - test.*
      - pkg.*
```

#### peer_run

Default: {}

The peer_run option is used to open up runners on the master to access from the minions. The peer_run configuration matches the format of the peer configuration.

The following example would allow foo.example.com to execute the manage.up runner:

```
peer_run:
  foo.example.com:
      - manage.up
```

### 2.1.10 Master Logging Settings

#### log_file

Default: /var/log/salt/master

The master log can be sent to a regular file, local path name, or network location. See also *log_file*.

Examples:

```
log_file: /var/log/salt/master
```

```
log_file: file:///dev/log
```

```
log_file: udp://loghost:10514
```

#### log_level

Default: warning

The level of messages to send to the console. See also *log_level*.

```
log_level: warning
```

#### log_level_logfile

Default: warning

The level of messages to send to the log file. See also *log_level_logfile*. When it is not set explicitly it will inherit the level set by *log_level* option.

```
log_level_logfile: warning
```

### log_datefmt

Default: `%H:%M:%S`

The date and time format used in console log messages. See also *log_datefmt*.

```
log_datefmt: '%H:%M:%S'
```

### log_datefmt_logfile

Default: `%Y-%m-%d %H:%M:%S`

The date and time format used in log file messages. See also *log_datefmt_logfile*.

```
log_datefmt_logfile: '%Y-%m-%d %H:%M:%S'
```

### log_fmt_console

Default: `[%(levelname)-8s] %(message)s`

The format of the console logging messages. See also *log_fmt_console*.

---

**Note:** Log colors are enabled in `log_fmt_console` rather than the *color* config since the logging system is loaded before the master config.

Console log colors are specified by these additional formatters:

%(colorlevel)s %(colorname)s %(colorprocess)s %(colormsg)s

Since it is desirable to include the surrounding brackets, `[' and `]', in the coloring of the messages, these color formatters also include padding as well. Color LogRecord attributes are only available for console logging.

---

```
log_fmt_console: '%(colorlevel)s %(colormsg)s'
log_fmt_console: '[%(levelname)-8s] %(message)s'
```

### log_fmt_logfile

Default: `%(asctime)s,%(msecs)03.0f [%(name)-17s][%(levelname)-8s] %(message)s`

The format of the log file logging messages. See also *log_fmt_logfile*.

```
log_fmt_logfile: '%(asctime)s,%(msecs)03.0f [%(name)-17s][%(levelname)-8s] %(message)s'
```

### log_granular_levels

Default: {}

This can be used to control logging levels more specifically. See also *log_granular_levels*.

### 2.1.11 Node Groups

Default: {}

Node groups allow for logical groupings of minion nodes. A group consists of a group name and a compound target.

```
nodegroups:
  group1: 'L@foo.domain.com,bar.domain.com,baz.domain.com or bl*.domain.com'
  group2: 'G@os:Debian and foo.domain.com'
  group3: 'G@os:Debian and N@group1'
  group4:
    - 'G@foo:bar'
    - 'or'
    - 'G@foo:baz'
```

More information on using nodegroups can be found *here*.

### 2.1.12 Range Cluster Settings

#### range_server

Default: 'range:80'

The range server (and optional port) that serves your cluster information https://github.com/ytoolshed/range/wiki/%22yamlfile%22-module-file-spec

```
range_server: range:80
```

### 2.1.13 Include Configuration

#### default_include

Default: master.d/*.conf

The master can include configuration from other files. Per default the master will automatically include all config files from master.d/*.conf where master.d is relative to the directory of the master configuration file.

---

**Note**: Salt creates files in the master.d directory for its own use. These files are prefixed with an underscore. A common example of this is the _schedule.conf file.

---

#### include

Default: not defined

The master can include configuration from other files. To enable this, pass a list of paths to this option. The paths can be either relative or absolute; if relative, they are considered to be relative to the directory the main minion configuration file lives in. Paths can make use of shell-style globbing. If no files are matched by a path passed to this option then the master will log a warning message.

```
# Include files from a master.d directory in the same
# directory as the master config file
include: master.d/*
```

```
# Include a single extra file into the configuration
include: /etc/roles/webserver

# Include several files and the master.d directory
include:
  - extra_config
  - master.d/*
  - /etc/roles/webserver
```

### 2.1.14 Windows Software Repo Settings

#### winrepo_provider

New in version 2015.8.0.

Specify the provider to be used for winrepo. Must be either `pygit2` or `gitpython`. If unset, then both will be tried in that same order, and the first one with a compatible version installed will be the provider that is used.

```
winrepo_provider: gitpython
```

#### winrepo_dir

Changed in version 2015.8.0: Renamed from `win_repo` to `winrepo_dir`.

Default: `/srv/salt/win/repo`

Location on the master where the *winrepo_remotes* are checked out for pre-2015.8.0 minions. 2015.8.0 and later minions use *winrepo_remotes_ng* instead.

```
winrepo_dir: /srv/salt/win/repo
```

#### winrepo_dir_ng

New in version 2015.8.0: A new *ng* repo was added.

Default: `/srv/salt/win/repo-ng`

Location on the master where the *winrepo_remotes_ng* are checked out for 2015.8.0 and later minions.

```
winrepo_dir_ng: /srv/salt/win/repo-ng
```

#### winrepo_cachefile

Changed in version 2015.8.0: Renamed from `win_repo_mastercachefile` to `winrepo_cachefile`

**Note**: 2015.8.0 and later minions do not use this setting since the cachefile is now located on the minion.

Default: `winrepo.p`

Path relative to *winrepo_dir* where the winrepo cache should be created.

```
winrepo_cachefile: winrepo.p
```

### winrepo_remotes

Changed in version 2015.8.0: Renamed from `win_gitrepos` to `winrepo_remotes`.

Default: `['https://github.com/saltstack/salt-winrepo.git']`

List of git repositories to checkout and include in the winrepo for pre-2015.8.0 minions. 2015.8.0 and later minions use *winrepo_remotes_ng* instead.

```
winrepo_remotes:
  - https://github.com/saltstack/salt-winrepo.git
```

To specify a specific revision of the repository, prepend a commit ID to the URL of the repository:

```
winrepo_remotes:
  - '<commit_id> https://github.com/saltstack/salt-winrepo.git'
```

Replace `<commit_id>` with the SHA1 hash of a commit ID. Specifying a commit ID is useful in that it allows one to revert back to a previous version in the event that an error is introduced in the latest revision of the repo.

### winrepo_remotes_ng

New in version 2015.8.0: A new *ng* repo was added.

Default: `['https://github.com/saltstack/salt-winrepo-ng.git']`

List of git repositories to checkout and include in the winrepo for 2015.8.0 and later minions.

```
winrepo_remotes_ng:
  - https://github.com/saltstack/salt-winrepo-ng.git
```

To specify a specific revision of the repository, prepend a commit ID to the URL of the repository:

```
winrepo_remotes:
  - '<commit_id> https://github.com/saltstack/salt-winrepo-ng.git'
```

Replace `<commit_id>` with the SHA1 hash of a commit ID. Specifying a commit ID is useful in that it allows one to revert back to a previous version in the event that an error is introduced in the latest revision of the repo.

### winrepo_branch

New in version 2015.8.0.

Default: `master`

If the branch is omitted from a winrepo remote, then this branch will be used instead. For example, in the configuration below, the first two remotes would use the `winrepo` branch/tag, while the third would use the `foo` branch/tag.

```
winrepo_branch: winrepo

ext_pillar:
  - git:
    - https://mygitserver/winrepo1.git
```

```
    - https://mygitserver/winrepo2.git:
    - foo https://mygitserver/winrepo3.git
```

### winrepo_ssl_verify

New in version 2015.8.0.

Default: `False`

Specifies whether or not to ignore SSL certificate errors when contacting the remote repository. The `False` setting is useful if you're using a git repo that uses a self-signed certificate. However, keep in mind that setting this to anything other `True` is a considered insecure, and using an SSH-based transport (if available) may be a better option.

```
winrepo_ssl_verify: True
```

#### Winrepo Authentication Options

These parameters only currently apply to the `pygit2` *winrepo_provider*. Authentication works the same as it does in gitfs, as outlined in the *GitFS Walkthrough*, though the global configuration options are named differently to reflect that they are for winrepo instead of gitfs.

### winrepo_user

New in version 2015.8.0.

Default: `''`

Along with *winrepo_password*, is used to authenticate to HTTPS remotes.

```
winrepo_user: git
```

### winrepo_password

New in version 2015.8.0.

Default: `''`

Along with *winrepo_user*, is used to authenticate to HTTPS remotes. This parameter is not required if the repository does not use authentication.

```
winrepo_password: mypassword
```

### winrepo_insecure_auth

New in version 2015.8.0.

Default: `False`

By default, Salt will not authenticate to an HTTP (non-HTTPS) remote. This parameter enables authentication over HTTP. **Enable this at your own risk.**

```
winrepo_insecure_auth: True
```

#### winrepo_pubkey

New in version 2015.8.0.

Default: ''

Along with *winrepo_privkey* (and optionally *winrepo_passphrase*), is used to authenticate to SSH remotes.

```
winrepo_pubkey: /path/to/key.pub
```

#### winrepo_privkey

New in version 2015.8.0.

Default: ''

Along with *winrepo_pubkey* (and optionally *winrepo_passphrase*), is used to authenticate to SSH remotes.

```
winrepo_privkey: /path/to/key
```

#### winrepo_passphrase

New in version 2015.8.0.

Default: ''

This parameter is optional, required only when the SSH key being used to authenticate is protected by a passphrase.

```
winrepo_passphrase: mypassphrase
```

## 2.2 Configuring the Salt Minion

The Salt system is amazingly simple and easy to configure. The two components of the Salt system each have a respective configuration file. The **salt-master** is configured via the master configuration file, and the **salt-minion** is configured via the minion configuration file.

**See also:**

*example minion configuration file*

The Salt Minion configuration is very simple. Typically, the only value that needs to be set is the master value so the minion knows where to locate its master.

By default, the salt-minion configuration will be in `/etc/salt/minion`. A notable exception is FreeBSD, where the configuration will be in `/usr/local/etc/salt/minion`.

### 2.2.1 Minion Primary Configuration

#### master

Default: `salt`

The hostname or IP address of the master. See *ipv6* for IPv6 connections to the master.

Default: `salt`

```
master: salt
```

#### master:port Syntax

New in version 2015.8.0.

The `master` config option can also be set to use the master's IP in conjunction with a port number by default.

```
master: localhost:1234
```

For IPv6 formatting with a port, remember to add brackets around the IP address before adding the port and enclose the line in single quotes to make it a string:

```
master: '[2001:db8:85a3:8d3:1319:8a2e:370:7348]:1234'
```

**Note:** If a port is specified in the `master` as well as *master_port*, the `master_port` setting will be overridden by the `master` configuration.

#### List of Masters Syntax

The option can can also be set to a list of masters, enabling *multi-master* mode.

```
master:
  - address1
  - address2
```

Changed in version 2014.7.0: The master can be dynamically configured. The *master* value can be set to an module function which will be executed and will assume that the returning value is the ip or hostname of the desired master. If a function is being specified, then the *master_type* option must be set to `func`, to tell the minion that the value is a function to be run and not a fully-qualified domain name.

```
master: module.function
master_type: func
```

In addition, instead of using multi-master mode, the minion can be configured to use the list of master addresses as a failover list, trying the first address, then the second, etc. until the minion successfully connects. To enable this behavior, set *master_type* to `failover`:

```
master:
  - address1
  - address2
master_type: failover
```

### ipv6

Default: None

Whether the master should be connected over IPv6. By default salt minion will try to automatically detect IPv6 connectivity to master.

```
ipv6: True
```

### master_uri_format

New in version 2015.8.0.

Specify the format in which the master address will be evaluated. Valid options are `default` or `ip_only`. If `ip_only` is specified, then the master address will not be split into IP and PORT, so be sure that only an IP (or domain name) is set in the *master* configuration setting.

```
master_uri_format: ip_only
```

### master_type

New in version 2014.7.0.

Default: `str`

The type of the *master* variable. Can be `str`, `failover` or `func`.

```
master_type: failover
```

If this option is set to `failover`, *master* must be a list of master addresses. The minion will then try each master in the order specified in the list until it successfully connects. *master_alive_interval* must also be set, this determines how often the minion will verify the presence of the master.

```
master_type: func
```

If the master needs to be dynamically assigned by executing a function instead of reading in the static master value, set this to `func`. This can be used to manage the minion's master setting from an execution module. By simply changing the algorithm in the module to return a new master ip/fqdn, restart the minion and it will connect to the new master.

### max_event_size

New in version 2014.7.0.

Default: `1048576`

Passing very large events can cause the minion to consume large amounts of memory. This value tunes the maximum size of a message allowed onto the minion event bus. The value is expressed in bytes.

```
max_event_size: 1048576
```

### master_failback

New in version 2016.3.0.

Default: `False`

If the minion is in multi-master mode and the :conf_minion`master_type` configuration option is set to `failover`, this setting can be set to `True` to force the minion to fail back to the first master in the list if the first master is back online.

```
master_failback: False
```

### master_failback_interval

New in version 2016.3.0.

Default: `0`

If the minion is in multi-master mode, the :conf_minion`master_type` configuration is set to `failover`, and the `master_failback` option is enabled, the master failback interval can be set to ping the top master with this interval, in seconds.

```
master_failback_interval: 0
```

### master_alive_interval

Default: `0`

Configures how often, in seconds, the minion will verify that the current master is alive and responding. The minion will try to establish a connection to the next master in the list if it finds the existing one is dead.

```
master_alive_interval: 30
```

### master_shuffle

New in version 2014.7.0.

Default: `False`

If *`master`* is a list of addresses and :conf_minion`master_type` is `failover`, shuffle them before trying to connect to distribute the minions over all available masters. This uses Python's `random.shuffle` method.

```
master_shuffle: True
```

### random_master

Default: `False`

If *`master`* is a list of addresses, shuffle them before trying to connect to distribute the minions over all available masters. This uses Python's `random.randint` method.

```
random_master: True
```

### retry_dns

Default: `30`

Set the number of seconds to wait before attempting to resolve the master hostname if name resolution fails. Defaults to 30 seconds. Set to zero if the minion should shutdown and not retry.

```
retry_dns: 30
```

### master_port

Default: `4506`

The port of the master ret server, this needs to coincide with the ret_port option on the Salt master.

```
master_port: 4506
```

### user

Default: `root`

The user to run the Salt processes

```
user: root
```

### sudo_user

Default: `''`

The user to run salt remote execution commands as via sudo. If this option is enabled then sudo will be used to change the active user executing the remote command. If enabled the user will need to be allowed access via the sudoers file for the user that the salt minion is configured to run as. The most common option would be to use the root user. If this option is set the `user` option should also be set to a non-root user. If migrating from a root minion to a non root minion the minion cache should be cleared and the minion pki directory will need to be changed to the ownership of the new user.

```
sudo_user: root
```

### pidfile

Default: `/var/run/salt-minion.pid`

The location of the daemon's process ID file

```
pidfile: /var/run/salt-minion.pid
```

### root_dir

Default: `/`

This directory is prepended to the following options: *pki_dir*, *cachedir*, *log_file*, *sock_dir*, and `pidfile`.

```
root_dir: /
```

### conf_file

Default: `/etc/salt/minion`

The path to the minion's configuration file.

```
conf_file: /etc/salt/minion
```

### pki_dir

Default: `/etc/salt/pki/minion`

The directory used to store the minion's public and private keys.

```
pki_dir: /etc/salt/pki/minion
```

### id

Default: the system's hostname

**See also**:

Salt Walkthrough

The **Setting up a Salt Minion** section contains detailed information on how the hostname is determined.

Explicitly declare the id for this minion to use. Since Salt uses detached ids it is possible to run multiple minions on the same machine but with different ids.

```
id: foo.bar.com
```

### minion_id_caching

New in version 0.17.2.

Default: `True`

Caches the minion id to a file when the minion's :minion_conf:`id` is not statically defined in the minion config. This setting prevents potential problems when automatic minion id resolution changes, which can cause the minion to lose connection with the master. To turn off minion id caching, set this config to `False`.

For more information, please see Issue #7558 and Pull Request #8488.

```
minion_id_caching: True
```

### append_domain

Default: `None`

Append a domain to a hostname in the event that it does not exist. This is useful for systems where `socket.getfqdn()` does not actually result in a FQDN (for instance, Solaris).

```
append_domain: foo.org
```

### cachedir

Default: `/var/cache/salt/minion`

The location for minion cache data.

This directory may contain sensitive data and should be protected accordingly.

```
cachedir: /var/cache/salt/minion
```

### append_minionid_config_dirs

Default: `[]` (the empty list) for regular minions, `['cachedir']` for proxy minions.

Append minion_id to these configuration directories. Helps with multiple proxies and minions running on the same machine. Allowed elements in the list: `pki_dir`, `cachedir`, `extension_modules`. Normally not needed unless running several proxies and/or minions on the same machine.

```
append_minionid_config_dirs:
  - pki_dir
  - cachedir
```

### verify_env

Default: `True`

Verify and set permissions on configuration directories at startup.

```
verify_env: True
```

**Note**: When set to `True` the verify_env option requires WRITE access to the configuration directory (/etc/salt/). In certain situations such as mounting /etc/salt/ as read-only for templating this will create a stack trace when `state.apply` is called.

### cache_jobs

Default: `False`

The minion can locally cache the return data from jobs sent to it, this can be a good way to keep track of the minion side of the jobs the minion has executed. By default this feature is disabled, to enable set cache_jobs to `True`.

```
cache_jobs: False
```

### grains

Default: (empty)

**See also**:

*Grains in the Minion Config*

Statically assigns grains to the minion.

```
grains:
  roles:
    - webserver
    - memcache
  deployment: datacenter4
  cabinet: 13
  cab_u: 14-15
```

### grains_cache

Default: `False`

The minion can locally cache grain data instead of refreshing the data each time the grain is referenced. By default this feature is disabled, to enable set grains_cache to `True`.

```
grains_cache: False
```

### grains_deep_merge

New in version 2016.3.0.

Default: `False`

The grains can be merged, instead of overridden, using this option. This allows custom grains to defined different subvalues of a dictionary grain. By default this feature is disabled, to enable set grains_deep_merge to `True`.

```
grains_deep_merge: False
```

For example, with these custom grains functions:

```
def custom1_k1():
    return {'custom1': {'k1': 'v1'}}

def custom1_k2():
    return {'custom1': {'k2': 'v2'}}
```

Without `grains_deep_merge`, the result would be:

```
custom1:
  k1: v1
```

With `grains_deep_merge`, the result will be:

```
custom1:
  k1: v1
  k2: v2
```

### mine_enabled

New in version 2015.8.10.

Default: `True`

Determines whether or not the salt minion should run scheduled mine updates. If this is set to False then the mine update function will not get added to the scheduler for the minion.

```
mine_enabled: True
```

### mine_return_job

New in version 2015.8.10.

Default: `False`

Determines whether or not scheduled mine updates should be accompanied by a job return for the job cache.

```
mine_return_job: False
```

### mine_functions

Default: Empty

Designate which functions should be executed at mine_interval intervals on each minion. *See this documentation on the Salt Mine* for more information. Note these can be defined in the pillar for a minion as well.

*example minion configuration file*

```
mine_functions:
  test.ping: []
  network.ip_addrs:
    interface: eth0
    cidr: '10.0.0.0/8'
```

### sock_dir

Default: `/var/run/salt/minion`

The directory where Unix sockets will be kept.

```
sock_dir: /var/run/salt/minion
```

### backup_mode

Default: `''`

Make backups of files replaced by `file.managed` and `file.recurse` state modules under *`cachedir`* in `file_backup` subdirectory preserving original paths. Refer to *File State Backups documentation* for more details.

```
backup_mode: minion
```

### acceptance_wait_time

Default: `10`

The number of seconds to wait until attempting to re-authenticate with the master.

```
acceptance_wait_time: 10
```

### acceptance_wait_time_max

Default: `0`

The maximum number of seconds to wait until attempting to re-authenticate with the master. If set, the wait will increase by *acceptance_wait_time* seconds each iteration.

```
acceptance_wait_time_max: 0
```

### random_reauth_delay

Default: `10`

When the master key changes, the minion will try to re-auth itself to receive the new master key. In larger environments this can cause a syn-flood on the master because all minions try to re-auth immediately. To prevent this and have a minion wait for a random amount of time, use this optional parameter. The wait-time will be a random number of seconds between 0 and the defined value.

```
random_reauth_delay: 60
```

### master_tries

New in version 2016.3.0.

Default: `1`

The number of attempts to connect to a master before giving up. Set this to `-1` for unlimited attempts. This allows for a master to have downtime and the minion to reconnect to it later when it comes back up. In `failover' mode, which is set in the *master_type* configuration, this value is the number of attempts for each set of masters. In this mode, it will cycle through the list of masters for each attempt.

`master_tries` is different than `auth_tries` because `auth_tries` attempts to retry auth attempts with a single master. `auth_tries` is under the assumption that you can connect to the master but not gain authorization from it. `master_tries` will still cycle through all of the masters in a given try, so it is appropriate if you expect occasional downtime from the master(s).

```
master_tries: 1
```

### auth_tries

New in version 2014.7.0.

Default: `7`

The number of attempts to authenticate to a master before giving up. Or, more technically, the number of consecutive SaltReqTimeoutErrors that are acceptable when trying to authenticate to the master.

```
auth_tries: 7
```

### auth_timeout

New in version 2014.7.0.

Default: `60`

When waiting for a master to accept the minion's public key, salt will continuously attempt to reconnect until successful. This is the timeout value, in seconds, for each individual attempt. After this timeout expires, the minion will wait for *acceptance_wait_time* seconds before trying again. Unless your master is under unusually heavy load, this should be left at the default.

```
auth_timeout: 60
```

### auth_safemode

New in version 2014.7.0.

Default: `False`

If authentication fails due to SaltReqTimeoutError during a ping_interval, this setting, when set to `True`, will cause a sub-minion process to restart.

```
auth_safemode: False
```

### recon_default

Default: `1000`

The interval in milliseconds that the socket should wait before trying to reconnect to the master (1000ms = 1 second).

```
recon_default: 1000
```

### recon_max

Default: `10000`

The maximum time a socket should wait. Each interval the time to wait is calculated by doubling the previous time. If recon_max is reached, it starts again at the recon_default.

**Short example**:

- reconnect 1: the socket will wait `recon_default' milliseconds
- reconnect 2: `recon_default' * 2
- reconnect 3: (`recon_default' * 2) * 2
- reconnect 4: value from previous interval * 2
- reconnect 5: value from previous interval * 2
- reconnect x: if value >= recon_max, it starts again with recon_default

```
recon_max: 10000
```

### recon_randomize

Default: `True`

Generate a random wait time on minion start. The wait time will be a random value between recon_default and recon_default + recon_max. Having all minions reconnect with the same recon_default and recon_max value kind of defeats the purpose of being able to change these settings. If all minions have the same values and the setup is quite large (several thousand minions), they will still flood the master. The desired behavior is to have time-frame within all minions try to reconnect.

```
recon_randomize: True
```

### return_retry_timer

Default: `5`

The default timeout for a minion return attempt.

```
return_retry_timer: 5
```

### return_retry_timer_max

Default: `10`

The maximum timeout for a minion return attempt. If non-zero the minion return retry timeout will be a random int between `return_retry_timer` and `return_retry_timer_max`

```
return_retry_timer_max: 10
```

### cache_sreqs

Default: `True`

The connection to the master ret_port is kept open. When set to False, the minion creates a new connection for every return to the master.

```
cache_sreqs: True
```

### ipc_mode

Default: `ipc`

Windows platforms lack POSIX IPC and must rely on slower TCP based inter- process communications. Set ipc_mode to `tcp` on such systems.

```
ipc_mode: ipc
```

### tcp_pub_port

Default: `4510`

Publish port used when *ipc_mode* is set to `tcp`.

```
tcp_pub_port: 4510
```

### tcp_pull_port

Default: 4511

Pull port used when *ipc_mode* is set to tcp.

```
tcp_pull_port: 4511
```

### transport

Default: zeromq

Changes the underlying transport layer. ZeroMQ is the recommended transport while additional transport layers are under development. Supported values are zeromq, raet (experimental), and tcp (experimental). This setting has a significant impact on performance and should not be changed unless you know what you are doing! Transports are explained in Salt Transports.

```
transport: zeromq
```

### syndic_finger

Default: ''

The key fingerprint of the higher-level master for the syndic to verify it is talking to the intended master.

```
syndic_finger: 'ab:30:65:2a:d6:9e:20:4f:d8:b2:f3:a7:d4:65:50:10'
```

### proxy_host

Default: ''

The hostname used for HTTP proxy access.

```
proxy_host: proxy.my-domain
```

### proxy_port

Default: 0

The port number used for HTTP proxy access.

```
proxy_port: 31337
```

### proxy_username

Default: ''

The username used for HTTP proxy access.

```
proxy_username: charon
```

#### proxy_password

Default: ''

The password used for HTTP proxy access.

```
proxy_password: obolus
```

### 2.2.2 Minion Module Management

#### disable_modules

Default: [] (all modules are enabled by default)

The event may occur in which the administrator desires that a minion should not be able to execute a certain module. The sys module is built into the minion and cannot be disabled.

This setting can also tune the minion. Because all modules are loaded into system memory, disabling modules will lover the minion's memory footprint.

Modules should be specified according to their file name on the system and not by their virtual name. For example, to disable cmd, use the string cmdmod which corresponds to salt.modules.cmdmod.

```
disable_modules:
  - test
  - solr
```

#### disable_returners

Default: [] (all returners are enabled by default)

If certain returners should be disabled, this is the place

```
disable_returners:
  - mongo_return
```

#### module_dirs

Default: []

A list of extra directories to search for Salt modules

```
module_dirs:
  - /var/lib/salt/modules
```

#### returner_dirs

Default: []

A list of extra directories to search for Salt returners

```
returner_dirs:
  - /var/lib/salt/returners
```

### states_dirs

Default: []

A list of extra directories to search for Salt states

```
states_dirs:
  - /var/lib/salt/states
```

### grains_dirs

Default: []

A list of extra directories to search for Salt grains

```
grains_dirs:
  - /var/lib/salt/grains
```

### render_dirs

Default: []

A list of extra directories to search for Salt renderers

```
render_dirs:
  - /var/lib/salt/renderers
```

### cython_enable

Default: False

Set this value to true to enable auto-loading and compiling of .pyx modules, This setting requires that gcc and cython are installed on the minion.

```
cython_enable: False
```

### enable_zip_modules

New in version 2015.8.0.

Default: False

Set this value to true to enable loading of zip archives as extension modules. This allows for packing module code with specific dependencies to avoid conflicts and/or having to install specific modules' dependencies in system libraries.

```
enable_zip_modules: False
```

#### providers

Default: (empty)

A module provider can be statically overwritten or extended for the minion via the `providers` option. This can be done *on an individual basis in an SLS file*, or globally here in the minion config, like below.

```
providers:
  service: systemd
```

### 2.2.3 State Management Settings

#### renderer

Default: `yaml_jinja`

The default renderer used for local state executions

```
renderer: yaml_jinja
```

#### state_verbose

Default: `True`

Controls the verbosity of state runs. By default, the results of all states are returned, but setting this value to `False` will cause salt to only display output for states that failed or states that have changes.

```
state_verbose: True
```

#### state_output

Default: `full`

The state_output setting changes if the output is the full multi line output for each changed state if set to `full', but if set to `terse' the output will be shortened to a single line.

```
state_output: full
```

#### autoload_dynamic_modules

Default: `True`

autoload_dynamic_modules turns on automatic loading of modules found in the environments on the master. This is turned on by default. To turn off auto-loading modules when states run, set this value to `False`.

```
autoload_dynamic_modules: True
```

Default: `True`

clean_dynamic_modules keeps the dynamic modules on the minion in sync with the dynamic modules on the master. This means that if a dynamic module is not on the master it will be deleted from the minion. By default this is enabled and can be disabled by changing this value to `False`.

```
clean_dynamic_modules: True
```

### environment

Normally the minion is not isolated to any single environment on the master when running states, but the environment can be isolated on the minion side by statically setting it. Remember that the recommended way to manage environments is to isolate via the top file.

```
environment: dev
```

### state_top_saltenv

This option has no default value. Set it to an environment name to ensure that *only* the top file from that environment is considered during a *highstate*.

**Note:** Using this value does not change the merging strategy. For instance, if *top_file_merging_strategy* is left at its default, and *state_top_saltenv* is set to `foo`, then any sections for environments other than `foo` in the top file for the `foo` environment will be ignored. With *state_top_saltenv* set to `base`, all states from all environments in the `base` top file will be applied, while all other top files are ignored.

```
state_top_saltenv: dev
```

### top_file_merging_strategy

Default: `merge`

When no specific fileserver environment (a.k.a. `saltenv`) has been specified for a *highstate*, all environments' top files are inspected. This config option determines how the SLS targets in those top files are handled.

When set to the default value of `merge`, all SLS files are interpreted. The first target expression for a given environment is kept, and when the same target expression is used in a different top file evaluated later, it is ignored. The environments will be evaluated in no specific order, for greater control over the order in which the environments are evaluated use *env_order*.

When set to `same`, then for each environment, only that environment's top file is processed, with the others being ignored. For example, only the `dev` environment's top file will be processed for the `dev` environment, and any SLS targets defined for `dev` in the `base` environment's (or any other environment's) top file will be ignored. If an environment does not have a top file, then the top file from the *default_top* config parameter will be used as a fallback.

```
top_file_merging_strategy: same
```

### env_order

Default: `[]`

When *top_file_merging_strategy* is set to `merge`, and no environment is specified for a *highstate*, this config option allows for the order in which top files are evaluated to be explicitly defined.

```
env_order:
  - base
  - dev
  - qa
```

#### default_top

Default: `base`

When *top_file_merging_strategy* is set to `same`, and no environment is specified for a *highstate*, this config option specifies a fallback environment in which to look for a top file if an environment lacks one.

```
default_top: dev
```

### 2.2.4 File Directory Settings

#### file_client

Default: `remote`

The client defaults to looking on the master server for files, but can be directed to look on the minion by setting this parameter to `local`.

```
file_client: remote
```

#### use_master_when_local

Default: `False`

When using a local *file_client*, this parameter is used to allow the client to connect to a master for remote execution.

```
use_master_when_local: False
```

#### file_roots

Default:

```
base:
  - /srv/salt
```

When using a local *file_client*, this parameter is used to setup the fileserver's environments. This parameter operates identically to the *master config parameter* of the same name.

```
file_roots:
  base:
    - /srv/salt
  dev:
    - /srv/salt/dev/services
    - /srv/salt/dev/states
  prod:
```

```
    - /srv/salt/prod/services
    - /srv/salt/prod/states
```

### fileserver_followsymlinks

New in version 2014.1.0.

Default: `True`

By default, the file_server follows symlinks when walking the filesystem tree. Currently this only applies to the default roots fileserver_backend.

```
fileserver_followsymlinks: True
```

### fileserver_ignoresymlinks

New in version 2014.1.0.

Default: `False`

If you do not want symlinks to be treated as the files they are pointing to, set `fileserver_ignoresymlinks` to `True`. By default this is set to False. When set to `True`, any detected symlink while listing files on the Master will not be returned to the Minion.

```
fileserver_ignoresymlinks: False
```

### fileserver_limit_traversal

New in version 2014.1.0.

Default: `False`

By default, the Salt fileserver recurses fully into all defined environments to attempt to find files. To limit this behavior so that the fileserver only traverses directories with SLS files and special Salt directories like _modules, set `fileserver_limit_traversal` to `True`. This might be useful for installations where a file root has a very large number of files and performance is impacted.

```
fileserver_limit_traversal: False
```

### hash_type

Default: `md5`

The hash_type is the hash to use when discovering the hash of a file on the local fileserver. The default is md5, but sha1, sha224, sha256, sha384, and sha512 are also supported.

```
hash_type: md5
```

### 2.2.5 Pillar Configuration

#### pillar_roots

Default:

```
base:
  - /srv/pillar
```

When using a local *file_client*, this parameter is used to setup the pillar environments.

```
pillar_roots:
  base:
    - /srv/pillar
  dev:
    - /srv/pillar/dev
  prod:
    - /srv/pillar/prod
```

#### on_demand_ext_pillar

New in version 2016.3.6,2016.11.3,Nitrogen.

Default: `['libvirt','virtkey']`

When using a local *file_client*, this option controls which external pillars are permitted to be used on-demand using *pillar.ext*.

```
on_demand_ext_pillar:
  - libvirt
  - virtkey
  - git
```

**Warning**: This will allow a masterless minion to request specific pillar data via *pillar.ext*, and may be considered a security risk. However, pillar data generated in this way will not affect the *in-memory pillar data*, so this risk is limited to instances in which states/modules/etc. (built-in or custom) rely upon pillar data generated by *pillar.ext*.

#### pillarenv

Default: `None`

Isolates the pillar environment on the minion side. This functions the same as the environment setting, but for pillar instead of states.

```
pillarenv: None
```

#### minion_pillar_cache

New in version 2016.3.0.

Default: `False`

The minion can locally cache rendered pillar data under *cachedir*/pillar. This allows a temporarily disconnected minion to access previously cached pillar data by invoking salt-call with the --local and --pillar_root=:conf_minion:*cachedir*/pillar options. Before enabling this setting consider that the rendered pillar may contain security sensitive data. Appropriate access restrictions should be in place. By default the saved pillar data will be readable only by the user account running salt. By default this feature is disabled, to enable set minion_pillar_cache to `True`.

```
minion_pillar_cache: False
```

#### file_recv_max_size

New in version 2014.7.0.

Default: `100`

Set a hard-limit on the size of the files that can be pushed to the master. It will be interpreted as megabytes.

```
file_recv_max_size: 100
```

### 2.2.6 Security Settings

#### open_mode

Default: `False`

Open mode can be used to clean out the PKI key received from the Salt master, turn on open mode, restart the minion, then turn off open mode and restart the minion to clean the keys.

```
open_mode: False
```

#### master_finger

Default: `''`

Fingerprint of the master public key to validate the identity of your Salt master before the initial key exchange. The master fingerprint can be found by running ``salt-key -F master'' on the Salt master.

```
master_finger: 'ba:30:65:2a:d6:9e:20:4f:d8:b2:f3:a7:d4:65:11:13'
```

#### verify_master_pubkey_sign

Default: `False`

Enables verification of the master-public-signature returned by the master in auth-replies. Please see the tutorial on how to configure this properly Multimaster-PKI with Failover Tutorial

New in version 2014.7.0.

```
verify_master_pubkey_sign: True
```

If this is set to `True`, *master_sign_pubkey* must be also set to `True` in the master configuration file.

#### master_sign_key_name

Default: `master_sign`

The filename without the *.pub* suffix of the public key that should be used for verifying the signature from the master. The file must be located in the minion's pki directory.

New in version 2014.7.0.

```
master_sign_key_name: <filename_without_suffix>
```

#### always_verify_signature

Default: `False`

If *verify_master_pubkey_sign* is enabled, the signature is only verified if the public-key of the master changes. If the signature should always be verified, this can be set to `True`.

New in version 2014.7.0.

```
always_verify_signature: True
```

### 2.2.7 Thread Settings

Default: `True`

If *multiprocessing* is enabled when a minion receives a publication a new process is spawned and the command is executed therein. Conversely, if *multiprocessing* is disabled the new publication will be run executed in a thread.

```
multiprocessing: True
```

### 2.2.8 Minion Logging Settings

#### log_file

Default: `/var/log/salt/minion`

The minion log can be sent to a regular file, local path name, or network location. See also *log_file*.

Examples:

```
log_file: /var/log/salt/minion
```

```
log_file: file:///dev/log
```

```
log_file: udp://loghost:10514
```

#### log_level

Default: `warning`

The level of messages to send to the console. See also *log_level*.

```
log_level: warning
```

### log_level_logfile

Default: `info`

The level of messages to send to the log file. See also *log_level_logfile*. When it is not set explicitly it will inherit the level set by *log_level* option.

```
log_level_logfile: warning
```

### log_datefmt

Default: `%H:%M:%S`

The date and time format used in console log messages. See also *log_datefmt*.

```
log_datefmt: '%H:%M:%S'
```

### log_datefmt_logfile

Default: `%Y-%m-%d %H:%M:%S`

The date and time format used in log file messages. See also *log_datefmt_logfile*.

```
log_datefmt_logfile: '%Y-%m-%d %H:%M:%S'
```

### log_fmt_console

Default: `[%(levelname)-8s] %(message)s`

The format of the console logging messages. See also *log_fmt_console*.

---

**Note**: Log colors are enabled in `log_fmt_console` rather than the `color` config since the logging system is loaded before the minion config.

Console log colors are specified by these additional formatters:

%(colorlevel)s %(colorname)s %(colorprocess)s %(colormsg)s

Since it is desirable to include the surrounding brackets, `[' and `]', in the coloring of the messages, these color formatters also include padding as well. Color LogRecord attributes are only available for console logging.

---

```
log_fmt_console: '%(colorlevel)s %(colormsg)s'
log_fmt_console: '[%(levelname)-8s] %(message)s'
```

### log_fmt_logfile

Default: `%(asctime)s,%(msecs)03.0f [%(name)-17s][%(levelname)-8s] %(message)s`

The format of the log file logging messages. See also *log_fmt_logfile*.

```
log_fmt_logfile: '%(asctime)s,%(msecs)03.0f [%(name)-17s][%(levelname)-8s] %(message)s'
```

#### log_granular_levels

Default: {}

This can be used to control logging levels more specifically. See also *log_granular_levels*.

#### zmq_monitor

Default: False

To diagnose issues with minions disconnecting or missing returns, ZeroMQ supports the use of monitor sockets to log connection events. This feature requires ZeroMQ 4.0 or higher.

To enable ZeroMQ monitor sockets, set `zmq_monitor' to `True' and log at a debug level or higher.

A sample log event is as follows:

```
[DEBUG   ] ZeroMQ event: {'endpoint': 'tcp://127.0.0.1:4505', 'event': 512,
'value': 27, 'description': 'EVENT_DISCONNECTED'}
```

All events logged will include the string ZeroMQ event. A connection event should be logged as the minion starts up and initially connects to the master. If not, check for debug log level and that the necessary version of ZeroMQ is installed.

#### failhard

Default: False

Set the global failhard flag. This informs all states to stop running states at the moment a single state fails

```
failhard: False
```

### 2.2.9 Include Configuration

#### default_include

Default: minion.d/*.conf

The minion can include configuration from other files. Per default the minion will automatically include all config files from *minion.d/*.conf* where minion.d is relative to the directory of the minion configuration file.

---

**Note**: Salt creates files in the minion.d directory for its own use. These files are prefixed with an underscore. A common example of this is the _schedule.conf file.

---

#### include

Default: `not defined`

The minion can include configuration from other files. To enable this, pass a list of paths to this option. The paths can be either relative or absolute; if relative, they are considered to be relative to the directory the main minion configuration file lives in. Paths can make use of shell-style globbing. If no files are matched by a path passed to this option then the minion will log a warning message.

```
# Include files from a minion.d directory in the same
# directory as the minion config file
include: minion.d/*.conf

# Include a single extra file into the configuration
include: /etc/roles/webserver

# Include several files and the minion.d directory
include:
  - extra_config
  - minion.d/*
  - /etc/roles/webserver
```

### 2.2.10 Frozen Build Update Settings

These options control how *salt.modules.saltutil.update()* works with esky frozen apps. For more information look at https://github.com/cloudmatrix/esky/.

#### update_url

Default: `False` (Update feature is disabled)

The url to use when looking for application updates. Esky depends on directory listings to search for new versions. A webserver running on your Master is a good starting point for most setups.

```
update_url: 'http://salt.example.com/minion-updates'
```

#### update_restart_services

Default: `[]` (service restarting on update is disabled)

A list of services to restart when the minion software is updated. This would typically just be a list containing the minion's service name, but you may have other services that need to go with it.

```
update_restart_services: ['salt-minion']
```

### 2.2.11 Standalone Minion Windows Software Repo Settings

**Important**: To use these config options, the minion must be running in masterless mode (set *file_client* to `local`).

#### winrepo_dir

Changed in version 2015.8.0: Renamed from `win_repo` to `winrepo_dir`. Also, this option did not have a default value until this version.

Default: `C:\salt\srv\salt\win\repo`

Location on the minion where the *winrepo_remotes* are checked out.

```
winrepo_dir: 'D:\winrepo'
```

#### winrepo_cachefile

Changed in version 2015.8.0: Renamed from `win_repo_cachefile` to `winrepo_cachefile`. Also, this option did not have a default value until this version.

Default: `winrepo.p`

Path relative to *winrepo_dir* where the winrepo cache should be created.

```
winrepo_cachefile: winrepo.p
```

#### winrepo_remotes

Changed in version 2015.8.0: Renamed from `win_gitrepos` to `winrepo_remotes`. Also, this option did not have a default value until this version.

New in version 2015.8.0.

Default: `['https://github.com/saltstack/salt-winrepo.git']`

List of git repositories to checkout and include in the winrepo

```
winrepo_remotes:
  - https://github.com/saltstack/salt-winrepo.git
```

To specify a specific revision of the repository, prepend a commit ID to the URL of the the repository:

```
winrepo_remotes:
  - '<commit_id> https://github.com/saltstack/salt-winrepo.git'
```

Replace `<commit_id>` with the SHA1 hash of a commit ID. Specifying a commit ID is useful in that it allows one to revert back to a previous version in the event that an error is introduced in the latest revision of the repo.

## 2.3 Configuration file examples


- *Example master configuration file*
- *Example minion configuration file*

### 2.3.1 Example master configuration file

```
##### Primary configuration settings #####
##########################################
# This configuration file is used to manage the behavior of the Salt Master.
# Values that are commented out but have an empty line after the comment are
# defaults that do not need to be set in the config. If there is no blank line
# after the comment then the value is presented as an example and is not the
# default.

# Per default, the master will automatically include all config files
# from master.d/*.conf (master.d is a directory in the same directory
# as the main master config file).
#default_include: master.d/*.conf

# The address of the interface to bind to:
#interface: 0.0.0.0

# Whether the master should listen for IPv6 connections. If this is set to True,
# the interface option must be adjusted, too. (For example: "interface: '::'")
#ipv6: False

# The tcp port used by the publisher:
#publish_port: 4505

# The user under which the salt master will run. Salt will update all
# permissions to allow the specified user to run the master. The exception is
# the job cache, which must be deleted if this user is changed. If the
# modified files cause conflicts, set verify_env to False.
#user: root

# The port used by the communication interface. The ret (return) port is the
# interface used for the file server, authentication, job returns, etc.
#ret_port: 4506

# Specify the location of the daemon process ID file:
#pidfile: /var/run/salt-master.pid

# The root directory prepended to these options: pki_dir, cachedir,
# sock_dir, log_file, autosign_file, autoreject_file, extension_modules,
# key_logfile, pidfile:
#root_dir: /

# The path to the master's configuration file.
#conf_file: /etc/salt/master

# Directory used to store public key data:
#pki_dir: /etc/salt/pki/master

# Directory to store job and cache data:
# This directory may contain sensitive data and should be protected accordingly.
#
#cachedir: /var/cache/salt/master

# Directory for custom modules. This directory can contain subdirectories for
# each of Salt's module types such as "runners", "output", "wheel", "modules",
# "states", "returners", etc.
#extension_modules: <no default>
```

```
# Directory for custom modules. This directory can contain subdirectories for
# each of Salt's module types such as "runners", "output", "wheel", "modules",
# "states", "returners", "engines", etc.
# Like 'extension_modules' but can take an array of paths
#module_dirs: <no default>
#   - /var/cache/salt/minion/extmods

# Verify and set permissions on configuration directories at startup:
#verify_env: True

# Set the number of hours to keep old job information in the job cache:
#keep_jobs: 24

# The number of seconds to wait when the client is requesting information
# about running jobs.
#gather_job_timeout: 10

# Set the default timeout for the salt command and api. The default is 5
# seconds.
#timeout: 5

# The loop_interval option controls the seconds for the master's maintenance
# process check cycle. This process updates file server backends, cleans the
# job cache and executes the scheduler.
#loop_interval: 60

# Set the default outputter used by the salt command. The default is "nested".
#output: nested

# Set the default output file used by the salt command. Default is to output
# to the CLI and not to a file. Functions the same way as the "--out-file"
# CLI option, only sets this to a single file for all salt commands.
#output_file: None

# Return minions that timeout when running commands like test.ping
#show_timeout: True

# By default, output is colored. To disable colored output, set the color value
# to False.
#color: True

# Do not strip off the colored output from nested results and state outputs
# (true by default).
# strip_colors: False

# To display a summary of the number of minions targeted, the number of
# minions returned, and the number of minions that did not return, set the
# cli_summary value to True. (False by default.)
#
#cli_summary: False

# Set the directory used to hold unix sockets:
#sock_dir: /var/run/salt/master

# The master can take a while to start up when lspci and/or dmidecode is used
# to populate the grains for the master. Enable if you want to see GPU hardware
# data for your master.
```

```
# enable_gpu_grains: False

# The master maintains a job cache. While this is a great addition, it can be
# a burden on the master for larger deployments (over 5000 minions).
# Disabling the job cache will make previously executed jobs unavailable to
# the jobs system and is not generally recommended.
#job_cache: True

# Cache minion grains and pillar data in the cachedir.
#minion_data_cache: True

# Store all returns in the given returner.
# Setting this option requires that any returner-specific configuration also
# be set. See various returners in salt/returners for details on required
# configuration values. (See also, event_return_queue below.)
#
#event_return: mysql

# On busy systems, enabling event_returns can cause a considerable load on
# the storage system for returners. Events can be queued on the master and
# stored in a batched fashion using a single transaction for multiple events.
# By default, events are not queued.
#event_return_queue: 0

# Only return events matching tags in a whitelist,
# event_return_whitelist:
#   - salt/master/a_tag
#   - salt/master/another_tag

# Store all event returns _except_ the tags in a blacklist.
# event_return_blacklist:
#   - salt/master/not_this_tag
#   - salt/master/or_this_one

# Passing very large events can cause the minion to consume large amounts of
# memory. This value tunes the maximum size of a message allowed onto the
# master event bus. The value is expressed in bytes.
#max_event_size: 1048576

# By default, the master AES key rotates every 24 hours. The next command
# following a key rotation will trigger a key refresh from the minion which may
# result in minions which do not respond to the first command after a key refresh.
#
# To tell the master to ping all minions immediately after an AES key refresh, set
# ping_on_rotate to True. This should mitigate the issue where a minion does not
# appear to initially respond after a key is rotated.
#
# Note that ping_on_rotate may cause high load on the master immediately after
# the key rotation event as minions reconnect. Consider this carefully if this
# salt master is managing a large number of minions.
#
# If disabled, it is recommended to handle this event by listening for the
# 'aes_key_rotate' event with the 'key' tag and acting appropriately.
# ping_on_rotate: False

# By default, the master deletes its cache of minion data when the key for that
# minion is removed. To preserve the cache after key deletion, set
# 'preserve_minion_cache' to True.
```

```
#
# WARNING: This may have security implications if compromised minions auth with
# a previous deleted minion ID.
#preserve_minion_cache: False

# If max_minions is used in large installations, the master might experience
# high-load situations because of having to check the number of connected
# minions for every authentication. This cache provides the minion-ids of
# all connected minions to all MWorker-processes and greatly improves the
# performance of max_minions.
# con_cache: False

# The master can include configuration from other files. To enable this,
# pass a list of paths to this option. The paths can be either relative or
# absolute; if relative, they are considered to be relative to the directory
# the main master configuration file lives in (this file). Paths can make use
# of shell-style globbing. If no files are matched by a path passed to this
# option, then the master will log a warning message.
#
# Include a config file from some other path:
# include: /etc/salt/extra_config
#
# Include config from several files and directories:
# include:
#   - /etc/salt/extra_config


#####  Large-scale tuning settings   #####
##########################################
# Max open files
#
# Each minion connecting to the master uses AT LEAST one file descriptor, the
# master subscription connection. If enough minions connect you might start
# seeing on the console (and then salt-master crashes):
#   Too many open files (tcp_listener.cpp:335)
#   Aborted (core dumped)
#
# By default this value will be the one of `ulimit -Hn`, ie, the hard limit for
# max open files.
#
# If you wish to set a different value than the default one, uncomment and
# configure this setting. Remember that this value CANNOT be higher than the
# hard limit. Raising the hard limit depends on your OS and/or distribution,
# a good way to find the limit is to search the internet. For example:
#   raise max open files hard limit debian
#
#max_open_files: 100000

# The number of worker threads to start. These threads are used to manage
# return calls made from minions to the master. If the master seems to be
# running slowly, increase the number of threads. This setting can not be
# set lower than 3.
#worker_threads: 5

# Set the ZeroMQ high water marks
# http://api.zeromq.org/3-2:zmq-setsockopt

# The publisher interface ZeroMQPubServerChannel
```

```
#pub_hwm: 1000

# These two ZMQ HWM settings, salt_event_pub_hwm and event_publisher_pub_hwm
# are significant for masters with thousands of minions.  When these are
# insufficiently high it will manifest in random responses missing in the CLI
# and even missing from the job cache.  Masters that have fast CPUs and many
# cores with appropriate worker_threads will not need these set as high.

# On deployment with 8,000 minions, 2.4GHz CPUs, 24 cores, 32GiB memory has
# these settings:
#
#   salt_event_pub_hwm: 128000
#   event_publisher_pub_hwm: 64000

# ZMQ high-water-mark for SaltEvent pub socket
#salt_event_pub_hwm: 20000

# ZMQ high-water-mark for EventPublisher pub socket
#event_publisher_pub_hwm: 10000

# The master may allocate memory per-event and not
# reclaim it.
# To set a high-water mark for memory allocation, use
# ipc_write_buffer to set a high-water mark for message
# buffering.
# Value: In bytes. Set to 'dynamic' to have Salt select
# a value for you. Default is disabled.
# ipc_write_buffer: 'dynamic'


#####        Security settings       #####
##########################################
# Enable "open mode", this mode still maintains encryption, but turns off
# authentication, this is only intended for highly secure environments or for
# the situation where your keys end up in a bad state. If you run in open mode
# you do so at your own risk!
#open_mode: False

# Enable auto_accept, this setting will automatically accept all incoming
# public keys from the minions. Note that this is insecure.
#auto_accept: False

# Time in minutes that a incoming public key with a matching name found in
# pki_dir/minion_autosign/keyid is automatically accepted. Expired autosign keys
# are removed when the master checks the minion_autosign directory.
# 0 equals no timeout
# autosign_timeout: 120

# If the autosign_file is specified, incoming keys specified in the
# autosign_file will be automatically accepted. This is insecure.  Regular
# expressions as well as globing lines are supported.
#autosign_file: /etc/salt/autosign.conf

# Works like autosign_file, but instead allows you to specify minion IDs for
# which keys will automatically be rejected. Will override both membership in
# the autosign_file and the auto_accept setting.
#autoreject_file: /etc/salt/autoreject.conf
```

```
# Enable permissive access to the salt keys. This allows you to run the
# master or minion as root, but have a non-root group be given access to
# your pki_dir. To make the access explicit, root must belong to the group
# you've given access to. This is potentially quite insecure. If an autosign_file
# is specified, enabling permissive_pki_access will allow group access to that
# specific file.
#permissive_pki_access: False

# Allow users on the master access to execute specific commands on minions.
# This setting should be treated with care since it opens up execution
# capabilities to non root users. By default this capability is completely
# disabled.
#pulisher_acl:
#  larry:
#    - test.ping
#    - network.*
#
# Blacklist any of the following users or modules
#
# This example would blacklist all non sudo users, including root from
# running any commands. It would also blacklist any use of the "cmd"
# module. This is completely disabled by default.
#
#
# Check the list of configured users in client ACL against users on the
# system and throw errors if they do not exist.
#client_acl_verify: True
#
#publisher_acl_blacklist:
#  users:
#    - root
#    - '^(?!sudo_).*$'   #  all non sudo users
#  modules:
#    - cmd
#
# WARNING: client_acl and client_acl_blacklist options are deprecated and will
# be removed in the future releases. Use publisher_acl and
# publisher_acl_blacklist instead.

# Enforce publisher_acl & publisher_acl_blacklist when users have sudo
# access to the salt command.
#
#sudo_acl: False

# The external auth system uses the Salt auth modules to authenticate and
# validate users to access areas of the Salt system.
#external_auth:
#  pam:
#    fred:
#      - test.*
#
# Time (in seconds) for a newly generated token to live. Default: 12 hours
#token_expire: 43200

# Allow minions to push files to the master. This is disabled by default, for
# security purposes.
#file_recv: False
```

```
# Set a hard-limit on the size of the files that can be pushed to the master.
# It will be interpreted as megabytes. Default: 100
#file_recv_max_size: 100

# Signature verification on messages published from the master.
# This causes the master to cryptographically sign all messages published to its event
# bus, and minions then verify that signature before acting on the message.
#
# This is False by default.
#
# Note that to facilitate interoperability with masters and minions that are different
# versions, if sign_pub_messages is True but a message is received by a minion with
# no signature, it will still be accepted, and a warning message will be logged.
# Conversely, if sign_pub_messages is False, but a minion receives a signed
# message it will be accepted, the signature will not be checked, and a warning message
# will be logged. This behavior went away in Salt 2014.1.0 and these two situations
# will cause minion to throw an exception and drop the message.
# sign_pub_messages: False

#####     Salt-SSH Configuration     #####
##########################################

# Pass in an alternative location for the salt-ssh roster file
#roster_file: /etc/salt/roster

# Define a location for roster files so they can be chosen when using Salt API.
# An administrator can place roster files into these locations. Then when
# calling Salt API, parameter 'roster_file' should contain a relative path to
# these locations. That is, "roster_file=/foo/roster" will be resolved as
# "/etc/salt/roster.d/foo/roster" etc. This feature prevents passing insecure
# custom rosters through the Salt API.
#
#rosters:
# - /etc/salt/roster.d
# - /opt/salt/some/more/rosters

# The log file of the salt-ssh command:
#ssh_log_file: /var/log/salt/ssh

# Pass in minion option overrides that will be inserted into the SHIM for
# salt-ssh calls. The local minion config is not used for salt-ssh. Can be
# overridden on a per-minion basis in the roster (`minion_opts`)
#ssh_minion_opts:
#  gpg_keydir: /root/gpg

#####    Master Module Management    #####
##########################################
# Manage how master side modules are loaded.

# Add any additional locations to look for master runners:
#runner_dirs: []

# Enable Cython for master side modules:
#cython_enable: False


#####      State System settings     #####
##########################################
```

```
# The state system uses a "top" file to tell the minions what environment to
# use and what modules to use. The state_top file is defined relative to the
# root of the base environment as defined in "File Server settings" below.
#state_top: top.sls

# The master_tops option replaces the external_nodes option by creating
# a plugable system for the generation of external top data. The external_nodes
# option is deprecated by the master_tops option.
#
# To gain the capabilities of the classic external_nodes system, use the
# following configuration:
# master_tops:
#   ext_nodes: <Shell command which returns yaml>
#
#master_tops: {}

# The external_nodes option allows Salt to gather data that would normally be
# placed in a top file. The external_nodes option is the executable that will
# return the ENC data. Remember that Salt will look for external nodes AND top
# files and combine the results if both are enabled!
#external_nodes: None

# The renderer to use on the minions to render the state data
#renderer: yaml_jinja

# The Jinja renderer can strip extra carriage returns and whitespace
# See http://jinja.pocoo.org/docs/api/#high-level-api
#
# If this is set to True the first newline after a Jinja block is removed
# (block, not variable tag!). Defaults to False, corresponds to the Jinja
# environment init variable "trim_blocks".
#jinja_trim_blocks: False
#
# If this is set to True leading spaces and tabs are stripped from the start
# of a line to a block. Defaults to False, corresponds to the Jinja
# environment init variable "lstrip_blocks".
#jinja_lstrip_blocks: False

# The failhard option tells the minions to stop immediately after the first
# failure detected in the state execution, defaults to False
#failhard: False

# The state_verbose and state_output settings can be used to change the way
# state system data is printed to the display. By default all data is printed.
# The state_verbose setting can be set to True or False, when set to False
# all data that has a result of True and no changes will be suppressed.
#state_verbose: True

# The state_output setting changes if the output is the full multi line
# output for each changed state if set to 'full', but if set to 'terse'
# the output will be shortened to a single line.  If set to 'mixed', the output
# will be terse unless a state failed, in which case that output will be full.
# If set to 'changes', the output will be full unless the state didn't change.
#state_output: full

# Automatically aggregate all states that have support for mod_aggregate by
# setting to 'True'. Or pass a list of state module names to automatically
# aggregate just those types.
```

```
#
# state_aggregate:
#   - pkg
#
#state_aggregate: False

# Send progress events as each function in a state run completes execution
# by setting to 'True'. Progress events are in the format
# 'salt/job/<JID>/prog/<MID>/<RUN NUM>'.
#state_events: False

#####      File Server settings      #####
##########################################
# Salt runs a lightweight file server written in zeromq to deliver files to
# minions. This file server is built into the master daemon and does not
# require a dedicated port.

# The file server works on environments passed to the master, each environment
# can have multiple root directories, the subdirectories in the multiple file
# roots cannot match, otherwise the downloaded files will not be able to be
# reliably ensured. A base environment is required to house the top file.
# Example:
# file_roots:
#   base:
#     - /srv/salt/
#   dev:
#     - /srv/salt/dev/services
#     - /srv/salt/dev/states
#   prod:
#     - /srv/salt/prod/services
#     - /srv/salt/prod/states
#
#file_roots:
#  base:
#    - /srv/salt
#

# When using multiple environments, each with their own top file, the
# default behaviour is an unordered merge. To prevent top files from
# being merged together and instead to only use the top file from the
# requested environment, set this value to 'same'.
#top_file_merging_strategy: merge

# To specify the order in which environments are merged, set the ordering
# in the env_order option. Given a conflict, the last matching value will
# win.
#env_order: ['base', 'dev', 'prod']

# If top_file_merging_strategy is set to 'same' and an environment does not
# contain a top file, the top file in the environment specified by default_top
# will be used instead.
#default_top: base

# The hash_type is the hash to use when discovering the hash of a file on
# the master server. The default is md5 but sha1, sha224, sha256, sha384
# and sha512 are also supported.
#
# WARNING: While md5 is supported, do not use it due to the high chance
```

```
# of possible collisions and thus security breach.
#
# Prior to changing this value, the master should be stopped and all Salt
# caches should be cleared.
#hash_type: md5

# The buffer size in the file server can be adjusted here:
#file_buffer_size: 1048576

# A regular expression (or a list of expressions) that will be matched
# against the file path before syncing the modules and states to the minions.
# This includes files affected by the file.recurse state.
# For example, if you manage your custom modules and states in subversion
# and don't want all the '.svn' folders and content synced to your minions,
# you could set this to '/\.svn($|/)'. By default nothing is ignored.
#file_ignore_regex:
#  - '/\.svn($|/)'
#  - '/\.git($|/)'

# A file glob (or list of file globs) that will be matched against the file
# path before syncing the modules and states to the minions. This is similar
# to file_ignore_regex above, but works on globs instead of regex. By default
# nothing is ignored.
# file_ignore_glob:
#  - '*.pyc'
#  - '*/somefolder/*.bak'
#  - '*.swp'

# File Server Backend
#
# Salt supports a modular fileserver backend system, this system allows
# the salt master to link directly to third party systems to gather and
# manage the files available to minions. Multiple backends can be
# configured and will be searched for the requested file in the order in which
# they are defined here. The default setting only enables the standard backend
# "roots" which uses the "file_roots" option.
#fileserver_backend:
#  - roots
#
# To use multiple backends list them in the order they are searched:
#fileserver_backend:
#  - git
#  - roots
#
# Uncomment the line below if you do not want the file_server to follow
# symlinks when walking the filesystem tree. This is set to True
# by default. Currently this only applies to the default roots
# fileserver_backend.
#fileserver_followsymlinks: False
#
# Uncomment the line below if you do not want symlinks to be
# treated as the files they are pointing to. By default this is set to
# False. By uncommenting the line below, any detected symlink while listing
# files on the Master will not be returned to the Minion.
#fileserver_ignoresymlinks: True
#
# By default, the Salt fileserver recurses fully into all defined environments
# to attempt to find files. To limit this behavior so that the fileserver only
```

```
# traverses directories with SLS files and special Salt directories like _modules,
# enable the option below. This might be useful for installations where a file root
# has a very large number of files and performance is impacted. Default is False.
# fileserver_limit_traversal: False
#
# The fileserver can fire events off every time the fileserver is updated,
# these are disabled by default, but can be easily turned on by setting this
# flag to True
#fileserver_events: False

# Git File Server Backend Configuration
#
# Optional parameter used to specify the provider to be used for gitfs. Must
# be one of the following: pygit2, gitpython, or dulwich. If unset, then each
# will be tried in that same order, and the first one with a compatible
# version installed will be the provider that is used.
#gitfs_provider: pygit2

# Along with gitfs_password, is used to authenticate to HTTPS remotes.
# gitfs_user: ''

# Along with gitfs_user, is used to authenticate to HTTPS remotes.
# This parameter is not required if the repository does not use authentication.
#gitfs_password: ''

# By default, Salt will not authenticate to an HTTP (non-HTTPS) remote.
# This parameter enables authentication over HTTP. Enable this at your own risk.
#gitfs_insecure_auth: False

# Along with gitfs_privkey (and optionally gitfs_passphrase), is used to
# authenticate to SSH remotes. This parameter (or its per-remote counterpart)
# is required for SSH remotes.
#gitfs_pubkey: ''

# Along with gitfs_pubkey (and optionally gitfs_passphrase), is used to
# authenticate to SSH remotes. This parameter (or its per-remote counterpart)
# is required for SSH remotes.
#gitfs_privkey: ''

# This parameter is optional, required only when the SSH key being used to
# authenticate is protected by a passphrase.
#gitfs_passphrase: ''

# When using the git fileserver backend at least one git remote needs to be
# defined. The user running the salt master will need read access to the repo.
#
# The repos will be searched in order to find the file requested by a client
# and the first repo to have the file will return it.
# When using the git backend branches and tags are translated into salt
# environments.
# Note: file:// repos will be treated as a remote, so refs you want used must
# exist in that repo as *local* refs.
#gitfs_remotes:
#  - git://github.com/saltstack/salt-states.git
#  - file:///var/git/saltmaster
#
# The gitfs_ssl_verify option specifies whether to ignore ssl certificate
# errors when contacting the gitfs backend. You might want to set this to
```

```
# false if you're using a git backend that uses a self-signed certificate but
# keep in mind that setting this flag to anything other than the default of True
# is a security concern, you may want to try using the ssh transport.
#gitfs_ssl_verify: True
#
# The gitfs_root option gives the ability to serve files from a subdirectory
# within the repository. The path is defined relative to the root of the
# repository and defaults to the repository root.
#gitfs_root: somefolder/otherfolder
#
#
#####         Pillar settings        #####
##########################################
# Salt Pillars allow for the building of global data that can be made selectively
# available to different minions based on minion grain filtering. The Salt
# Pillar is laid out in the same fashion as the file server, with environments,
# a top file and sls files. However, pillar data does not need to be in the
# highstate format, and is generally just key/value pairs.
#pillar_roots:
#  base:
#    - /srv/pillar
#
#ext_pillar:
#  - hiera: /etc/hiera.yaml
#  - cmd_yaml: cat /etc/salt/yaml

# The ext_pillar_first option allows for external pillar sources to populate
# before file system pillar. This allows for targeting file system pillar from
# ext_pillar.
#ext_pillar_first: False

# The external pillars permitted to be used on-demand using pillar.ext
#on_demand_ext_pillar:
#  - libvirt
#  - virtkey

# The pillar_gitfs_ssl_verify option specifies whether to ignore ssl certificate
# errors when contacting the pillar gitfs backend. You might want to set this to
# false if you're using a git backend that uses a self-signed certificate but
# keep in mind that setting this flag to anything other than the default of True
# is a security concern, you may want to try using the ssh transport.
#pillar_gitfs_ssl_verify: True

# The pillar_opts option adds the master configuration file data to a dict in
# the pillar called "master". This is used to set simple configurations in the
# master config file that can then be used on minions.
#pillar_opts: False

# The pillar_safe_render_error option prevents the master from passing pillar
# render errors to the minion. This is set on by default because the error could
# contain templating data which would give that minion information it shouldn't
# have, like a password! When set true the error message will only show:
#   Rendering SLS 'my.sls' failed. Please see master log for details.
#pillar_safe_render_error: True

# The pillar_source_merging_strategy option allows you to configure merging strategy
# between different sources. It accepts five values: none, recurse, aggregate,
 ↪overwrite,
```

```
# or smart. None will not do any merging at all. Recurse will merge recursively
 ↪mapping of data.
# Aggregate instructs aggregation of elements between sources that use the #!yamlex
 ↪renderer. Overwrite
# will overwrite elements according the order in which they are processed. This is
# behavior of the 2014.1 branch and earlier. Smart guesses the best strategy based
# on the "renderer" setting and is the default value.
#pillar_source_merging_strategy: smart

# Recursively merge lists by aggregating them instead of replacing them.
#pillar_merge_lists: False

# Git External Pillar (git_pillar) Configuration Options
#
# Specify the provider to be used for git_pillar. Must be either pygit2 or
# gitpython. If unset, then both will be tried in that same order, and the
# first one with a compatible version installed will be the provider that
# is used.
#git_pillar_provider: pygit2

# If the desired branch matches this value, and the environment is omitted
# from the git_pillar configuration, then the environment for that git_pillar
# remote will be base.
#git_pillar_base: master

# If the branch is omitted from a git_pillar remote, then this branch will
# be used instead
#git_pillar_branch: master

# Environment to use for git_pillar remotes. This is normally derived from
# the branch/tag (or from a per-remote env parameter), but if set this will
# override the process of deriving the env from the branch/tag name.
#git_pillar_env: ''

# Path relative to the root of the repository where the git_pillar top file
# and SLS files are located.
#git_pillar_root: ''

# Specifies whether or not to ignore SSL certificate errors when contacting
# the remote repository.
#git_pillar_ssl_verify: False

# When set to False, if there is an update/checkout lock for a git_pillar
# remote and the pid written to it is not running on the master, the lock
# file will be automatically cleared and a new lock will be obtained.
#git_pillar_global_lock: True

# Git External Pillar Authentication Options
#
# Along with git_pillar_password, is used to authenticate to HTTPS remotes.
#git_pillar_user: ''

# Along with git_pillar_user, is used to authenticate to HTTPS remotes.
# This parameter is not required if the repository does not use authentication.
#git_pillar_password: ''

# By default, Salt will not authenticate to an HTTP (non-HTTPS) remote.
# This parameter enables authentication over HTTP.
```

```
#git_pillar_insecure_auth: False

# Along with git_pillar_privkey (and optionally git_pillar_passphrase),
# is used to authenticate to SSH remotes.
#git_pillar_pubkey: ''

# Along with git_pillar_pubkey (and optionally git_pillar_passphrase),
# is used to authenticate to SSH remotes.
#git_pillar_privkey: ''

# This parameter is optional, required only when the SSH key being used
# to authenticate is protected by a passphrase.
#git_pillar_passphrase: ''

# A master can cache pillars locally to bypass the expense of having to render them
# for each minion on every request. This feature should only be enabled in cases
# where pillar rendering time is known to be unsatisfactory and any attendant security
# concerns about storing pillars in a master cache have been addressed.
#
# When enabling this feature, be certain to read through the additional ``pillar_cache_
 ↪*``
# configuration options to fully understand the tunable parameters and their
 ↪implications.
#
# Note: setting ``pillar_cache: True`` has no effect on targeting Minions with Pillars.
# See https://docs.saltstack.com/en/latest/topics/targeting/pillar.html
#pillar_cache: False

# If and only if a master has set ``pillar_cache: True``, the cache TTL controls the
 ↪amount
# of time, in seconds, before the cache is considered invalid by a master and a fresh
# pillar is recompiled and stored.
#pillar_cache_ttl: 3600

# If an only if a master has set ``pillar_cache: True``, one of several storage
 ↪providers
# can be utilized:
#
#   disk: The default storage backend. This caches rendered pillars to the master cache.
#         Rendered pillars are serialized and deserialized as ``msgpack`` structures for
#         speed. Note that pillars are stored UNENCRYPTED. Ensure that the master cache
#         has permissions set appropriately (sane defaults are provided).
#
# memory: [EXPERIMENTAL] An optional backend for pillar caches which uses a pure-Python
#         in-memory data structure for maximal performance. There are several caveats,
#         however. First, because each master worker contains its own in-memory cache,
#         there is no guarantee of cache consistency between minion requests. This
#         works best in situations where the pillar rarely if ever changes. Secondly,
#         and perhaps more importantly, this means that unencrypted pillars will
#         be accessible to any process which can examine the memory of the ``salt-
 ↪master``!
#         This may represent a substantial security risk.
#
#pillar_cache_backend: disk


#####          Syndic settings       #####
##########################################
```

```
# The Salt syndic is used to pass commands through a master from a higher
# master. Using the syndic is simple. If this is a master that will have
# syndic servers(s) below it, then set the "order_masters" setting to True.
#
# If this is a master that will be running a syndic daemon for passthrough, then
# the "syndic_master" setting needs to be set to the location of the master server
# to receive commands from.

# Set the order_masters setting to True if this master will command lower
# masters' syndic interfaces.
#order_masters: False

# If this master will be running a salt syndic daemon, syndic_master tells
# this master where to receive commands from.
#syndic_master: masterofmasters

# This is the 'ret_port' of the MasterOfMaster:
#syndic_master_port: 4506

# PID file of the syndic daemon:
#syndic_pidfile: /var/run/salt-syndic.pid

# The log file of the salt-syndic daemon:
#syndic_log_file: /var/log/salt/syndic

# The behaviour of the multi-syndic when connection to a master of masters failed.
# Can specify ``random`` (default) or ``ordered``. If set to ``random``, masters
# will be iterated in random order. If ``ordered`` is specified, the configured
# order will be used.
#syndic_failover: random

# The number of seconds for the salt client to wait for additional syndics to
# check in with their lists of expected minions before giving up.
#syndic_wait: 5


#####      Peer Publish settings     #####
##########################################
# Salt minions can send commands to other minions, but only if the minion is
# allowed to. By default "Peer Publication" is disabled, and when enabled it
# is enabled for specific minions and specific commands. This allows secure
# compartmentalization of commands based on individual minions.

# The configuration uses regular expressions to match minions and then a list
# of regular expressions to match functions. The following will allow the
# minion authenticated as foo.example.com to execute functions from the test
# and pkg modules.
#peer:
#  foo.example.com:
#    - test.*
#    - pkg.*
#
# This will allow all minions to execute all commands:
#peer:
#  .*:
#    - .*
#
# This is not recommended, since it would allow anyone who gets root on any
```

```
# single minion to instantly have root on all of the minions!

# Minions can also be allowed to execute runners from the salt master.
# Since executing a runner from the minion could be considered a security risk,
# it needs to be enabled. This setting functions just like the peer setting
# except that it opens up runners instead of module functions.
#
# All peer runner support is turned off by default and must be enabled before
# using. This will enable all peer runners for all minions:
#peer_run:
#  .*:
#    - .*
#
# To enable just the manage.up runner for the minion foo.example.com:
#peer_run:
#  foo.example.com:
#    - manage.up
#
#
#####         Mine settings     #####
##########################################
# Restrict mine.get access from minions. By default any minion has a full access
# to get all mine data from master cache. In acl definion below, only pcre matches
# are allowed.
# mine_get:
#   .*:
#     - .*
#
# The example below enables minion foo.example.com to get 'network.interfaces' mine
# data only, minions web* to get all network.* and disk.* mine data and all other
# minions won't get any mine data.
# mine_get:
#   foo.example.com:
#     - network.interfaces
#   web.*:
#     - network.*
#     - disk.*


#####         Logging settings       #####
##########################################
# The location of the master log file
# The master log can be sent to a regular file, local path name, or network
# location. Remote logging works best when configured to use rsyslogd(8) (e.g.:
# ``file:///dev/log``), with rsyslogd(8) configured for network logging. The URI
# format is: <file|udp|tcp>://<host|socketpath>:<port-if-required>/<log-facility>
#log_file: /var/log/salt/master
#log_file: file:///dev/log
#log_file: udp://loghost:10514

#log_file: /var/log/salt/master
#key_logfile: /var/log/salt/key

# The level of messages to send to the console.
# One of 'garbage', 'trace', 'debug', info', 'warning', 'error', 'critical'.
#
# The following log levels are considered INSECURE and may log sensitive data:
# ['garbage', 'trace', 'debug']
```

```
#
#log_level: warning

# The level of messages to send to the log file.
# One of 'garbage', 'trace', 'debug', info', 'warning', 'error', 'critical'.
# If using 'log_granular_levels' this must be set to the highest desired level.
#log_level_logfile: warning

# The date and time format used in log messages. Allowed date/time formatting
# can be seen here: http://docs.python.org/library/time.html#time.strftime
#log_datefmt: '%H:%M:%S'
#log_datefmt_logfile: '%Y-%m-%d %H:%M:%S'

# The format of the console logging messages. Allowed formatting options can
# be seen here: http://docs.python.org/library/logging.html#logrecord-attributes
#
# Console log colors are specified by these additional formatters:
#
# %(colorlevel)s
# %(colorname)s
# %(colorprocess)s
# %(colormsg)s
#
# Since it is desirable to include the surrounding brackets, '[' and ']', in
# the coloring of the messages, these color formatters also include padding as
# well.  Color LogRecord attributes are only available for console logging.
#
#log_fmt_console: '%(colorlevel)s %(colormsg)s'
#log_fmt_console: '[%(levelname)-8s] %(message)s'
#
#log_fmt_logfile: '%(asctime)s,%(msecs)03.0f [%(name)-17s][%(levelname)-8s] %(message)s
 ↪'

# This can be used to control logging levels more specificically.  This
# example sets the main salt library at the 'warning' level, but sets
# 'salt.modules' to log at the 'debug' level:
#   log_granular_levels:
#     'salt': 'warning'
#     'salt.modules': 'debug'
#
#log_granular_levels: {}


#####         Node Groups           ######
########################################
# Node groups allow for logical groupings of minion nodes. A group consists of
# a group name and a compound target. Nodgroups can reference other nodegroups
# with 'N@' classifier. Ensure that you do not have circular references.
#
#nodegroups:
#  group1: 'L@foo.domain.com,bar.domain.com,baz.domain.com or bl*.domain.com'
#  group2: 'G@os:Debian and foo.domain.com'
#  group3: 'G@os:Debian and N@group1'
#  group4:
#    - 'G@foo:bar'
#    - 'or'
#    - 'G@foo:baz'
```

```
#####     Range Cluster settings     #####
##########################################
# The range server (and optional port) that serves your cluster information
# https://github.com/ytoolshed/range/wiki/%22yamlfile%22-module-file-spec
#
#range_server: range:80


#####  Windows Software Repo settings #####
##########################################
# Location of the repo on the master:
#winrepo_dir_ng: '/srv/salt/win/repo-ng'
#
# List of git repositories to include with the local repo:
#winrepo_remotes_ng:
#  - 'https://github.com/saltstack/salt-winrepo-ng.git'


#####  Windows Software Repo settings - Pre 2015.8 #####
########################################################
# Legacy repo settings for pre-2015.8 Windows minions.
#
# Location of the repo on the master:
#winrepo_dir: '/srv/salt/win/repo'
#
# Location of the master's repo cache file:
#winrepo_mastercachefile: '/srv/salt/win/repo/winrepo.p'
#
# List of git repositories to include with the local repo:
#winrepo_remotes:
#  - 'https://github.com/saltstack/salt-winrepo.git'


#####      Returner settings          ######
##########################################
# Which returner(s) will be used for minion's result:
#return: mysql


######    Miscellaneous  settings     ######
##########################################
# Default match type for filtering events tags: startswith, endswith, find, regex,
 ↪fnmatch
#event_match_type: startswith

# Permanently include any available Python 3rd party modules into Salt Thin
# when they are generated for Salt-SSH or other purposes.
# The modules should be named by the names they are actually imported inside the Python.
# The value of the parameters can be either one module or a comma separated list of them.
#thin_extra_mods: foo,bar
```

### 2.3.2 Example minion configuration file

```
##### Primary configuration settings #####
##########################################
```

```
# This configuration file is used to manage the behavior of the Salt Minion.
# With the exception of the location of the Salt Master Server, values that are
# commented out but have an empty line after the comment are defaults that need
# not be set in the config. If there is no blank line after the comment, the
# value is presented as an example and is not the default.

# Per default the minion will automatically include all config files
# from minion.d/*.conf (minion.d is a directory in the same directory
# as the main minion config file).
#default_include: minion.d/*.conf

# Set the location of the salt master server. If the master server cannot be
# resolved, then the minion will fail to start.
#master: salt

# Set http proxy information for the minion when doing requests
#proxy_host:
#proxy_port:
#proxy_username:
#proxy_password:

# If multiple masters are specified in the 'master' setting, the default behavior
# is to always try to connect to them in the order they are listed. If random_master is
# set to True, the order will be randomized instead. This can be helpful in distributing
# the load of many minions executing salt-call requests, for example, from a cron job.
# If only one master is listed, this setting is ignored and a warning will be logged.
# NOTE: If master_type is set to failover, use master_shuffle instead.
#random_master: False

# Use if master_type is set to failover.
#master_shuffle: False

# Minions can connect to multiple masters simultaneously (all masters
# are "hot"), or can be configured to failover if a master becomes
# unavailable.  Multiple hot masters are configured by setting this
# value to "str".  Failover masters can be requested by setting
# to "failover".  MAKE SURE TO SET master_alive_interval if you are
# using failover.
# master_type: str

# Poll interval in seconds for checking if the master is still there.  Only
# respected if master_type above is "failover". To disable the interval entirely,
# set the value to -1. (This may be necessary on machines which have high numbers
# of TCP connections, such as load balancers.)
# master_alive_interval: 30

# If the minion is in multi-master mode and the master_type configuration option
# is set to "failover", this setting can be set to "True" to force the minion
# to fail back to the first master in the list if the first master is back online.
#master_failback: False

# If the minion is in multi-master mode, the "master_type" configuration is set to
# "failover", and the "master_failback" option is enabled, the master failback
# interval can be set to ping the top master with this interval, in seconds.
#master_failback_interval: 0

# Set whether the minion should connect to the master via IPv6:
#ipv6: False
```

```
# Set the number of seconds to wait before attempting to resolve
# the master hostname if name resolution fails. Defaults to 30 seconds.
# Set to zero if the minion should shutdown and not retry.
# retry_dns: 30

# Set the port used by the master reply and authentication server.
#master_port: 4506

# The user to run salt.
#user: root

# The user to run salt remote execution commands as via sudo. If this option is
# enabled then sudo will be used to change the active user executing the remote
# command. If enabled the user will need to be allowed access via the sudoers
# file for the user that the salt minion is configured to run as. The most
# common option would be to use the root user. If this option is set the user
# option should also be set to a non-root user. If migrating from a root minion
# to a non root minion the minion cache should be cleared and the minion pki
# directory will need to be changed to the ownership of the new user.
#sudo_user: root

# Specify the location of the daemon process ID file.
#pidfile: /var/run/salt-minion.pid

# The root directory prepended to these options: pki_dir, cachedir, log_file,
# sock_dir, pidfile.
#root_dir: /

# The path to the minion's configuration file.
#conf_file: /etc/salt/minion

# The directory to store the pki information in
#pki_dir: /etc/salt/pki/minion

# Explicitly declare the id for this minion to use, if left commented the id
# will be the hostname as returned by the python call: socket.getfqdn()
# Since salt uses detached ids it is possible to run multiple minions on the
# same machine but with different ids, this can be useful for salt compute
# clusters.
#id:

# Cache the minion id to a file when the minion's id is not statically defined
# in the minion config. Defaults to "True". This setting prevents potential
# problems when automatic minion id resolution changes, which can cause the
# minion to lose connection with the master. To turn off minion id caching,
# set this config to ``False``.
#minion_id_caching: True

# Append a domain to a hostname in the event that it does not exist.  This is
# useful for systems where socket.getfqdn() does not actually result in a
# FQDN (for instance, Solaris).
#append_domain:

# Custom static grains for this minion can be specified here and used in SLS
# files just like all other grains. This example sets 4 custom grains, with
# the 'roles' grain having two values that can be matched against.
#grains:
```

```
#  roles:
#    - webserver
#    - memcache
#  deployment: datacenter4
#  cabinet: 13
#  cab_u: 14-15
#
# Where cache data goes.
# This data may contain sensitive data and should be protected accordingly.
#cachedir: /var/cache/salt/minion

# Append minion_id to these directories.  Helps with
# multiple proxies and minions running on the same machine.
# Allowed elements in the list: pki_dir, cachedir, extension_modules
# Normally not needed unless running several proxies and/or minions on the same machine
# Defaults to ['cachedir'] for proxies, [] (empty list) for regular minions
#append_minionid_config_dirs:

# Verify and set permissions on configuration directories at startup.
#verify_env: True

# The minion can locally cache the return data from jobs sent to it, this
# can be a good way to keep track of jobs the minion has executed
# (on the minion side). By default this feature is disabled, to enable, set
# cache_jobs to True.
#cache_jobs: False

# Set the directory used to hold unix sockets.
#sock_dir: /var/run/salt/minion

# Set the default outputter used by the salt-call command. The default is
# "nested".
#output: nested
#
# By default output is colored. To disable colored output, set the color value
# to False.
#color: True

# Do not strip off the colored output from nested results and state outputs
# (true by default).
# strip_colors: False

# Backup files that are replaced by file.managed and file.recurse under
# 'cachedir'/file_backups relative to their original location and appended
# with a timestamp. The only valid setting is "minion". Disabled by default.
#
# Alternatively this can be specified for each file in state files:
# /etc/ssh/sshd_config:
#   file.managed:
#     - source: salt://ssh/sshd_config
#     - backup: minion
#
#backup_mode: minion

# When waiting for a master to accept the minion's public key, salt will
# continuously attempt to reconnect until successful. This is the time, in
# seconds, between those reconnection attempts.
#acceptance_wait_time: 10
```

```
# If this is nonzero, the time between reconnection attempts will increase by
# acceptance_wait_time seconds per iteration, up to this maximum. If this is
# set to zero, the time between reconnection attempts will stay constant.
#acceptance_wait_time_max: 0

# If the master rejects the minion's public key, retry instead of exiting.
# Rejected keys will be handled the same as waiting on acceptance.
#rejected_retry: False

# When the master key changes, the minion will try to re-auth itself to receive
# the new master key. In larger environments this can cause a SYN flood on the
# master because all minions try to re-auth immediately. To prevent this and
# have a minion wait for a random amount of time, use this optional parameter.
# The wait-time will be a random number of seconds between 0 and the defined value.
#random_reauth_delay: 60

# When waiting for a master to accept the minion's public key, salt will
# continuously attempt to reconnect until successful. This is the timeout value,
# in seconds, for each individual attempt. After this timeout expires, the minion
# will wait for acceptance_wait_time seconds before trying again. Unless your master
# is under unusually heavy load, this should be left at the default.
#auth_timeout: 60

# Number of consecutive SaltReqTimeoutError that are acceptable when trying to
# authenticate.
#auth_tries: 7

# The number of attempts to connect to a master before giving up.
# Set this to -1 for unlimited attempts. This allows for a master to have
# downtime and the minion to reconnect to it later when it comes back up.
# In 'failover' mode, it is the number of attempts for each set of masters.
# In this mode, it will cycle through the list of masters for each attempt.
#
# This is different than auth_tries because auth_tries attempts to
# retry auth attempts with a single master. auth_tries is under the
# assumption that you can connect to the master but not gain
# authorization from it. master_tries will still cycle through all
# the masters in a given try, so it is appropriate if you expect
# occasional downtime from the master(s).
#master_tries: 1

# If authentication fails due to SaltReqTimeoutError during a ping_interval,
# cause sub minion process to restart.
#auth_safemode: False

# Ping Master to ensure connection is alive (minutes).
#ping_interval: 0

# To auto recover minions if master changes IP address (DDNS)
#    auth_tries: 10
#    auth_safemode: False
#    ping_interval: 90
#
# Minions won't know master is missing until a ping fails. After the ping fail,
# the minion will attempt authentication and likely fails out and cause a restart.
# When the minion restarts it will resolve the masters IP and attempt to reconnect.
```

```
# If you don't have any problems with syn-floods, don't bother with the
# three recon_* settings described below, just leave the defaults!
#
# The ZeroMQ pull-socket that binds to the masters publishing interface tries
# to reconnect immediately, if the socket is disconnected (for example if
# the master processes are restarted). In large setups this will have all
# minions reconnect immediately which might flood the master (the ZeroMQ-default
# is usually a 100ms delay). To prevent this, these three recon_* settings
# can be used.
# recon_default: the interval in milliseconds that the socket should wait before
#                trying to reconnect to the master (1000ms = 1 second)
#
# recon_max: the maximum time a socket should wait. each interval the time to wait
#            is calculated by doubling the previous time. if recon_max is reached,
#            it starts again at recon_default. Short example:
#
#            reconnect 1: the socket will wait 'recon_default' milliseconds
#            reconnect 2: 'recon_default' * 2
#            reconnect 3: ('recon_default' * 2) * 2
#            reconnect 4: value from previous interval * 2
#            reconnect 5: value from previous interval * 2
#            reconnect x: if value >= recon_max, it starts again with recon_default
#
# recon_randomize: generate a random wait time on minion start. The wait time will
#                  be a random value between recon_default and recon_default +
#                  recon_max. Having all minions reconnect with the same recon_default
#                  and recon_max value kind of defeats the purpose of being able to
#                  change these settings. If all minions have the same values and your
#                  setup is quite large (several thousand minions), they will still
#                  flood the master. The desired behavior is to have timeframe within
#                  all minions try to reconnect.
#
# Example on how to use these settings. The goal: have all minions reconnect within a
# 60 second timeframe on a disconnect.
# recon_default: 1000
# recon_max: 59000
# recon_randomize: True
#
# Each minion will have a randomized reconnect value between 'recon_default'
# and 'recon_default + recon_max', which in this example means between 1000ms
# 60000ms (or between 1 and 60 seconds). The generated random-value will be
# doubled after each attempt to reconnect. Lets say the generated random
# value is 11 seconds (or 11000ms).
# reconnect 1: wait 11 seconds
# reconnect 2: wait 22 seconds
# reconnect 3: wait 33 seconds
# reconnect 4: wait 44 seconds
# reconnect 5: wait 55 seconds
# reconnect 6: wait time is bigger than 60 seconds (recon_default + recon_max)
# reconnect 7: wait 11 seconds
# reconnect 8: wait 22 seconds
# reconnect 9: wait 33 seconds
# reconnect x: etc.
#
# In a setup with ~6000 thousand hosts these settings would average the reconnects
# to about 100 per second and all hosts would be reconnected within 60 seconds.
# recon_default: 100
# recon_max: 5000
```

```
# recon_randomize: False
#
#
# The loop_interval sets how long in seconds the minion will wait between
# evaluating the scheduler and running cleanup tasks. This defaults to a
# sane 60 seconds, but if the minion scheduler needs to be evaluated more
# often lower this value
#loop_interval: 60

# The grains can be merged, instead of overridden, using this option.
# This allows custom grains to defined different subvalues of a dictionary
# grain. By default this feature is disabled, to enable set grains_deep_merge
# to ``True``.
#grains_deep_merge: False

# The grains_refresh_every setting allows for a minion to periodically check
# its grains to see if they have changed and, if so, to inform the master
# of the new grains. This operation is moderately expensive, therefore
# care should be taken not to set this value too low.
#
# Note: This value is expressed in __minutes__!
#
# A value of 10 minutes is a reasonable default.
#
# If the value is set to zero, this check is disabled.
#grains_refresh_every: 1

# Cache grains on the minion. Default is False.
#grains_cache: False

# Cache rendered pillar data on the minion. Default is False.
# This may cause 'cachedir'/pillar to contain sensitive data that should be
# protected accordingly.
#minion_pillar_cache: False

# Grains cache expiration, in seconds. If the cache file is older than this
# number of seconds then the grains cache will be dumped and fully re-populated
# with fresh data. Defaults to 5 minutes. Will have no effect if 'grains_cache'
# is not enabled.
# grains_cache_expiration: 300

# Determines whether or not the salt minion should run scheduled mine updates.
# Defaults to "True". Set to "False" to disable the scheduled mine updates
# (this essentially just does not add the mine update function to the minion's
# scheduler).
#mine_enabled: True

# Determines whether or not scheduled mine updates should be accompanied by a job
# return for the job cache. Defaults to "False". Set to "True" to include job
# returns in the job cache for mine updates.
#mine_return_job: False

# Example functions that can be run via the mine facility
# NO mine functions are established by default.
# Note these can be defined in the minion's pillar as well.
#mine_functions:
#  test.ping: []
#  network.ip_addrs:
```

```
#    interface: eth0
#    cidr: '10.0.0.0/8'

# Windows platforms lack posix IPC and must rely on slower TCP based inter-
# process communications. Set ipc_mode to 'tcp' on such systems
#ipc_mode: ipc

# Overwrite the default tcp ports used by the minion when in tcp mode
#tcp_pub_port: 4510
#tcp_pull_port: 4511

# Passing very large events can cause the minion to consume large amounts of
# memory. This value tunes the maximum size of a message allowed onto the
# minion event bus. The value is expressed in bytes.
#max_event_size: 1048576

# To detect failed master(s) and fire events on connect/disconnect, set
# master_alive_interval to the number of seconds to poll the masters for
# connection events.
#
#master_alive_interval: 30

# The minion can include configuration from other files. To enable this,
# pass a list of paths to this option. The paths can be either relative or
# absolute; if relative, they are considered to be relative to the directory
# the main minion configuration file lives in (this file). Paths can make use
# of shell-style globbing. If no files are matched by a path passed to this
# option then the minion will log a warning message.
#
# Include a config file from some other path:
# include: /etc/salt/extra_config
#
# Include config from several files and directories:
#include:
#   - /etc/salt/extra_config
#   - /etc/roles/webserver

# The syndic minion can verify that it is talking to the correct master via the
# key fingerprint of the higher-level master with the "syndic_finger" config.
#syndic_finger: ''
#
#
#
#####   Minion module management     #####
##########################################
# Disable specific modules. This allows the admin to limit the level of
# access the master has to the minion.
#disable_modules: [cmd,test]
#disable_returners: []

# This is the reverse of disable_modules.  The default, like disable_modules, is the
 ↪empty list,
# but if this option is set to *anything* then *only* those modules will load.
# Note that this is a very large hammer and it can be quite difficult to keep the
 ↪minion working
# the way you think it should since Salt uses many modules internally itself.  At a
 ↪bare minimum
# you need the following enabled or else the minion won't start.
```

```
#whitelist_modules:
#  - cmdmod
#  - test
#  - config

# Modules can be loaded from arbitrary paths. This enables the easy deployment
# of third party modules. Modules for returners and minions can be loaded.
# Specify a list of extra directories to search for minion modules and
# returners. These paths must be fully qualified!
#module_dirs: []
#returner_dirs: []
#states_dirs: []
#render_dirs: []
#utils_dirs: []
#
# A module provider can be statically overwritten or extended for the minion
# via the providers option, in this case the default module will be
# overwritten by the specified module. In this example the pkg module will
# be provided by the yumpkg5 module instead of the system default.
#providers:
#  pkg: yumpkg5
#
# Enable Cython modules searching and loading. (Default: False)
#cython_enable: False
#
# Specify a max size (in bytes) for modules on import. This feature is currently
# only supported on *nix operating systems and requires psutil.
# modules_max_memory: -1


#####    State Management Settings    #####
###########################################
# The state management system executes all of the state templates on the minion
# to enable more granular control of system state management. The type of
# template and serialization used for state management needs to be configured
# on the minion, the default renderer is yaml_jinja. This is a yaml file
# rendered from a jinja template, the available options are:
# yaml_jinja
# yaml_mako
# yaml_wempy
# json_jinja
# json_mako
# json_wempy
#
#renderer: yaml_jinja
#
# The failhard option tells the minions to stop immediately after the first
# failure detected in the state execution. Defaults to False.
#failhard: False
#
# Reload the modules prior to a highstate run.
#autoload_dynamic_modules: True
#
# clean_dynamic_modules keeps the dynamic modules on the minion in sync with
# the dynamic modules on the master, this means that if a dynamic module is
# not on the master it will be deleted from the minion. By default, this is
# enabled and can be disabled by changing this value to False.
#clean_dynamic_modules: True
```

```
#
# Normally, the minion is not isolated to any single environment on the master
# when running states, but the environment can be isolated on the minion side
# by statically setting it. Remember that the recommended way to manage
# environments is to isolate via the top file.
#environment: None
#
# Isolates the pillar environment on the minion side. This functions the same
# as the environment setting, but for pillar instead of states.
#pillarenv: None
#
# If using the local file directory, then the state top file name needs to be
# defined, by default this is top.sls.
#state_top: top.sls
#
# Run states when the minion daemon starts. To enable, set startup_states to:
# 'highstate' -- Execute state.highstate
# 'sls' -- Read in the sls_list option and execute the named sls files
# 'top' -- Read top_file option and execute based on that file on the Master
#startup_states: ''
#
# List of states to run when the minion starts up if startup_states is 'sls':
#sls_list:
#  - edit.vim
#  - hyper
#
# Top file to execute if startup_states is 'top':
#top_file: ''

# Automatically aggregate all states that have support for mod_aggregate by
# setting to True. Or pass a list of state module names to automatically
# aggregate just those types.
#
# state_aggregate:
#   - pkg
#
#state_aggregate: False

#####     File Directory Settings    #####
##############################################
# The Salt Minion can redirect all file server operations to a local directory,
# this allows for the same state tree that is on the master to be used if
# copied completely onto the minion. This is a literal copy of the settings on
# the master but used to reference a local directory on the minion.

# Set the file client. The client defaults to looking on the master server for
# files, but can be directed to look at the local file directory setting
# defined below by setting it to "local". Setting a local file_client runs the
# minion in masterless mode.
#file_client: remote

# The file directory works on environments passed to the minion, each environment
# can have multiple root directories, the subdirectories in the multiple file
# roots cannot match, otherwise the downloaded files will not be able to be
# reliably ensured. A base environment is required to house the top file.
# Example:
# file_roots:
#   base:
```

```
#     - /srv/salt/
#   dev:
#     - /srv/salt/dev/services
#     - /srv/salt/dev/states
#   prod:
#     - /srv/salt/prod/services
#     - /srv/salt/prod/states
#
#file_roots:
#  base:
#    - /srv/salt

# Uncomment the line below if you do not want the file_server to follow
# symlinks when walking the filesystem tree. This is set to True
# by default. Currently this only applies to the default roots
# fileserver_backend.
#fileserver_followsymlinks: False
#
# Uncomment the line below if you do not want symlinks to be
# treated as the files they are pointing to. By default this is set to
# False. By uncommenting the line below, any detected symlink while listing
# files on the Master will not be returned to the Minion.
#fileserver_ignoresymlinks: True
#
# By default, the Salt fileserver recurses fully into all defined environments
# to attempt to find files. To limit this behavior so that the fileserver only
# traverses directories with SLS files and special Salt directories like _modules,
# enable the option below. This might be useful for installations where a file root
# has a very large number of files and performance is negatively impacted. Default
# is False.
#fileserver_limit_traversal: False

# The hash_type is the hash to use when discovering the hash of a file in
# the local fileserver. The default is sha256, sha224, sha384 and sha512 are also
 ↪supported.
#
# WARNING: While md5 and sha1 are also supported, do not use it due to the high chance
# of possible collisions and thus security breach.
#
# Warning: Prior to changing this value, the minion should be stopped and all
# Salt caches should be cleared.
#hash_type: sha256

# The Salt pillar is searched for locally if file_client is set to local. If
# this is the case, and pillar data is defined, then the pillar_roots need to
# also be configured on the minion:
#pillar_roots:
#  base:
#    - /srv/pillar

# Set a hard-limit on the size of the files that can be pushed to the master.
# It will be interpreted as megabytes. Default: 100
#file_recv_max_size: 100
#
#
######        Security settings       #####
###########################################
# Enable "open mode", this mode still maintains encryption, but turns off
```

```
# authentication, this is only intended for highly secure environments or for
# the situation where your keys end up in a bad state. If you run in open mode
# you do so at your own risk!
#open_mode: False

# Enable permissive access to the salt keys.  This allows you to run the
# master or minion as root, but have a non-root group be given access to
# your pki_dir.  To make the access explicit, root must belong to the group
# you've given access to. This is potentially quite insecure.
#permissive_pki_access: False

# The state_verbose and state_output settings can be used to change the way
# state system data is printed to the display. By default all data is printed.
# The state_verbose setting can be set to True or False, when set to False
# all data that has a result of True and no changes will be suppressed.
#state_verbose: True

# The state_output setting changes if the output is the full multi line
# output for each changed state if set to 'full', but if set to 'terse'
# the output will be shortened to a single line.
#state_output: full

# The state_output_diff setting changes whether or not the output from
# successful states is returned. Useful when even the terse output of these
# states is cluttering the logs. Set it to True to ignore them.
#state_output_diff: False

# The state_output_profile setting changes whether profile information
# will be shown for each state run.
#state_output_profile: True

# Fingerprint of the master public key to validate the identity of your Salt master
# before the initial key exchange. The master fingerprint can be found by running
# "salt-key -F master" on the Salt master.
#master_finger: ''


######         Thread settings        #####
###########################################
# Disable multiprocessing support, by default when a minion receives a
# publication a new process is spawned and the command is executed therein.
#multiprocessing: True


#####         Logging settings       #####
###########################################
# The location of the minion log file
# The minion log can be sent to a regular file, local path name, or network
# location. Remote logging works best when configured to use rsyslogd(8) (e.g.:
# ``file:///dev/log``), with rsyslogd(8) configured for network logging. The URI
# format is: <file|udp|tcp>://<host|socketpath>:<port-if-required>/<log-facility>
#log_file: /var/log/salt/minion
#log_file: file:///dev/log
#log_file: udp://loghost:10514
#
#log_file: /var/log/salt/minion
#key_logfile: /var/log/salt/key
```

```
# The level of messages to send to the console.
# One of 'garbage', 'trace', 'debug', info', 'warning', 'error', 'critical'.
#
# The following log levels are considered INSECURE and may log sensitive data:
# ['garbage', 'trace', 'debug']
#
# Default: 'warning'
#log_level: warning

# The level of messages to send to the log file.
# One of 'garbage', 'trace', 'debug', info', 'warning', 'error', 'critical'.
# If using 'log_granular_levels' this must be set to the highest desired level.
# Default: 'warning'
#log_level_logfile:

# The date and time format used in log messages. Allowed date/time formatting
# can be seen here: http://docs.python.org/library/time.html#time.strftime
#log_datefmt: '%H:%M:%S'
#log_datefmt_logfile: '%Y-%m-%d %H:%M:%S'

# The format of the console logging messages. Allowed formatting options can
# be seen here: http://docs.python.org/library/logging.html#logrecord-attributes
#
# Console log colors are specified by these additional formatters:
#
# %(colorlevel)s
# %(colorname)s
# %(colorprocess)s
# %(colormsg)s
#
# Since it is desirable to include the surrounding brackets, '[' and ']', in
# the coloring of the messages, these color formatters also include padding as
# well.  Color LogRecord attributes are only available for console logging.
#
#log_fmt_console: '%(colorlevel)s %(colormsg)s'
#log_fmt_console: '[%(levelname)-8s] %(message)s'
#
#log_fmt_logfile: '%(asctime)s,%(msecs)03.0f [%(name)-17s][%(levelname)-8s] %(message)s
 ↪'

# This can be used to control logging levels more specificically.  This
# example sets the main salt library at the 'warning' level, but sets
# 'salt.modules' to log at the 'debug' level:
#   log_granular_levels:
#     'salt': 'warning'
#     'salt.modules': 'debug'
#
#log_granular_levels: {}

# To diagnose issues with minions disconnecting or missing returns, ZeroMQ
# supports the use of monitor sockets to log connection events. This
# feature requires ZeroMQ 4.0 or higher.
#
# To enable ZeroMQ monitor sockets, set 'zmq_monitor' to 'True' and log at a
# debug level or higher.
#
# A sample log event is as follows:
#
```

```
# [DEBUG   ] ZeroMQ event: {'endpoint': 'tcp://127.0.0.1:4505', 'event': 512,
# 'value': 27, 'description': 'EVENT_DISCONNECTED'}
#
# All events logged will include the string 'ZeroMQ event'. A connection event
# should be logged as the minion starts up and initially connects to the
# master. If not, check for debug log level and that the necessary version of
# ZeroMQ is installed.
#
#zmq_monitor: False

######      Module configuration      #####
###########################################
# Salt allows for modules to be passed arbitrary configuration data, any data
# passed here in valid yaml format will be passed on to the salt minion modules
# for use. It is STRONGLY recommended that a naming convention be used in which
# the module name is followed by a . and then the value. Also, all top level
# data must be applied via the yaml dict construct, some examples:
#
# You can specify that all modules should run in test mode:
#test: True
#
# A simple value for the test module:
#test.foo: foo
#
# A list for the test module:
#test.bar: [baz,quo]
#
# A dict for the test module:
#test.baz: {spam: sausage, cheese: bread}
#
#
######      Update settings          ######
###########################################
# Using the features in Esky, a salt minion can both run as a frozen app and
# be updated on the fly. These options control how the update process
# (saltutil.update()) behaves.
#
# The url for finding and downloading updates. Disabled by default.
#update_url: False
#
# The list of services to restart after a successful update. Empty by default.
#update_restart_services: []


######      Keepalive settings        ######
###########################################
# ZeroMQ now includes support for configuring SO_KEEPALIVE if supported by
# the OS. If connections between the minion and the master pass through
# a state tracking device such as a firewall or VPN gateway, there is
# the risk that it could tear down the connection the master and minion
# without informing either party that their connection has been taken away.
# Enabling TCP Keepalives prevents this from happening.

# Overall state of TCP Keepalives, enable (1 or True), disable (0 or False)
# or leave to the OS defaults (-1), on Linux, typically disabled. Default True, enabled.
#tcp_keepalive: True

# How long before the first keepalive should be sent in seconds. Default 300
```

```
# to send the first keepalive after 5 minutes, OS default (-1) is typically 7200 seconds
# on Linux see /proc/sys/net/ipv4/tcp_keepalive_time.
#tcp_keepalive_idle: 300

# How many lost probes are needed to consider the connection lost. Default -1
# to use OS defaults, typically 9 on Linux, see /proc/sys/net/ipv4/tcp_keepalive_probes.
#tcp_keepalive_cnt: -1

# How often, in seconds, to send keepalives after the first one. Default -1 to
# use OS defaults, typically 75 seconds on Linux, see
# /proc/sys/net/ipv4/tcp_keepalive_intvl.
#tcp_keepalive_intvl: -1


######   Windows Software settings    ######
############################################
# Location of the repository cache file on the master:
#win_repo_cachefile: 'salt://win/repo/winrepo.p'


######      Returner  settings        ######
############################################
# Default Minion returners. Can be a comma delimited string or a list:
#
#return: mysql
#
#return: mysql,slack,redis
#
#return:
#  - mysql
#  - hipchat
#  - slack


######    Miscellaneous  settings     ######
############################################
# Default match type for filtering events tags: startswith, endswith, find, regex,
 ↪fnmatch
#event_match_type: startswith
```

## 2.4 Minion Blackout Configuration

New in version 2016.3.0.

Salt supports minion blackouts. When a minion is in blackout mode, all remote execution commands are disabled. This allows production minions to be put ``on hold'', eliminating the risk of an untimely configuration change.

Minion blackouts are configured via a special pillar key, `minion_blackout`. If this key is set to `True`, then the minion will reject all incoming commands, except for `saltutil.refresh_pillar`. (The exception is important, so minions can be brought out of blackout mode)

Salt also supports an explicit whitelist of additional functions that will be allowed during blackout. This is configured with the special pillar key `minion_blackout_whitelist`, which is formed as a list:

```
minion_blackout_whitelist:
  - test.ping
```

```
  - pillar.get
```

## 2.5 Access Control System

New in version 0.10.4.

Salt maintains a standard system used to open granular control to non administrative users to execute Salt commands. The access control system has been applied to all systems used to configure access to non administrative control interfaces in Salt.

These interfaces include, the `peer` system, the `external auth` system and the `publisher acl` system.

The access control system mandated a standard configuration syntax used in all of the three aforementioned systems. While this adds functionality to the configuration in 0.10.4, it does not negate the old configuration.

Now specific functions can be opened up to specific minions from specific users in the case of external auth and publisher ACLs, and for specific minions in the case of the peer system.

### 2.5.1 Publisher ACL system

The salt publisher ACL system is a means to allow system users other than root to have access to execute select salt commands on minions from the master.

The publisher ACL system is configured in the master configuration file via the `publisher_acl` configuration option. Under the `publisher_acl` configuration option the users open to send commands are specified and then a list of regular expressions which specify the minion functions which will be made available to specified user. This configuration is much like the `peer` configuration:

```
publisher_acl:
  # Allow thatch to execute anything.
  thatch:
    - .*
  # Allow fred to use test and pkg, but only on "web*" minions.
  fred:
    - web*:
      - test.*
      - pkg.*
```

WARNING: client_acl and client_acl_blacklist options are deprecated and will be removed in the future releases. Use publisher_acl and publisher_acl_blacklist instead.

#### Permission Issues

Directories required for `publisher_acl` must be modified to be readable by the users specified:

```
chmod 755 /var/cache/salt /var/cache/salt/master /var/cache/salt/master/jobs /var/run/
↪salt /var/run/salt/master
```

**Note:** In addition to the changes above you will also need to modify the permissions of /var/log/salt and the existing log file to be writable by the user(s) which will be running the commands. If you do not wish to do this then you must disable logging or Salt will generate errors as it cannot write to the logs as the system users.

If you are upgrading from earlier versions of salt you must also remove any existing user keys and re-start the Salt master:

```
rm /var/cache/salt/.*key
service salt-master restart
```

#### Whitelist and Blacklist

Salt's authentication systems can be configured by specifying what is allowed using a whitelist, or by specifying what is disallowed using a blacklist. If you specify a whitelist, only specified operations are allowed. If you specify a blacklist, all operations are allowed except those that are blacklisted.

See *publisher_acl* and *publisher_acl_blacklist*.

### 2.5.2 External Authentication System

Salt's External Authentication System (eAuth) allows for Salt to pass through command authorization to any external authentication system, such as PAM or LDAP.

**Note**: eAuth using the PAM external auth system requires salt-master to be run as root as this system needs root access to check authentication.

#### External Authentication System Configuration

The external authentication system allows for specific users to be granted access to execute specific functions on specific minions. Access is configured in the master configuration file and uses the *access control system*:

```
external_auth:
  pam:
    thatch:
      - 'web*':
        - test.*
        - network.*
    steve:
      - .*
```

The above configuration allows the user `thatch` to execute functions in the test and network modules on the minions that match the web* target. User `steve` is given unrestricted access to minion commands.

Salt respects the current PAM configuration in place, and uses the `login' service to authenticate.

**Note**: The PAM module does not allow authenticating as `root`.

**Note**: state.sls and state.highstate will return ``Failed to authenticate!'' if the request timeout is reached. Use -t flag to increase the timeout

To allow access to *wheel modules* or *runner modules* the following `@` syntax must be used:

```
external_auth:
  pam:
    thatch:
      - '@wheel'   # to allow access to all wheel modules
      - '@runner'  # to allow access to all runner modules
      - '@jobs'    # to allow access to the jobs runner and/or wheel module
```

**Note**: The runner/wheel markup is different, since there are no minions to scope the acl to.

**Note**: Globs will not match wheel or runners! They must be explicitly allowed with @wheel or @runner.

**Warning**: All users that have external authentication privileges are allowed to run *saltutil.findjob*. Be aware that this could inadvertently expose some data such as minion IDs.

### Matching syntax

The structure of the `external_auth` dictionary can take the following shapes. Function matches are regular expressions; minion matches are compound targets.

By user:

```
external_auth:
  <eauth backend>:
    <user or group%>:
      - <regex to match function>
```

By user, by minion:

```
external_auth:
  <eauth backend>:
    <user or group%>:
      <minion compound target>:
        - <regex to match function>
```

### Groups

To apply permissions to a group of users in an external authentication system, append a % to the ID:

```
external_auth:
  pam:
    admins%:
      - '*':
        - 'pkg.*'
```

### Limiting by function arguments

Positional arguments or keyword arguments to functions can also be whitelisted.

New in version 2016.3.0.

```
external_auth:
  pam:
    my_user:
      - '*':
        - 'my_mod.*':
            args:
            - 'a.*'
            - 'b.*'
            kwargs:
              'kwa': 'kwa.*'
              'kwb': 'kwb'
```

The rules:

1. The arguments values are matched as regexp.
2. If arguments restrictions are specified the only matched are allowed.
3. If an argument isn't specified any value is allowed.
4. To skip an arg use ``everything'' regexp `.*`. I.e. if `arg0` and `arg2` should be limited but `arg1` and other arguments could have any value use:

   ```
   args:
     - 'value0'
     - '.*'
     - 'value2'
   ```

### Usage

The external authentication system can then be used from the command-line by any user on the same system as the master with the `-a` option:

```
$ salt -a pam web\* test.ping
```

The system will ask the user for the credentials required by the authentication system and then publish the command.

### Tokens

With external authentication alone, the authentication credentials will be required with every call to Salt. This can be alleviated with Salt tokens.

Tokens are short term authorizations and can be easily created by just adding a `-T` option when authenticating:

```
$ salt -T -a pam web\* test.ping
```

Now a token will be created that has an expiration of 12 hours (by default). This token is stored in a file named `salt_token` in the active user's home directory.

Once the token is created, it is sent with all subsequent communications. User authentication does not need to be entered again until the token expires.

Token expiration time can be set in the Salt master config file.

### LDAP and Active Directory

**Note**: LDAP usage requires that you have installed python-ldap.

Salt supports both user and group authentication for LDAP (and Active Directory accessed via its LDAP interface)

### OpenLDAP and similar systems

LDAP configuration happens in the Salt master configuration file.

Server configuration values and their defaults:

```
# Server to auth against
auth.ldap.server: localhost

# Port to connect via
auth.ldap.port: 389

# Use TLS when connecting
auth.ldap.tls: False

# LDAP scope level, almost always 2
auth.ldap.scope: 2

# Server specified in URI format
auth.ldap.uri: ''    # Overrides .ldap.server, .ldap.port, .ldap.tls above

# Verify server's TLS certificate
auth.ldap.no_verify: False

# Bind to LDAP anonymously to determine group membership
# Active Directory does not allow anonymous binds without special configuration
auth.ldap.anonymous: False

# FOR TESTING ONLY, this is a VERY insecure setting.
# If this is True, the LDAP bind password will be ignored and
# access will be determined by group membership alone with
# the group memberships being retrieved via anonymous bind
auth.ldap.auth_by_group_membership_only: False

# Require authenticating user to be part of this Organizational Unit
# This can be blank if your LDAP schema does not use this kind of OU
auth.ldap.groupou: 'Groups'

# Object Class for groups.  An LDAP search will be done to find all groups of this
# class to which the authenticating user belongs.
auth.ldap.groupclass: 'posixGroup'

# Unique ID attribute name for the user
auth.ldap.accountattributename: 'memberUid'

# These are only for Active Directory
auth.ldap.activedirectory: False
auth.ldap.persontype: 'person'

auth.ldap.minion_stripdomains: []
```

There are two phases to LDAP authentication. First, Salt authenticates to search for a users' Distinguished Name and group membership. The user it authenticates as in this phase is often a special LDAP system user with read-only access to the LDAP directory. After Salt searches the directory to determine the actual user's DN and groups, it re-authenticates as the user running the Salt commands.

If you are already aware of the structure of your DNs and permissions in your LDAP store are set such that users can look up their own group memberships, then the first and second users can be the same. To tell Salt this is the case, omit the `auth.ldap.bindpw` parameter. You can template the `binddn` like this:

```
auth.ldap.basedn: dc=saltstack,dc=com
auth.ldap.binddn: uid={{ username }},cn=users,cn=accounts,dc=saltstack,dc=com
```

Salt will use the password entered on the salt command line in place of the bindpw.

To use two separate users, specify the LDAP lookup user in the binddn directive, and include a bindpw like so

```
auth.ldap.binddn: uid=ldaplookup,cn=sysaccounts,cn=etc,dc=saltstack,dc=com
auth.ldap.bindpw: mypassword
```

As mentioned before, Salt uses a filter to find the DN associated with a user. Salt substitutes the `{{ username }}` value for the username when querying LDAP

```
auth.ldap.filter: uid={{ username }}
```

For OpenLDAP, to determine group membership, one can specify an OU that contains group data. This is prepended to the basedn to create a search path. Then the results are filtered against `auth.ldap.groupclass`, default `posixGroup`, and the account's `name' attribute, `memberUid` by default.

```
auth.ldap.groupou: Groups
```

When using the *ldap(`DC=domain,DC=com')* eauth operator, sometimes the records returned from LDAP or Active Directory have fully-qualified domain names attached, while minion IDs instead are simple hostnames. The parameter below allows the administrator to strip off a certain set of domain names so the hostnames looked up in the directory service can match the minion IDs.

```
auth.ldap.minion_stripdomains: ['.external.bigcorp.com', '.internal.bigcorp.com']
```

### Active Directory

Active Directory handles group membership differently, and does not utilize the `groupou` configuration variable. AD needs the following options in the master config:

```
auth.ldap.activedirectory: True
auth.ldap.filter: sAMAccountName={{username}}
auth.ldap.accountattributename: sAMAccountName
auth.ldap.groupclass: group
auth.ldap.persontype: person
```

To determine group membership in AD, the username and password that is entered when LDAP is requested as the eAuth mechanism on the command line is used to bind to AD's LDAP interface. If this fails, then it doesn't matter what groups the user belongs to, he or she is denied access. Next, the `distinguishedName` of the user is looked up with the following LDAP search:

```
(&(<value of auth.ldap.accountattributename>={{username}})
  (objectClass=<value of auth.ldap.persontype>)
)
```

This should return a distinguishedName that we can use to filter for group membership. Then the following LDAP query is executed:

```
(&(member=<distinguishedName from search above>)
  (objectClass=<value of auth.ldap.groupclass>)
)
```

```
external_auth:
  ldap:
    test_ldap_user:
        - '*':
            - test.ping
```

To configure a LDAP group, append a % to the ID:

```
external_auth:
  ldap:
    test_ldap_group%:
      - '*':
        - test.echo
```

In addition, if there are a set of computers in the directory service that should be part of the eAuth definition, they can be specified like this:

```
external_auth:
  ldap:
    test_ldap_group%:
      - ldap('DC=corp,DC=example,DC=com'):
        - test.echo
```

The string inside *ldap()* above is any valid LDAP/AD tree limiter. *OU=* in particular is permitted as long as it would return a list of computer objects.

### 2.5.3 Peer Communication

Salt 0.9.0 introduced the capability for Salt minions to publish commands. The intent of this feature is not for Salt minions to act as independent brokers one with another, but to allow Salt minions to pass commands to each other.

In Salt 0.10.0 the ability to execute runners from the master was added. This allows for the master to return collective data from runners back to the minions via the peer interface.

The peer interface is configured through two options in the master configuration file. For minions to send commands from the master the `peer` configuration is used. To allow for minions to execute runners from the master the `peer_run` configuration is used.

Since this presents a viable security risk by allowing minions access to the master publisher the capability is turned off by default. The minions can be allowed access to the master publisher on a per minion basis based on regular expressions. Minions with specific ids can be allowed access to certain Salt modules and functions.

### Peer Configuration

The configuration is done under the `peer` setting in the Salt master configuration file, here are a number of configuration possibilities.

The simplest approach is to enable all communication for all minions, this is only recommended for very secure environments.

```
peer:
  .*:
    - .*
```

This configuration will allow minions with IDs ending in example.com access to the test, ps, and pkg module functions.

```
peer:
  .*example.com:
    - test.*
    - ps.*
    - pkg.*
```

The configuration logic is simple, a regular expression is passed for matching minion ids, and then a list of expressions matching minion functions is associated with the named minion. For instance, this configuration will also allow minions ending with foo.org access to the publisher.

```
peer:
  .*example.com:
    - test.*
    - ps.*
    - pkg.*
  .*foo.org:
    - test.*
    - ps.*
    - pkg.*
```

**Note:** Functions are matched using regular expressions.

### Peer Runner Communication

Configuration to allow minions to execute runners from the master is done via the `peer_run` option on the master. The `peer_run` configuration follows the same logic as the `peer` option. The only difference is that access is granted to runner modules.

To open up access to all minions to all runners:

```
peer_run:
  .*:
    - .*
```

This configuration will allow minions with IDs ending in example.com access to the manage and jobs runner functions.

```
peer_run:
  .*example.com:
```

```
    - manage.*
    - jobs.*
```

**Note:** Functions are matched using regular expressions.

#### Using Peer Communication

The publish module was created to manage peer communication. The publish module comes with a number of functions to execute peer communication in different ways. Currently there are three functions in the publish module. These examples will show how to test the peer system via the salt-call command.

To execute test.ping on all minions:

```
# salt-call publish.publish \* test.ping
```

To execute the manage.up runner:

```
# salt-call publish.runner manage.up
```

To match minions using other matchers, use `expr_form`:

```
# salt-call publish.publish 'webserv* and not G@os:Ubuntu' test.ping expr_form=
 ↪'compound'
```

**Note:** The expr_form argument will be renamed to `tgt_type` in the Nitrogen release of Salt.

### 2.5.4 When to Use Each Authentication System

`publisher_acl` is useful for allowing local system users to run Salt commands without giving them root access. If you can log into the Salt master directly, then `publisher_acl` allows you to use Salt without root privileges. If the local system is configured to authenticate against a remote system, like LDAP or Active Directory, then `publisher_acl` will interact with the remote system transparently.

`external_auth` is useful for `salt-api` or for making your own scripts that use Salt's Python API. It can be used at the CLI (with the `-a` flag) but it is more cumbersome as there are more steps involved. The only time it is useful at the CLI is when the local system is *not* configured to authenticate against an external service *but* you still want Salt to authenticate against an external service.

### 2.5.5 Examples

The access controls are manifested using matchers in these configurations:

```
publisher_acl:
  fred:
    - web\*:
      - pkg.list_pkgs
      - test.*
      - apache.*
```

In the above example, fred is able to send commands only to minions which match the specified glob target. This can be expanded to include other functions for other minions based on standard targets (all matchers are supported except the compound one).

```
external_auth:
  pam:
    dave:
      - test.ping
      - mongo\*:
        - network.*
      - log\*:
        - network.*
        - pkg.*
      - 'G@os:RedHat':
        - kmod.*
    steve:
      - .*
```

The above allows for all minions to be hit by test.ping by dave, and adds a few functions that dave can execute on other minions. It also allows steve unrestricted access to salt commands.

**Note:** Functions are matched using regular expressions.

## 2.6 Job Management

New in version 0.9.7.

Since Salt executes jobs running on many systems, Salt needs to be able to manage jobs running on many systems.

### 2.6.1 The Minion proc System

Salt Minions maintain a *proc* directory in the Salt `cachedir`. The *proc* directory maintains files named after the executed job ID. These files contain the information about the current running jobs on the minion and allow for jobs to be looked up. This is located in the *proc* directory under the cachedir, with a default configuration it is under `/var/cache/salt/proc`.

### 2.6.2 Functions in the saltutil Module

Salt 0.9.7 introduced a few new functions to the *`saltutil`* module for managing jobs. These functions are:

1. `running` Returns the data of all running jobs that are found in the *proc* directory.
2. `find_job` Returns specific data about a certain job based on job id.
3. `signal_job` Allows for a given jid to be sent a signal.
4. `term_job` Sends a termination signal (SIGTERM, 15) to the process controlling the specified job.
5. `kill_job` Sends a kill signal (SIGKILL, 9) to the process controlling the specified job.

These functions make up the core of the back end used to manage jobs at the minion level.

### 2.6.3 The jobs Runner

A convenience runner front end and reporting system has been added as well. The jobs runner contains functions to make viewing data easier and cleaner.

The jobs runner contains a number of functions...

#### active

The active function runs saltutil.running on all minions and formats the return data about all running jobs in a much more usable and compact format. The active function will also compare jobs that have returned and jobs that are still running, making it easier to see what systems have completed a job and what systems are still being waited on.

```
# salt-run jobs.active
```

#### lookup_jid

When jobs are executed the return data is sent back to the master and cached. By default it is cached for 24 hours, but this can be configured via the `keep_jobs` option in the master configuration. Using the lookup_jid runner will display the same return data that the initial job invocation with the salt command would display.

```
# salt-run jobs.lookup_jid <job id number>
```

#### list_jobs

Before finding a historic job, it may be required to find the job id. `list_jobs` will parse the cached execution data and display all of the job data for jobs that have already, or partially returned.

```
# salt-run jobs.list_jobs
```

### 2.6.4 Scheduling Jobs

Salt's scheduling system allows incremental executions on minions or the master. The schedule system exposes the execution of any execution function on minions or any runner on the master.

Scheduling can be enabled by multiple methods:

- `schedule` option in either the master or minion config files. These require the master or minion application to be restarted in order for the schedule to be implemented.
- Minion pillar data. Schedule is implemented by refreshing the minion's pillar data, for example by using `saltutil.refresh_pillar`.
- The *schedule state* or *schedule module*

---

**Note**: The scheduler executes different functions on the master and minions. When running on the master the functions reference runner functions, when running on the minion the functions specify execution functions.

---

A scheduled run has no output on the minion unless the config is set to info level or higher. Refer to `minion-logging-settings`.

States are executed on the minion, as all states are. You can pass positional arguments and provide a YAML dict of named arguments.

```
schedule:
  job1:
    function: state.sls
    seconds: 3600
    args:
      - httpd
    kwargs:
      test: True
```

This will schedule the command: `state.sls httpd test=True` every 3600 seconds (every hour).

```
schedule:
  job1:
    function: state.sls
    seconds: 3600
    args:
      - httpd
    kwargs:
      test: True
    splay: 15
```

This will schedule the command: `state.sls httpd test=True` every 3600 seconds (every hour) splaying the time between 0 and 15 seconds.

```
schedule:
  job1:
    function: state.sls
    seconds: 3600
    args:
      - httpd
    kwargs:
      test: True
    splay:
      start: 10
      end: 15
```

This will schedule the command: `state.sls httpd test=True` every 3600 seconds (every hour) splaying the time between 10 and 15 seconds.

### Schedule by Date and Time

New in version 2014.7.0.

Frequency of jobs can also be specified using date strings supported by the Python `dateutil` library. This requires the Python `dateutil` library to be installed.

```
schedule:
  job1:
    function: state.sls
    args:
      - httpd
    kwargs:
      test: True
    when: 5:00pm
```

This will schedule the command: `state.sls httpd test=True` at 5:00 PM minion localtime.

```
schedule:
  job1:
    function: state.sls
    args:
      - httpd
    kwargs:
      test: True
    when:
      - Monday 5:00pm
      - Tuesday 3:00pm
      - Wednesday 5:00pm
      - Thursday 3:00pm
      - Friday 5:00pm
```

This will schedule the command: `state.sls httpd test=True` at 5:00 PM on Monday, Wednesday and Friday, and 3:00 PM on Tuesday and Thursday.

```
schedule:
  job1:
    function: state.sls
    seconds: 3600
    args:
      - httpd
    kwargs:
      test: True
    range:
      start: 8:00am
      end: 5:00pm
```

This will schedule the command: `state.sls httpd test=True` every 3600 seconds (every hour) between the hours of 8:00 AM and 5:00 PM. The range parameter must be a dictionary with the date strings using the `dateutil` format.

```
schedule:
  job1:
    function: state.sls
    seconds: 3600
    args:
      - httpd
    kwargs:
      test: True
    range:
      invert: True
      start: 8:00am
      end: 5:00pm
```

Using the invert option for range, this will schedule the command `state.sls httpd test=True` every 3600 seconds (every hour) until the current time is between the hours of 8:00 AM and 5:00 PM. The range parameter must be a dictionary with the date strings using the `dateutil` format.

```
schedule:
  job1:
    function: pkg.install
    kwargs:
      pkgs: [{'bar': '>1.2.3'}]
      refresh: true
```

```
    once: '2016-01-07T14:30:00'
```

This will schedule the function `pkg.install` to be executed once at the specified time. The schedule entry `job1` will not be removed after the job completes, therefore use `schedule.delete` to manually remove it afterwards.

The default date format is ISO 8601 but can be overridden by also specifying the `once_fmt` option, like this:

```
schedule:
  job1:
    function: test.ping
    once: 2015-04-22T20:21:00
    once_fmt: '%Y-%m-%dT%H:%M:%S'
```

#### Maximum Parallel Jobs Running

New in version 2014.7.0.

The scheduler also supports ensuring that there are no more than N copies of a particular routine running. Use this for jobs that may be long-running and could step on each other or pile up in case of infrastructure outage.

The default for `maxrunning` is 1.

```
schedule:
  long_running_job:
    function: big_file_transfer
    jid_include: True
    maxrunning: 1
```

#### Cron-like Schedule

New in version 2014.7.0.

```
schedule:
  job1:
    function: state.sls
    cron: '*/15 * * * *'
    args:
      - httpd
    kwargs:
      test: True
```

The scheduler also supports scheduling jobs using a cron like format. This requires the Python `croniter` library.

#### Job Data Return

New in version 2015.5.0.

By default, data about jobs runs from the Salt scheduler is returned to the master. Setting the `return_job` parameter to False will prevent the data from being sent back to the Salt master.

```
schedule:
  job1:
    function: scheduled_job_function
    return_job: False
```

### Job Metadata

New in version 2015.5.0.

It can be useful to include specific data to differentiate a job from other jobs. Using the metadata parameter special values can be associated with a scheduled job. These values are not used in the execution of the job, but can be used to search for specific jobs later if combined with the `return_job` parameter. The metadata parameter must be specified as a dictionary, othewise it will be ignored.

```
schedule:
  job1:
    function: scheduled_job_function
    metadata:
      foo: bar
```

### Run on Start

New in version 2015.5.0.

By default, any job scheduled based on the startup time of the minion will run the scheduled job when the minion starts up. Sometimes this is not the desired situation. Using the `run_on_start` parameter set to `False` will cause the scheduler to skip this first run and wait until the next scheduled run:

```
schedule:
  job1:
    function: state.sls
    seconds: 3600
    run_on_start: False
    args:
      - httpd
    kwargs:
      test: True
```

### Until and After

New in version 2015.8.0.

```
schedule:
  job1:
    function: state.sls
    seconds: 15
    until: '12/31/2015 11:59pm'
    args:
      - httpd
    kwargs:
      test: True
```

Using the until argument, the Salt scheduler allows you to specify an end time for a scheduled job. If this argument is specified, jobs will not run once the specified time has passed. Time should be specified in a format supported by the `dateutil` library. This requires the Python `dateutil` library to be installed.

New in version 2015.8.0.

```
schedule:
  job1:
    function: state.sls
```

```
    seconds: 15
    after: '12/31/2015 11:59pm'
    args:
      - httpd
    kwargs:
      test: True
```

Using the after argument, the Salt scheduler allows you to specify an start time for a scheduled job. If this argument is specified, jobs will not run until the specified time has passed. Time should be specified in a format supported by the `dateutil` library. This requires the Python `dateutil` library to be installed.

### Scheduling States

```
schedule:
  log-loadavg:
    function: cmd.run
    seconds: 3660
    args:
      - 'logger -t salt < /proc/loadavg'
    kwargs:
      stateful: False
      shell: /bin/sh
```

### Scheduling Highstates

To set up a highstate to run on a minion every 60 minutes set this in the minion config or pillar:

```
schedule:
  highstate:
    function: state.highstate
    minutes: 60
```

Time intervals can be specified as seconds, minutes, hours, or days.

### Scheduling Runners

Runner executions can also be specified on the master within the master configuration file:

```
schedule:
  run_my_orch:
    function: state.orchestrate
    hours: 6
    splay: 600
    args:
      - orchestration.my_orch
```

The above configuration is analogous to running `salt-run state.orch orchestration.my_orch` every 6 hours.

### Scheduler With Returner

The scheduler is also useful for tasks like gathering monitoring data about a minion, this schedule option will gather status data and send it to a MySQL returner database:

```
schedule:
  uptime:
    function: status.uptime
    seconds: 60
    returner: mysql
  meminfo:
    function: status.meminfo
    minutes: 5
    returner: mysql
```

Since specifying the returner repeatedly can be tiresome, the `schedule_returner` option is available to specify one or a list of global returners to be used by the minions when scheduling.

## 2.7 Managing the Job Cache

The Salt Master maintains a job cache of all job executions which can be queried via the jobs runner. This job cache is called the Default Job Cache.

### 2.7.1 Default Job Cache

A number of options are available when configuring the job cache. The default caching system uses local storage on the Salt Master and can be found in the job cache directory (on Linux systems this is typically `/var/cache/salt/master/jobs`). The default caching system is suitable for most deployments as it does not typically require any further configuration or management.

The default job cache is a temporary cache and jobs will be stored for 24 hours. If the default cache needs to store jobs for a different period the time can be easily adjusted by changing the *keep_jobs* parameter in the Salt Master configuration file. The value passed in is measured via hours:

```
keep_jobs: 24
```

#### Reducing the Size of the Default Job Cache

The Default Job Cache can sometimes be a burden on larger deployments (over 5000 minions). Disabling the job cache will make previously executed jobs unavailable to the jobs system and is not generally recommended. Normally it is wise to make sure the master has access to a faster IO system or a tmpfs is mounted to the jobs dir.

However, you can disable the *job_cache* by setting it to `False` in the Salt Master configuration file. Setting this value to `False` means that the Salt Master will no longer cache minion returns, but a JID directory and `jid` file for each job will still be created. This JID directory is necessary for checking for and preventing JID collisions.

The default location for the job cache is in the `/var/cache/salt/master/jobs/` directory.

Setting the `job_cache` to `False` in addition to setting the *keep_jobs* option to a smaller value, such as `1`, in the Salt Master configuration file will reduce the size of the Default Job Cache, and thus the burden on the Salt Master.

---

**Note**: Changing the `keep_jobs` option sets the number of hours to keep old job information and defaults to `24` hours. Do not set this value to `0` when trying to make the cache cleaner run more frequently, as this means the cache cleaner will never run.

---

### 2.7.2 Additional Job Cache Options

Many deployments may wish to use an external database to maintain a long term register of executed jobs. Salt comes with two main mechanisms to do this, the master job cache and the external job cache.

See *Storing Job Results in an External System*.

## 2.8 Storing Job Results in an External System

After a job executes, job results are returned to the Salt Master by each Salt Minion. These results are stored in the *Default Job Cache*.

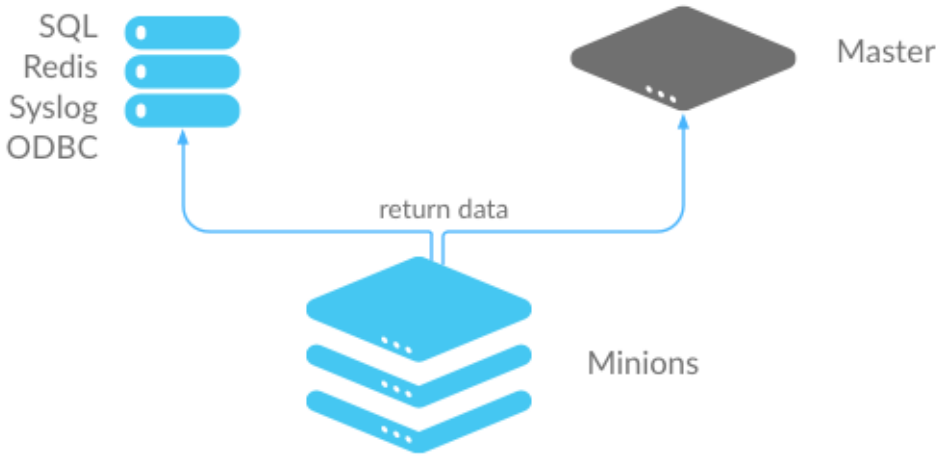
In addition to the Default Job Cache, Salt provides two additional mechanisms to send job results to other systems (databases, local syslog, and others):

- External Job Cache
- Master Job Cache

The major difference between these two mechanism is from where results are returned (from the Salt Master or Salt Minion).

### 2.8.1 External Job Cache - Minion-Side Returner

When an External Job Cache is configured, data is returned to the Default Job Cache on the Salt Master like usual, and then results are also sent to an External Job Cache using a Salt returner module running on the Salt Minion.



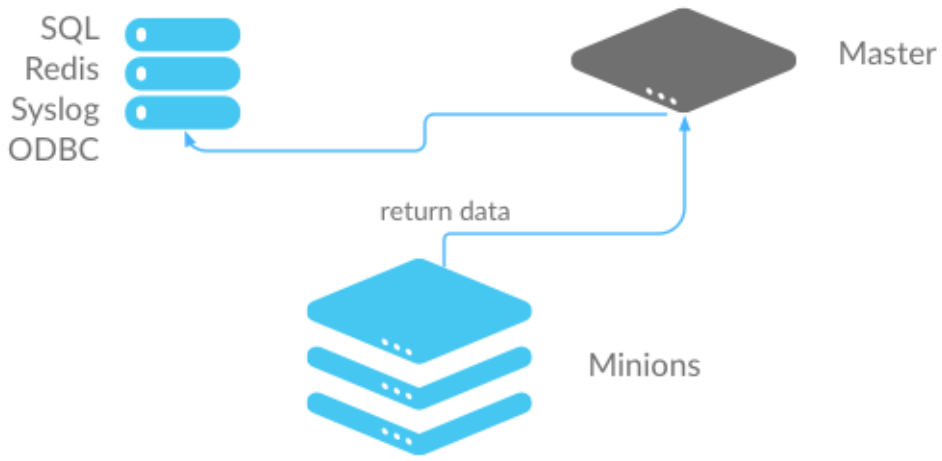

- Advantages: Data is stored without placing additional load on the Salt Master.
- Disadvantages: Each Salt Minion connects to the external job cache, which can result in a large number of connections. Also requires additional configuration to get returner module settings on all Salt Minions.

### 2.8.2 Master Job Cache - Master-Side Returner

New in version 2014.7.0.

Instead of configuring an External Job Cache on each Salt Minion, you can configure the Master Job Cache to send job results from the Salt Master instead. In this configuration, Salt Minions send data to the Default Job Cache as

usual, and then the Salt Master sends the data to the external system using a Salt returner module running on the Salt Master.




- Advantages: A single connection is required to the external system. This is preferred for databases and similar systems.
- Disadvantages: Places additional load on your Salt Master.

### 2.8.3 Configure an External or Master Job Cache

#### Step 1: Understand Salt Returners

Before you configure a job cache, it is essential to understand Salt returner modules (``returners''). Returners are pluggable Salt Modules that take the data returned by jobs, and then perform any necessary steps to send the data to an external system. For example, a returner might establish a connection, authenticate, and then format and transfer data.

The Salt Returner system provides the core functionality used by the External and Master Job Cache systems, and the same returners are used by both systems.

Salt currently provides many different returners that let you connect to a wide variety of systems. A complete list is available at *all Salt returners*. Each returner is configured differently, so make sure you read and follow the instructions linked from that page.

For example, the MySQL returner requires:

- A database created using provided schema (structure is available at `MySQL returner`)
- A user created with with privileges to the database
- Optional SSL configuration

A simpler returner, such as Slack or HipChat, requires:

- An API key/version
- The target channel/room
- The username that should be used to send the message

### Step 2: Configure the Returner

After you understand the configuration and have the external system ready, the configuration requirements must be declared.

#### External Job Cache

The returner configuration settings can be declared in the Salt Minion configuration file, the Minion's pillar data, or the Minion's grains.

If `external_job_cache` configuration settings are specified in more than one place, the options are retrieved in the following order. The first configuration location that is found is the one that will be used.

- Minion configuration file
- Minion's grains
- Minion's pillar data

#### Master Job Cache

The returner configuration settings for the Master Job Cache should be declared in the Salt Master's configuration file.

#### Configuration File Examples

MySQL requires:

```
mysql.host: 'salt'
mysql.user: 'salt'
mysql.pass: 'salt'
mysql.db: 'salt'
mysql.port: 3306
```

Slack requires:

```
slack.channel: 'channel'
slack.api_key: 'key'
slack.from_name: 'name'
```

After you have configured the returner and added settings to the configuration file, you can enable the External or Master Job Cache.

### Step 3: Enable the External or Master Job Cache

Configuration is a single line that specifies an already-configured returner to use to send all job data to an external system.

#### External Job Cache

To enable a returner as the External Job Cache (Minion-side), add the following line to the Salt Master configuration file:

```
ext_job_cache: <returner>
```

For example:

```
ext_job_cache: mysql
```

**Note:** When configuring an External Job Cache (Minion-side), the returner settings are added to the Minion configuration file, but the External Job Cache setting is configured in the Master configuration file.

#### Master Job Cache

To enable a returner as a Master Job Cache (Master-side), add the following line to the Salt Master configuration file:

```
master_job_cache: <returner>
```

For example:

```
master_job_cache: mysql
```

Verify that the returner configuration settings are in the Master configuration file, and be sure to restart the salt-master service after you make configuration changes. (`service salt-master restart`).

## 2.9 Logging

The salt project tries to get the logging to work for you and help us solve any issues you might find along the way.

If you want to get some more information on the nitty-gritty of salt's logging system, please head over to the *logging development document*, if all you're after is salt's logging configurations, please continue reading.

### 2.9.1 Log Levels

The log levels are ordered numerically such that setting the log level to a specific level will record all log statements at that level and higher. For example, setting `log_level: error` will log statements at `error`, `critical`, and `quiet` levels, although nothing *should* be logged at `quiet` level.

Most of the logging levels are defined by default in Python's logging library and can be found in the official Python documentation. Salt uses some more levels in addition to the standard levels. All levels available in salt are shown in the table below.

**Note:** Python dependencies used by salt may define and use additional logging levels. For example, the Python 2 version of the `multiprocessing` standard Python library uses the levels `subwarning`, 25 and `subdebug`, 5.

| Level | Numeric value | Description |
|---|---|---|
| quiet | 1000 | Nothing should be logged at this level |
| critical | 50 | Critical errors |
| error | 40 | Errors |
| warning | 30 | Warnings |
| info | 20 | Normal log information |
| profile | 15 | Profiling information on salt performance |
| debug | 10 | Information useful for debugging both salt implementations and salt code |
| trace | 5 | More detailed code debugging information |
| garbage | 1 | Even more debugging information |
| all | 0 | Everything |

### 2.9.2 Available Configuration Settings

#### log_file

The log records can be sent to a regular file, local path name, or network location. Remote logging works best when configured to use rsyslogd(8) (e.g.: `file:///dev/log`), with rsyslogd(8) configured for network logging. The format for remote addresses is: `<file|udp|tcp>://<host|socketpath>:<port-if-required>/<log-facility>`. Where `log-facility` is the symbolic name of a syslog facility as defined in the SysLogHandler documentation . It defaults to `LOG_USER`.

Default: Dependent of the binary being executed, for example, for `salt-master`, `/var/log/salt/master`.

Examples:

```
log_file: /var/log/salt/master
```

```
log_file: /var/log/salt/minion
```

```
log_file: file:///dev/log
```

```
log_file: file:///dev/log/LOG_DAEMON
```

```
log_file: udp://loghost:10514
```

#### log_level

Default: `warning`

The level of log record messages to send to the console. One of `all`, `garbage`, `trace`, `debug`, `profile`, `info`, `warning`, `error`, `critical`, `quiet`.

```
log_level: warning
```

**Note**: Add `log_level: quiet` in salt configuration file to completely disable logging. In case of running salt in command line use `--log-level=quiet` instead.

### log_level_logfile

Default: `info`

The level of messages to send to the log file. One of `all`, `garbage`, `trace`, `debug`, `profile`, `info`, `warning`, `error`, `critical`, `quiet`.

```
log_level_logfile: warning
```

### log_datefmt

Default: `%H:%M:%S`

The date and time format used in console log messages. Allowed date/time formatting can be seen on `time.strftime`.

```
log_datefmt: '%H:%M:%S'
```

### log_datefmt_logfile

Default: `%Y-%m-%d %H:%M:%S`

The date and time format used in log file messages. Allowed date/time formatting can be seen on `time.strftime`.

```
log_datefmt_logfile: '%Y-%m-%d %H:%M:%S'
```

### log_fmt_console

Default: `[%(levelname)-8s] %(message)s`

The format of the console logging messages. All standard python logging LogRecord attributes can be used. Salt also provides these custom LogRecord attributes to colorize console log output:

```
'%(colorlevel)s'   # log level name colorized by level
'%(colorname)s'    # colorized module name
'%(colorprocess)s' # colorized process number
'%(colormsg)s'     # log message colorized by level
```

**Note**: The `%(colorlevel)s`, `%(colorname)s`, and `%(colorprocess)` LogRecord attributes also include padding and enclosing brackets, `[` and `]` to match the default values of their collateral non-colorized LogRecord attributes.

```
log_fmt_console: '[%(levelname)-8s] %(message)s'
```

### log_fmt_logfile

Default: `%(asctime)s,%(msecs)03.0f [%(name)-17s][%(levelname)-8s] %(message)s`

The format of the log file logging messages. All standard python logging LogRecord attributes can be used. Salt also provides these custom LogRecord attributes that include padding and enclosing brackets `[` and `]`:

```
'%(bracketlevel)s'   # equivalent to [%(levelname)-8s]
'%(bracketname)s'    # equivalent to [%(name)-17s]
'%(bracketprocess)s' # equivalent to [%(process)5s]
```

```
log_fmt_logfile: '%(asctime)s,%(msecs)03.0f [%(name)-17s][%(levelname)-8s] %(message)s'
```

#### log_granular_levels

Default: {}

This can be used to control logging levels more specifically. The example sets the main salt library at the `warning' level, but sets `salt.modules` to log at the `debug` level:

```
log_granular_levels:
  'salt': 'warning'
  'salt.modules': 'debug'
```

#### External Logging Handlers

Besides the internal logging handlers used by salt, there are some external which can be used, see the external logging handlers document.

## 2.10 Salt File Server

Salt comes with a simple file server suitable for distributing files to the Salt minions. The file server is a stateless ZeroMQ server that is built into the Salt master.

The main intent of the Salt file server is to present files for use in the Salt state system. With this said, the Salt file server can be used for any general file transfer from the master to the minions.

### 2.10.1 File Server Backends

In Salt 0.12.0, the modular fileserver was introduced. This feature added the ability for the Salt Master to integrate different file server backends. File server backends allow the Salt file server to act as a transparent bridge to external resources. A good example of this is the `git` backend, which allows Salt to serve files sourced from one or more git repositories, but there are several others as well. Click *here* for a full list of Salt's fileserver backends.

#### Enabling a Fileserver Backend

Fileserver backends can be enabled with the *fileserver_backend* option.

```
fileserver_backend:
  - git
```

See the *documentation* for each backend to find the correct value to add to *fileserver_backend* in order to enable them.

### Using Multiple Backends

If *fileserver_backend* is not defined in the Master config file, Salt will use the *roots* backend, but the *fileserver_backend* option supports multiple backends. When more than one backend is in use, the files from the enabled backends are merged into a single virtual filesystem. When a file is requested, the backends will be searched in order for that file, and the first backend to match will be the one which returns the file.

```
fileserver_backend:
  - roots
  - git
```

With this configuration, the environments and files defined in the *file_roots* parameter will be searched first, and if the file is not found then the git repositories defined in *gitfs_remotes* will be searched.

### Defining Environments

Just as the order of the values in *fileserver_backend* matters, so too does the order in which different sources are defined within a fileserver environment. For example, given the below *file_roots* configuration, if both `/srv/salt/dev/foo.txt` and `/srv/salt/prod/foo.txt` exist on the Master, then `salt://foo.txt` would point to `/srv/salt/dev/foo.txt` in the `dev` environment, but it would point to `/srv/salt/prod/foo.txt` in the `base` environment.

```
file_roots:
  base:
    - /srv/salt/prod
  qa:
    - /srv/salt/qa
    - /srv/salt/prod
  dev:
    - /srv/salt/dev
    - /srv/salt/qa
    - /srv/salt/prod
```

Similarly, when using the *git* backend, if both repositories defined below have a `hotfix23` branch/tag, and both of them also contain the file `bar.txt` in the root of the repository at that branch/tag, then `salt://bar.txt` in the `hotfix23` environment would be served from the `first` repository.

```
gitfs_remotes:
  - https://mydomain.tld/repos/first.git
  - https://mydomain.tld/repos/second.git
```

**Note**: Environments map differently based on the fileserver backend. For instance, the mappings are explicitly defined in *roots* backend, while in the VCS backends (*git*, *hg*, *svn*) the environments are created from branches/tags/bookmarks/etc. For the *minion* backend, the files are all in a single environment, which is specified by the *minionfs_env* option.

See the documentation for each backend for a more detailed explanation of how environments are mapped.

## 2.10.2 Dynamic Module Distribution

New in version 0.9.5.

Custom Salt execution, state, and other modules can be distributed to Salt minions using the Salt file server.

Under the root of any environment defined via the *file_roots* option on the master server directories corresponding to the type of module can be used.

The directories are prepended with an underscore:

- _beacons
- _engines
- _grains
- _modules
- _output
- _proxy
- _renderers
- _returners
- _states
- _utils

The contents of these directories need to be synced over to the minions after Python modules have been created in them. There are a number of ways to sync the modules.

#### Sync Via States

The minion configuration contains an option autoload_dynamic_modules which defaults to True. This option makes the state system refresh all dynamic modules when states are run. To disable this behavior set *autoload_dynamic_modules* to False in the minion config.

When dynamic modules are autoloaded via states, modules only pertinent to the environments matched in the master's top file are downloaded.

This is important to remember, because modules can be manually loaded from any specific environment that environment specific modules will be loaded when a state run is executed.

#### Sync Via the saltutil Module

The saltutil module has a number of functions that can be used to sync all or specific dynamic modules. The saltutil module function saltutil.sync_all will sync all module types over to a minion. For more information see: *salt.modules.saltutil*

### 2.10.3 Requesting Files from Specific Environments

The Salt fileserver supports multiple environments, allowing for SLS files and other files to be isolated for better organization.

For the default backend (called *roots*), environments are defined using the *roots* option. Other backends (such as *gitfs*) define environments in their own ways. For a list of available fileserver backends, see *here*.

#### Querystring Syntax

Any salt:// file URL can specify its fileserver environment using a querystring syntax, like so:

```
salt://path/to/file?saltenv=foo
```

In *Reactor* configurations, this method must be used to pull files from an environment other than `base`.

#### In States

Minions can be instructed which environment to use both globally, and for a single state, and multiple methods for each are available:

#### Globally

A minion can be pinned to an environment using the *environment* option in the minion config file.

Additionally, the environment can be set for a single call to the following functions:

- *state.apply*
- *state.highstate*
- *state.sls*
- *state.top*

**Note:** When the `saltenv` parameter is used to trigger a *highstate* using either *state.apply* or *state.highstate*, only states from that environment will be applied.

#### On a Per-State Basis

Within an individual state, there are two ways of specifying the environment. The first is to add a `saltenv` argument to the state. This example will pull the file from the `config` environment:

```
/etc/foo/bar.conf:
  file.managed:
    - source: salt://foo/bar.conf
    - user: foo
    - mode: 600
    - saltenv: config
```

Another way of doing the same thing is to use the *querystring syntax* described above:

```
/etc/foo/bar.conf:
  file.managed:
    - source: salt://foo/bar.conf?saltenv=config
    - user: foo
    - mode: 600
```

**Note:** Specifying the environment using either of the above methods is only necessary in cases where a state from one environment needs to access files from another environment. If the SLS file containing this state was in the `config` environment, then it would look in that environment by default.

### 2.10.4 File Server Configuration

The Salt file server is a high performance file server written in ZeroMQ. It manages large files quickly and with little overhead, and has been optimized to handle small files in an extremely efficient manner.

The Salt file server is an environment aware file server. This means that files can be allocated within many root directories and accessed by specifying both the file path and the environment to search. The individual environments can span across multiple directory roots to create overlays and to allow for files to be organized in many flexible ways.

#### Environments

The Salt file server defaults to the mandatory `base` environment. This environment **MUST** be defined and is used to download files when no environment is specified.

Environments allow for files and sls data to be logically separated, but environments are not isolated from each other. This allows for logical isolation of environments by the engineer using Salt, but also allows for information to be used in multiple environments.

#### Directory Overlay

The `environment` setting is a list of directories to publish files from. These directories are searched in order to find the specified file and the first file found is returned.

This means that directory data is prioritized based on the order in which they are listed. In the case of this `file_roots` configuration:

```
file_roots:
  base:
    - /srv/salt/base
    - /srv/salt/failover
```

If a file's URI is `salt://httpd/httpd.conf`, it will first search for the file at `/srv/salt/base/httpd/httpd.conf`. If the file is found there it will be returned. If the file is not found there, then `/srv/salt/failover/httpd/httpd.conf` will be used for the source.

This allows for directories to be overlaid and prioritized based on the order they are defined in the configuration.

It is also possible to have `file_roots` which supports multiple environments:

```
file_roots:
  base:
    - /srv/salt/base
  dev:
    - /srv/salt/dev
    - /srv/salt/base
  prod:
    - /srv/salt/prod
    - /srv/salt/base
```

This example ensures that each environment will check the associated environment directory for files first. If a file is not found in the appropriate directory, the system will default to using the base directory.

#### Local File Server

New in version 0.9.8.

The file server can be rerouted to run from the minion. This is primarily to enable running Salt states without a Salt master. To use the local file server interface, copy the file server data to the minion and set the file_roots option on the minion to point to the directories copied from the master. Once the minion `file_roots` option has been set, change the `file_client` option to local to make sure that the local file server interface is used.

### 2.10.5 The cp Module

The cp module is the home of minion side file server operations. The cp module is used by the Salt state system, salt-cp, and can be used to distribute files presented by the Salt file server.

#### Escaping Special Characters

The `salt://` url format can potentially contain a query string, for example `salt://dir/file.txt?saltenv=base`. You can prevent the fileclient/fileserver from interpreting `?` as the initial token of a query string by referencing the file with `salt://|` rather than `salt://`.

```
/etc/marathon/conf/?checkpoint:
  file.managed:
    - source: salt://|hw/config/?checkpoint
    - makedirs: True
```

#### Environments

Since the file server is made to work with the Salt state system, it supports environments. The environments are defined in the master config file and when referencing an environment the file specified will be based on the root directory of the environment.

#### get_file

The cp.get_file function can be used on the minion to download a file from the master, the syntax looks like this:

```
# salt '*' cp.get_file salt://vimrc /etc/vimrc
```

This will instruct all Salt minions to download the vimrc file and copy it to /etc/vimrc

Template rendering can be enabled on both the source and destination file names like so:

```
# salt '*' cp.get_file "salt://{{grains.os}}/vimrc" /etc/vimrc template=jinja
```

This example would instruct all Salt minions to download the vimrc from a directory with the same name as their OS grain and copy it to /etc/vimrc

For larger files, the cp.get_file module also supports gzip compression. Because gzip is CPU-intensive, this should only be used in scenarios where the compression ratio is very high (e.g. pretty-printed JSON or YAML files).

To use compression, use the `gzip` named argument. Valid values are integers from 1 to 9, where 1 is the lightest compression and 9 the heaviest. In other words, 1 uses the least CPU on the master (and minion), while 9 uses the most.

```
# salt '*' cp.get_file salt://vimrc /etc/vimrc gzip=5
```

Finally, note that by default cp.get_file does *not* create new destination directories if they do not exist. To change this, use the `makedirs` argument:

```
# salt '*' cp.get_file salt://vimrc /etc/vim/vimrc makedirs=True
```

In this example, /etc/vim/ would be created if it didn't already exist.

#### get_dir

The cp.get_dir function can be used on the minion to download an entire directory from the master. The syntax is very similar to get_file:

```
# salt '*' cp.get_dir salt://etc/apache2 /etc
```

cp.get_dir supports template rendering and gzip compression arguments just like get_file:

```
# salt '*' cp.get_dir salt://etc/{{pillar.webserver}} /etc gzip=5 template=jinja
```

### 2.10.6 File Server Client Instance

A client instance is available which allows for modules and applications to be written which make use of the Salt file server.

The file server uses the same authentication and encryption used by the rest of the Salt system for network communication.

#### fileclient Module

The `salt/fileclient.py` module is used to set up the communication from the minion to the master. When creating a client instance using the fileclient module, the minion configuration needs to be passed in. When using the fileclient module from within a minion module the built in `__opts__` data can be passed:

```
import salt.minion
import salt.fileclient

def get_file(path, dest, env='base'):
    '''
    Used to get a single file from the Salt master

    CLI Example:
    salt '*' cp.get_file salt://vimrc /etc/vimrc
    '''
    # Get the fileclient object
    client = salt.fileclient.get_file_client(__opts__)
    # Call get_file
    return client.get_file(path, dest, False, env)
```

Creating a fileclient instance outside of a minion module where the `__opts__` data is not available, it needs to be generated:

```
import salt.fileclient
import salt.config

def get_file(path, dest, env='base'):
    '''
    Used to get a single file from the Salt master
    '''
```

```
    # Get the configuration data
    opts = salt.config.minion_config('/etc/salt/minion')
    # Get the fileclient object
    client = salt.fileclient.get_file_client(opts)
    # Call get_file
    return client.get_file(path, dest, False, env)
```

## 2.11 Git Fileserver Backend Walkthrough

**Note:** This walkthrough assumes basic knowledge of Salt. To get up to speed, check out the Salt Walkthrough.

The gitfs backend allows Salt to serve files from git repositories. It can be enabled by adding `git` to the *fileserver_backend* list, and configuring one or more repositories in *gitfs_remotes*.

Branches and tags become Salt fileserver environments.

**Note:** Branching and tagging can result in a lot of potentially-conflicting *top files*, for this reason it may be useful to set *top_file_merging_strategy* to `same` in the minions' config files if the top files are being managed in a GitFS repo.

### 2.11.1 Installing Dependencies

Beginning with version 2014.7.0, both pygit2 and Dulwich are supported as alternatives to GitPython. The desired provider can be configured using the *gitfs_provider* parameter in the master config file.

If *gitfs_provider* is not configured, then Salt will prefer pygit2 if a suitable version is available, followed by GitPython and Dulwich.

**Note:** It is recommended to always run the most recent version of any the below dependencies. Certain features of gitfs may not be available without the most recent version of the chosen library.

#### pygit2

The minimum supported version of pygit2 is 0.20.3. Availability for this version of pygit2 is still limited, though the SaltStack team is working to get compatible versions available for as many platforms as possible.

For the Fedora/EPEL versions which have a new enough version packaged, the following command would be used to install pygit2:

```
# yum install python-pygit2
```

Provided a valid version is packaged for Debian/Ubuntu (which is not currently the case), the package name would be the same, and the following command would be used to install it:

```
# apt-get install python-pygit2
```

If pygit2 is not packaged for the platform on which the Master is running, the pygit2 website has installation instructions here. Keep in mind however that following these instructions will install libgit2 and pygit2 without system packages. Additionally, keep in mind that *SSH authentication in pygit2* requires libssh2 (*not* libssh) development libraries to be present before libgit2 is built. On some Debian-based distros `pkg-config` is also required to link libgit2 with libssh2.

Additionally, version 0.21.0 of pygit2 introduced a dependency on python-cffi, which in turn depends on newer releases of libffi. Upgrading libffi is not advisable as several other applications depend on it, so on older LTS linux releases pygit2 0.20.3 and libgit2 0.20.0 is the recommended combination.

**Warning:** pygit2 is actively developed and frequently makes non-backwards-compatible API changes, even in minor releases. It is not uncommon for pygit2 upgrades to result in errors in Salt. Please take care when upgrading pygit2, and pay close attention to the changelog, keeping an eye out for API changes. Errors can be reported on the SaltStack issue tracker.

#### RedHat Pygit2 Issues

The release of RedHat/CentOS 7.3 upgraded both `python-cffi` and `http-parser`, both of which are dependencies for pygit2/libgit2. Both pygit2 and libgit2 (which are from the EPEL repository and not managed directly by RedHat) need to be rebuilt against these updated dependencies.

The below errors will show up in the master log if an incompatible `python-pygit2` package is installed:

```
2017-02-10 09:07:34,892 [salt.utils.gitfs ][ERROR ][11211] Import pygit2 failed:
 ↪CompileError: command 'gcc' failed with exit status 1
2017-02-10 09:07:34,907 [salt.utils.gitfs ][ERROR ][11211] gitfs is configured but
 ↪could not be loaded, are pygit2 and libgit2 installed?
2017-02-10 09:07:34,907 [salt.utils.gitfs ][CRITICAL][11211] No suitable gitfs
 ↪provider module is installed.
2017-02-10 09:07:34,912 [salt.master ][CRITICAL][11211] Master failed pre flight
 ↪checks, exiting
```

The below errors will show up in the master log if an incompatible `libgit2` package is installed:

```
2017-02-15 18:04:45,211 [salt.utils.gitfs ][ERROR   ][6211] Error occurred fetching
 ↪gitfs remote 'https://foo.com/bar.git': No Content-Type header in response
```

As of 15 February 2017, `python-pygit2` has been rebuilt and is in the stable EPEL repository. However, `libgit2` remains broken (a bug report has been filed to get it rebuilt).

In the meantime, you can work around this by downgrading `http-parser`. To do this, go to this page and download the appropriate `http-parser` RPM for the OS architecture you are using (x86_64, etc.). Then downgrade using the `rpm` command. For example:

```
[root@784e8a8c5028 /]# curl --silent -O https://kojipkgs.fedoraproject.org//packages/
 ↪http-parser/2.0/5.20121128gitcd01361.el7/x86_64/http-parser-2.0-5.
 ↪20121128gitcd01361.el7.x86_64.rpm
[root@784e8a8c5028 /]# rpm -Uvh --oldpackage http-parser-2.0-5.20121128gitcd01361.el7.
 ↪x86_64.rpm
Preparing...                          ################################# [100%]
Updating / installing...
   1:http-parser-2.0-5.20121128gitcd01################################# [ 50%]
Cleaning up / removing...
   2:http-parser-2.7.1-3.el7          ################################# [100%]
```

A restart of the salt-master daemon may be required to allow http(s) repositories to continue to be fetched.

### GitPython

GitPython 0.3.0 or newer is required to use GitPython for gitfs. For RHEL-based Linux distros, a compatible version is available in EPEL, and can be easily installed on the master using yum:

```
# yum install GitPython
```

Ubuntu 14.04 LTS and Debian Wheezy (7.x) also have a compatible version packaged:

```
# apt-get install python-git
```

If your master is running an older version (such as Ubuntu 12.04 LTS or Debian Squeeze), then you will need to install GitPython using either pip or easy_install (it is recommended to use pip). Version 0.3.2.RC1 is now marked as the stable release in PyPI, so it should be a simple matter of running `pip install GitPython` (or `easy_install GitPython`) as root.

**Warning**: Keep in mind that if GitPython has been previously installed on the master using pip (even if it was subsequently uninstalled), then it may still exist in the build cache (typically `/tmp/pip-build-root/GitPython`) if the cache is not cleared after installation. The package in the build cache will override any requirement specifiers, so if you try upgrading to version 0.3.2.RC1 by running `pip install 'GitPython==0.3.2.RC1'` then it will ignore this and simply install the version from the cache directory. Therefore, it may be necessary to delete the GitPython directory from the build cache in order to ensure that the specified version is installed.

**Warning**: GitPython 2.0.9 and newer is not compatible with Python 2.6. If installing GitPython using pip on a machine running Python 2.6, make sure that a version earlier than 2.0.9 is installed. This can be done on the CLI by running `pip install 'GitPython<2.0.9'`, or in a *pip.installed* state using the following SLS:

```
GitPython:
  pip.installed:
    - name: 'GitPython < 2.0.9'
```

### Dulwich

Dulwich 0.9.4 or newer is required to use Dulwich as backend for gitfs.

Dulwich is available in EPEL, and can be easily installed on the master using yum:

```
# yum install python-dulwich
```

For APT-based distros such as Ubuntu and Debian:

```
# apt-get install python-dulwich
```

**Important**: If switching to Dulwich from GitPython/pygit2, or switching from GitPython/pygit2 to Dulwich, it is necessary to clear the gitfs cache to avoid unpredictable behavior. This is probably a good idea whenever switching to a new *gitfs_provider*, but it is less important when switching between GitPython and pygit2.

Beginning in version 2015.5.0, the gitfs cache can be easily cleared using the *fileserver.clear_cache* runner.

```
salt-run fileserver.clear_cache backend=git
```

If the Master is running an earlier version, then the cache can be cleared by removing the `gitfs` and `file_lists/gitfs` directories (both paths relative to the master cache directory, usually `/var/cache/salt/master`).

```
rm -rf /var/cache/salt/master{,/file_lists}/gitfs
```

### 2.11.2 Simple Configuration

To use the gitfs backend, only two configuration changes are required on the master:

1. Include `git` in the *`fileserver_backend`* list in the master config file:

   ```
   fileserver_backend:
     - git
   ```

2. Specify one or more `git://`, `https://`, `file://`, or `ssh://` URLs in *`gitfs_remotes`* to configure which repositories to cache and search for requested files:

   ```
   gitfs_remotes:
     - https://github.com/saltstack-formulas/salt-formula.git
   ```

   SSH remotes can also be configured using scp-like syntax:

   ```
   gitfs_remotes:
     - git@github.com:user/repo.git
     - ssh://user@domain.tld/path/to/repo.git
   ```

   Information on how to authenticate to SSH remotes can be found *here*.

   **Note**: Dulwich does not recognize `ssh://` URLs, `git+ssh://` must be used instead. Salt version 2015.5.0 and later will automatically add the `git+` to the beginning of these URLs before fetching, but earlier Salt versions will fail to fetch unless the URL is specified using `git+ssh://`.

3. Restart the master to load the new configuration.

**Note**: In a master/minion setup, files from a gitfs remote are cached once by the master, so minions do not need direct access to the git repository.

### 2.11.3 Multiple Remotes

The `gitfs_remotes` option accepts an ordered list of git remotes to cache and search, in listed order, for requested files.

A simple scenario illustrates this cascading lookup behavior:

If the `gitfs_remotes` option specifies three remotes:

```
gitfs_remotes:
  - git://github.com/example/first.git
  - https://github.com/example/second.git
  - file:///root/third
```

And each repository contains some files:

```
first.git:
    top.sls
    edit/vim.sls
    edit/vimrc
    nginx/init.sls

second.git:
    edit/dev_vimrc
    haproxy/init.sls

third:
    haproxy/haproxy.conf
    edit/dev_vimrc
```

Salt will attempt to lookup the requested file from each gitfs remote repository in the order in which they are defined in the configuration. The **git://github.com/example/first.git** remote will be searched first. If the requested file is found, then it is served and no further searching is executed. For example:

- A request for the file **salt://haproxy/init.sls** will be served from the **https://github.com/example/second.git** git repo.
- A request for the file **salt://haproxy/haproxy.conf** will be served from the **file:///root/third** repo.

---

**Note**: This example is purposefully contrived to illustrate the behavior of the gitfs backend. This example should not be read as a recommended way to lay out files and git repos.

The **file://** prefix denotes a git repository in a local directory. However, it will still use the given **file://** URL as a remote, rather than copying the git repo to the salt cache. This means that any refs you want accessible must exist as *local* refs in the specified repo.

---

**Warning**: Salt versions prior to 2014.1.0 are not tolerant of changing the order of remotes or modifying the URI of existing remotes. In those versions, when modifying remotes it is a good idea to remove the gitfs cache directory (`/var/cache/salt/master/gitfs`) before restarting the salt-master service.

### 2.11.4 Per-remote Configuration Parameters

New in version 2014.7.0.

The following master config parameters are global (that is, they apply to all configured gitfs remotes):

- *gitfs_base*
- *gitfs_root*
- *gitfs_mountpoint* (new in 2014.7.0)
- *gitfs_user* (**pygit2 only**, new in 2014.7.0)
- *gitfs_password* (**pygit2 only**, new in 2014.7.0)

- *gitfs_insecure_auth* (**pygit2 only**, new in 2014.7.0)
- *gitfs_pubkey* (**pygit2 only**, new in 2014.7.0)
- *gitfs_privkey* (**pygit2 only**, new in 2014.7.0)
- *gitfs_passphrase* (**pygit2 only**, new in 2014.7.0)

These parameters can now be overridden on a per-remote basis. This allows for a tremendous amount of customization. Here's some example usage:

```
gitfs_provider: pygit2
gitfs_base: develop

gitfs_remotes:
  - https://foo.com/foo.git
  - https://foo.com/bar.git:
    - root: salt
    - mountpoint: salt://bar
    - base: salt-base
  - https://foo.com/bar.git:
    - name: second_bar_repo
    - root: other/salt
    - mountpoint: salt://other/bar
    - base: salt-base
  - http://foo.com/baz.git:
    - root: salt/states
    - user: joe
    - password: mysupersecretpassword
    - insecure_auth: True
```

**Important**: There are two important distinctions which should be noted for per-remote configuration:

1. The URL of a remote which has per-remote configuration must be suffixed with a colon.
2. Per-remote configuration parameters are named like the global versions, with the `gitfs_` removed from the beginning. The exception being the `name` parameter which is only available to per-remote configurations.

In the example configuration above, the following is true:

1. The first and fourth gitfs remotes will use the `develop` branch/tag as the `base` environment, while the second and third will use the `salt-base` branch/tag as the `base` environment.
2. The first remote will serve all files in the repository. The second remote will only serve files from the `salt` directory (and its subdirectories). The third remote will only server files from the `other/salt` directory (and its subdirectories), while the fourth remote will only serve files from the `salt/states` directory (and its subdirectories).
3. The first and fourth remotes will have files located under the root of the Salt fileserver namespace (`salt://`). The files from the second remote will be located under `salt://bar`, while the files from the third remote will be located under `salt://other/bar`.
4. The second and third remotes reference the same repository and unique names need to be declared for duplicate gitfs remotes.
5. The fourth remote overrides the default behavior of *not authenticating to insecure (non-HTTPS) remotes*.

### 2.11.5 Serving from a Subdirectory

The *gitfs_root* parameter allows files to be served from a subdirectory within the repository. This allows for only part of a repository to be exposed to the Salt fileserver.

Assume the below layout:

```
.gitignore
README.txt
foo/
foo/bar/
foo/bar/one.txt
foo/bar/two.txt
foo/bar/three.txt
foo/baz/
foo/baz/top.sls
foo/baz/edit/vim.sls
foo/baz/edit/vimrc
foo/baz/nginx/init.sls
```

The below configuration would serve only the files under `foo/baz`, ignoring the other files in the repository:

```
gitfs_remotes:
  - git://mydomain.com/stuff.git

gitfs_root: foo/baz
```

The root can also be configured on a *per-remote basis*.

### 2.11.6 Mountpoints

New in version 2014.7.0.

The *gitfs_mountpoint* parameter will prepend the specified path to the files served from gitfs. This allows an existing repository to be used, rather than needing to reorganize a repository or design it around the layout of the Salt fileserver.

Before the addition of this feature, if a file being served up via gitfs was deeply nested within the root directory (for example, `salt://webapps/foo/files/foo.conf`, it would be necessary to ensure that the file was properly located in the remote repository, and that all of the the parent directories were present (for example, the directories `webapps/foo/files/` would need to exist at the root of the repository).

The below example would allow for a file `foo.conf` at the root of the repository to be served up from the Salt fileserver path `salt://webapps/foo/files/foo.conf`.

```
gitfs_remotes:
  - https://mydomain.com/stuff.git

gitfs_mountpoint: salt://webapps/foo/files
```

Mountpoints can also be configured on a *per-remote basis*.

### 2.11.7 Using gitfs Alongside Other Backends

Sometimes it may make sense to use multiple backends; for instance, if `sls` files are stored in git but larger files are stored directly on the master.

The cascading lookup logic used for multiple remotes is also used with multiple backends. If the `fileserver_backend` option contains multiple backends:

```
fileserver_backend:
  - roots
  - git
```

Then the `roots` backend (the default backend of files in `/srv/salt`) will be searched first for the requested file; then, if it is not found on the master, each configured git remote will be searched.

### 2.11.8 Branches, Environments, and Top Files

When using the gitfs backend, branches, and tags will be mapped to environments using the branch/tag name as an identifier.

There is one exception to this rule: the `master` branch is implicitly mapped to the `base` environment.

So, for a typical `base`, `qa`, `dev` setup, the following branches could be used:

```
master
qa
dev
```

`top.sls` files from different branches will be merged into one at runtime. Since this can lead to overly complex configurations, the recommended setup is to have a separate repository, containing only the `top.sls` file with just one single `master` branch.

To map a branch other than `master` as the `base` environment, use the *`gitfs_base`* parameter.

```
gitfs_base: salt-base
```

The base can also be configured on a *per-remote basis*.

### 2.11.9 Environment Whitelist/Blacklist

New in version 2014.7.0.

The *`gitfs_env_whitelist`* and *`gitfs_env_blacklist`* parameters allow for greater control over which branches/tags are exposed as fileserver environments. Exact matches, globs, and regular expressions are supported, and are evaluated in that order. If using a regular expression, `^` and `$` must be omitted, and the expression must match the entire branch/tag.

```
gitfs_env_whitelist:
  - base
  - v1.*
  - 'mybranch\d+'
```

---

**Note**: `v1.*`, in this example, will match as both a glob and a regular expression (though it will have been matched as a glob, since globs are evaluated before regular expressions).

---

The behavior of the blacklist/whitelist will differ depending on which combination of the two options is used:

- If only *`gitfs_env_whitelist`* is used, then **only** branches/tags which match the whitelist will be available as environments

- If only *gitfs_env_blacklist* is used, then the branches/tags which match the blacklist will **not** be available as environments
- If both are used, then the branches/tags which match the whitelist, but do **not** match the blacklist, will be available as environments.

### 2.11.10 Authentication

#### pygit2

New in version 2014.7.0.

Both HTTPS and SSH authentication are supported as of version 0.20.3, which is the earliest version of pygit2 supported by Salt for gitfs.

---

**Note**: The examples below make use of per-remote configuration parameters, a feature new to Salt 2014.7.0. More information on these can be found *here*.

---

#### HTTPS

For HTTPS repositories which require authentication, the username and password can be provided like so:

```
gitfs_remotes:
  - https://domain.tld/myrepo.git:
    - user: git
    - password: mypassword
```

If the repository is served over HTTP instead of HTTPS, then Salt will by default refuse to authenticate to it. This behavior can be overridden by adding an `insecure_auth` parameter:

```
gitfs_remotes:
  - http://domain.tld/insecure_repo.git:
    - user: git
    - password: mypassword
    - insecure_auth: True
```

#### SSH

SSH repositories can be configured using the `ssh://` protocol designation, or using scp-like syntax. So, the following two configurations are equivalent:

- `ssh://git@github.com/user/repo.git`
- `git@github.com:user/repo.git`

Both *gitfs_pubkey* and *gitfs_privkey* (or their *per-remote counterparts*) must be configured in order to authenticate to SSH-based repos. If the private key is protected with a passphrase, it can be configured using *gitfs_passphrase* (or simply `passphrase` if being configured *per-remote*). For example:

```
gitfs_remotes:
  - git@github.com:user/repo.git:
    - pubkey: /root/.ssh/id_rsa.pub
```

```
    - privkey: /root/.ssh/id_rsa
    - passphrase: myawesomepassphrase
```

Finally, the SSH host key must be *added to the known_hosts file*.

#### GitPython

With GitPython, only passphrase-less SSH public key authentication is supported. **The auth parameters (pubkey, privkey, etc.) shown in the pygit2 authentication examples above do not work with GitPython.**

```
gitfs_remotes:
  - ssh://git@github.com/example/salt-states.git
```

Since GitPython wraps the git CLI, the private key must be located in `~/.ssh/id_rsa` for the user under which the Master is running, and should have permissions of `0600`. Also, in the absence of a user in the repo URL, GitPython will (just as SSH does) attempt to login as the current user (in other words, the user under which the Master is running, usually `root`).

If a key needs to be used, then `~/.ssh/config` can be configured to use the desired key. Information on how to do this can be found by viewing the manpage for `ssh_config`. Here's an example entry which can be added to the `~/.ssh/config` to use an alternate key for gitfs:

```
Host github.com
    IdentityFile /root/.ssh/id_rsa_gitfs
```

The `Host` parameter should be a hostname (or hostname glob) that matches the domain name of the git repository.

It is also necessary to *add the SSH host key to the known_hosts file*. The exception to this would be if strict host key checking is disabled, which can be done by adding `StrictHostKeyChecking no` to the entry in `~/.ssh/config`

```
Host github.com
    IdentityFile /root/.ssh/id_rsa_gitfs
    StrictHostKeyChecking no
```

However, this is generally regarded as insecure, and is not recommended.

#### Adding the SSH Host Key to the known_hosts File

To use SSH authentication, it is necessary to have the remote repository's SSH host key in the `~/.ssh/known_hosts` file. If the master is also a minion, this can be done using the *`ssh.set_known_host`* function:

```
# salt mymaster ssh.set_known_host user=root hostname=github.com
mymaster:
    ----------
    new:
        ----------
        enc:
            ssh-rsa
        fingerprint:
            16:27:ac:a5:76:28:2d:36:63:1b:56:4d:eb:df:a6:48
        hostname:
            |1|OiefWWqOD4kwO3BhoIGa0loR5AA=|BIXVtmcTbPER+68HvXmceodDcfI=
        key:
```

```
          X
↪AAAAB3NzaC1yc2EAAAABIwAAAQEAq2A7hRGmdnm9tUDbO9IDSwBK6TbQa+PXYPCPy6rbTrTtw7PHkccKrpp0yVhp5HdEIcKr6p
↪yMf+Se8xhHTvKSCZIFImWwoG6mbUoWf9nzpIoaSjB+weqqUUmpaaasXVal72J+UX2B+2RPW3RcT0eOzQgqlJL3RKrTJvdsjE3J
↪w4yCE6gbODqnTWlg7+wC604ydGXA8VJiS5ap43JXiUFFAaQ==
   old:
       None
   status:
       updated
```

If not, then the easiest way to add the key is to su to the user (usually `root`) under which the salt-master runs and attempt to login to the server via SSH:

```
$ su -
Password:
# ssh github.com
The authenticity of host 'github.com (192.30.252.128)' can't be established.
RSA key fingerprint is 16:27:ac:a5:76:28:2d:36:63:1b:56:4d:eb:df:a6:48.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'github.com,192.30.252.128' (RSA) to the list of known hosts.
Permission denied (publickey).
```

It doesn't matter if the login was successful, as answering `yes` will write the fingerprint to the known_hosts file.

### Verifying the Fingerprint

To verify that the correct fingerprint was added, it is a good idea to look it up. One way to do this is to use `nmap`:

```
$ nmap -p 22 github.com --script ssh-hostkey

Starting Nmap 5.51 ( http://nmap.org ) at 2014-08-18 17:47 CDT
Nmap scan report for github.com (192.30.252.129)
Host is up (0.17s latency).
Not shown: 996 filtered ports
PORT     STATE SERVICE
22/tcp   open  ssh
| ssh-hostkey: 1024 ad:1c:08:a4:40:e3:6f:9c:f5:66:26:5d:4b:33:5d:8c (DSA)
|_2048 16:27:ac:a5:76:28:2d:36:63:1b:56:4d:eb:df:a6:48 (RSA)
80/tcp   open  http
443/tcp  open  https
9418/tcp open  git

Nmap done: 1 IP address (1 host up) scanned in 28.78 seconds
```

Another way is to check one's own `known_hosts` file, using this one-liner:

```
$ ssh-keygen -l -f /dev/stdin <<<`ssh-keyscan github.com 2>/dev/null` | awk '{print $2}'
16:27:ac:a5:76:28:2d:36:63:1b:56:4d:eb:df:a6:48
```

**Warning**: AWS tracks usage of nmap and may flag it as abuse. On AWS hosts, the `ssh-keygen` method is recommended for host key verification.

**Note**: As of OpenSSH 6.8 the SSH fingerprint is now shown as a base64-encoded SHA256 checksum of the host key. So, instead of the fingerprint looking like `16:27:ac:a5:76:28:2d:36:63:1b:56:4d:eb:df:a6:48`, it

would look like `SHA256:nThbg6kXUpJWGl7E1IGOCspRomTxdCARLviKw6E5SY8`.

### 2.11.11 Refreshing gitfs Upon Push

By default, Salt updates the remote fileserver backends every 60 seconds. However, if it is desirable to refresh quicker than that, the *Reactor System* can be used to signal the master to update the fileserver on each push, provided that the git server is also a Salt minion. There are three steps to this process:

1. On the master, create a file **/srv/reactor/update_fileserver.sls**, with the following contents:

```
update_fileserver:
  runner.fileserver.update
```

2. Add the following reactor configuration to the master config file:

```
reactor:
  - 'salt/fileserver/gitfs/update':
    - /srv/reactor/update_fileserver.sls
```

3. On the git server, add a post-receive hook

   (a) If the user executing *git push* is the same as the minion user, use the following hook:

```
#!/usr/bin/env sh
salt-call event.fire_master update salt/fileserver/gitfs/update
```

   (a) To enable other git users to run the hook after a *push*, use sudo in the hook script:

```
#!/usr/bin/env sh
sudo -u root salt-call event.fire_master update salt/fileserver/gitfs/
 ↪update
```

2. If using sudo in the git hook (above), the policy must be changed to permit all users to fire the event. Add the following policy to the sudoers file on the git server.

```
Cmnd_Alias SALT_GIT_HOOK = /bin/salt-call event.fire_master update salt/
 ↪fileserver/gitfs/update
Defaults!SALT_GIT_HOOK !requiretty
ALL ALL=(root) NOPASSWD: SALT_GIT_HOOK
```

The `update` argument right after `event.fire_master` in this example can really be anything, as it represents the data being passed in the event, and the passed data is ignored by this reactor.

Similarly, the tag name `salt/fileserver/gitfs/update` can be replaced by anything, so long as the usage is consistent.

The `root` user name in the hook script and sudo policy should be changed to match the user under which the minion is running.

### 2.11.12 Using Git as an External Pillar Source

The git external pillar (a.k.a. git_pillar) has been rewritten for the 2015.8.0 release. This rewrite brings with it pygit2 support (allowing for access to authenticated repositories), as well as more granular support for per-remote configuration.

To make use of the new features, changes to the git ext_pillar configuration must be made. The new configuration schema is detailed *here*.

For Salt releases before 2015.8.0, click *here* for documentation.

### 2.11.13 Why aren't my custom modules/states/etc. syncing to my Minions?

In versions 0.16.3 and older, when using the *git fileserver backend*, certain versions of GitPython may generate errors when fetching, which Salt fails to catch. While not fatal to the fetch process, these interrupt the fileserver update that takes place before custom types are synced, and thus interrupt the sync itself. Try disabling the git fileserver backend in the master config, restarting the master, and attempting the sync again.

This issue is worked around in Salt 0.16.4 and newer.

## 2.12 MinionFS Backend Walkthrough

New in version 2014.1.0.

---

**Note**: This walkthrough assumes basic knowledge of Salt and *cp.push*. To get up to speed, check out the Salt Walkthrough.

---

Sometimes it is desirable to deploy a file located on one minion to one or more other minions. This is supported in Salt, and can be accomplished in two parts:

1. Minion support for pushing files to the master (using *cp.push*)
2. The *minionfs* fileserver backend

This walkthrough will show how to use both of these features.

### 2.12.1 Enabling File Push

To set the master to accept files pushed from minions, the *file_recv* option in the master config file must be set to `True` (the default is `False`).

```
file_recv: True
```

---

**Note**: This change requires a restart of the salt-master service.

---

### 2.12.2 Pushing Files

Once this has been done, files can be pushed to the master using the *cp.push* function:

```
salt 'minion-id' cp.push /path/to/the/file
```

This command will store the file in a subdirectory named `minions` under the master's *cachedir*. On most masters, this path will be `/var/cache/salt/master/minions`. Within this directory will be one directory for each minion which has pushed a file to the master, and underneath that the full path to the file on the minion. So, for example, if a minion with an ID of `dev1` pushed a file `/var/log/myapp.log` to the master, it would be saved to `/var/cache/salt/master/minions/dev1/var/log/myapp.log`.

### 2.12.3 Serving Pushed Files Using MinionFS

While it is certainly possible to add `/var/cache/salt/master/minions` to the master's *file_roots* and serve these files, it may only be desirable to expose files pushed from certain minions. Adding `/var/cache/salt/master/minions/<minion-id>` for each minion that needs to be exposed can be cumbersome and prone to errors.

Enter *minionfs*. This fileserver backend will make files pushed using *cp.push* available to the Salt fileserver, and provides an easy mechanism to restrict which minions' pushed files are made available.

#### Simple Configuration

To use the *minionfs* backend, add `minion` to the list of backends in the *fileserver_backend* configuration option on the master:

```
file_recv: True

fileserver_backend:
  - roots
  - minion
```

**Note**: As described earlier, `file_recv: True` is also needed to enable the master to receive files pushed from minions. As always, changes to the master configuration require a restart of the `salt-master` service.

Files made available via *minionfs* are by default located at `salt://<minion-id>/path/to/file`. Think back to the earlier example, in which `dev1` pushed a file `/var/log/myapp.log` to the master. With *minionfs* enabled, this file would be addressable in Salt at `salt://dev1/var/log/myapp.log`.

If many minions have pushed to the master, this will result in many directories in the root of the Salt fileserver. For this reason, it is recommended to use the *minionfs_mountpoint* config option to organize these files underneath a subdirectory:

```
minionfs_mountpoint: salt://minionfs
```

Using the above mountpoint, the file in the example would be located at `salt://minionfs/dev1/var/log/myapp.log`.

#### Restricting Certain Minions' Files from Being Available Via MinionFS

A whitelist and blacklist can be used to restrict the minions whose pushed files are available via *minionfs*. These lists can be managed using the *minionfs_whitelist* and *minionfs_blacklist* config options. Click the links for both of them for a detailed explanation of how to use them.

A more complex configuration example, which uses both a whitelist and blacklist, can be found below:

```
file_recv: True

fileserver_backend:
  - roots
  - minion

minionfs_mountpoint: salt://minionfs

minionfs_whitelist:
```

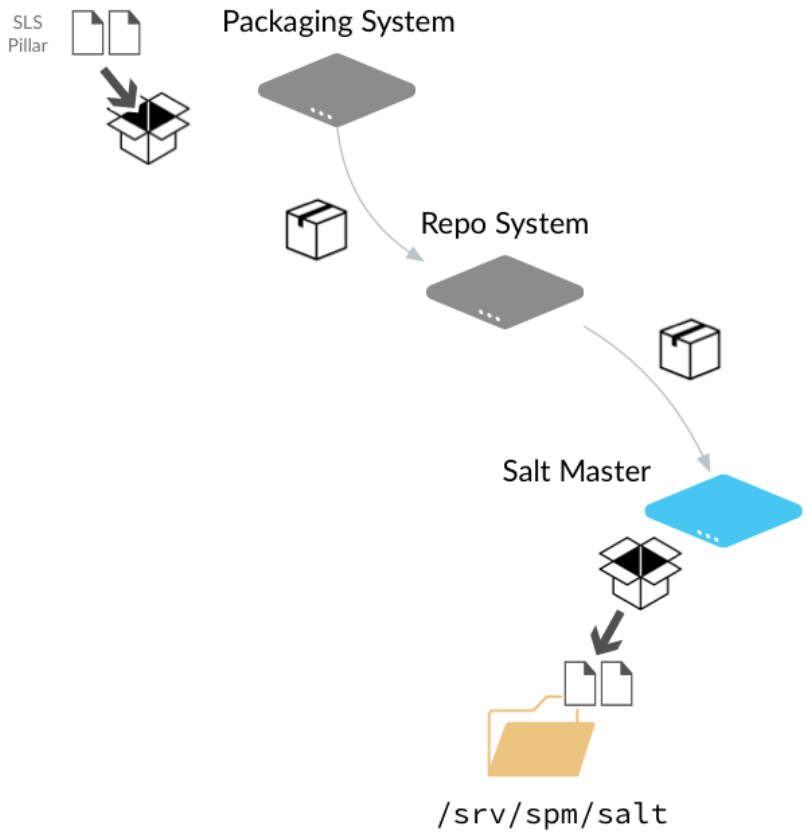
```
  - host04
  - web*
  - 'mail\d+\.domain\.tld'

minionfs_whitelist:
  - web21
```

#### Potential Concerns

- There is no access control in place to restrict which minions have access to files served up by *minionfs*. All minions will have access to these files.
- Unless the *minionfs_whitelist* and/or *minionfs_blacklist* config options are used, all minions which push files to the master will have their files made available via *minionfs*.

## 2.13 Salt Package Manager

The Salt Package Manager, or *SPM*, enables Salt formulas to be packaged to simplify distribution to Salt masters. The design of SPM was influenced by other existing packaging systems including RPM, Yum, and Pacman.




**Note:** The previous diagram shows each SPM component as a different system, but this is not required. You can build packages and host the SPM repo on a single Salt master if you'd like.

**Packaging System**

The packaging system is used to package the state, pillar, file templates, and other files used by your formula into a single file. After a formula package is created, it is copied to the Repository System where it is made available to Salt masters.

See *Building SPM Packages*

**Repo System**

The Repo system stores the SPM package and metadata files and makes them available to Salt masters via http(s), ftp, or file URLs. SPM repositories can be hosted on a Salt Master, a Salt Minion, or on another system.

See *Distributing SPM Packages*

**Salt Master**

SPM provides Salt master settings that let you configure the URL of one or more SPM repos. You can then quickly install packages that contain entire formulas to your Salt masters using SPM.

See *Installing SPM Packages*

**Contents**

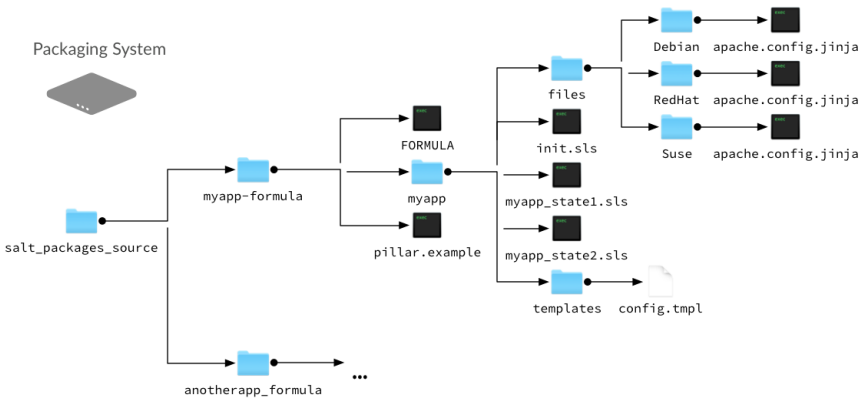
## 2.13.1 Building SPM Packages

The first step when using Salt Package Manager is to build packages for each of of the formulas that you want to distribute. Packages can be built on any system where you can install Salt.

### Package Build Overview

To build a package, all state, pillar, jinja, and file templates used by your formula are assembled into a folder on the build system. These files can be cloned from a Git repository, such as those found at the saltstack-formulas organization on GitHub, or copied directly to the folder.

The following diagram demonstrates a typical formula layout on the build system:




In this example, all formula files are placed in a `myapp-formula` folder. This is the folder that is targeted by the `spm build` command when this package is built.

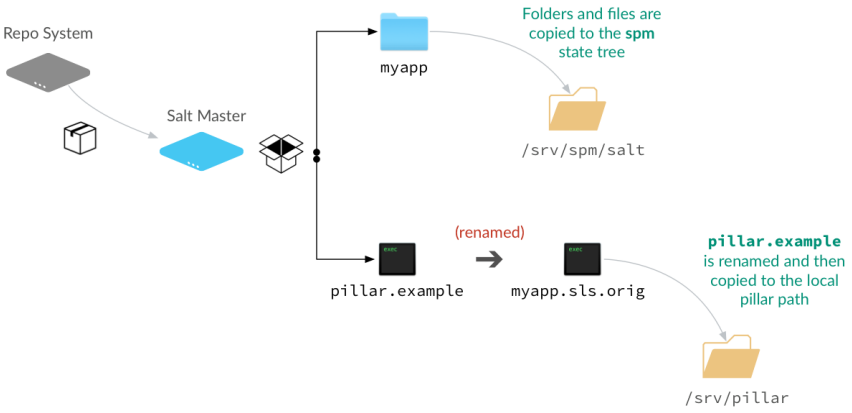
Within this folder, pillar data is placed in a `pillar.example` file at the root, and all state, jinja, and template files are placed within a subfolder that is named after the application being packaged. State files are typically contained within a subfolder, similar to how state files are organized in the state tree. Any non-pillar files in your package that are not contained in a subfolder are placed at the root of the spm state tree.

Additionally, a *FORMULA* file is created and placed in the root of the folder. This file contains package metadata that is used by SPM.

### Package Installation Overview

When building packages, it is useful to know where files are installed on the Salt master. During installation, all files except `pillar.example` and `FORMULA` are copied directly to the spm state tree on the Salt master (located at `\srv\spm\salt`).

If a `pillar.example` file is present in the root, it is renamed to `<formula name>.sls.orig` and placed in the `pillar_path`.




**Note:** Even though the pillar data file is copied to the pillar root, you still need to manually assign this pillar data to systems using the pillar top file. This file can also be duplicated and renamed so the `.orig` version is left intact in case you need to restore it later.

### Building an SPM Formula Package

1. Assemble formula files in a folder on the build system.
2. Create a *FORMULA* file and place it in the root of the package folder.
3. Run `spm build <folder name>`. The package is built and placed in the `/srv/spm_build` folder.

```
spm build /path/to/salt-packages-source/myapp-formula
```

4. Copy the `.spm` file to a folder on the *repository system*.

### Types of Packages

SPM supports different types of packages. The function of each package is denoted by its name. For instance, packages which end in `-formula` are considered to be Salt States (the most common type of formula). Packages which end in `-conf` contain configuration which is to be placed in the `/etc/salt/` directory. Packages which do not contain one of these names are treated as if they have a `-formula` name.

#### formula

By default, most files from this type of package live in the `/srv/spm/salt/` directory. The exception is the `pillar.example` file, which will be renamed to `<package_name>.sls` and placed in the pillar directory (`/srv/spm/pillar/` by default).

#### reactor

By default, files from this type of package live in the `/srv/spm/reactor/` directory.

#### conf

The files in this type of package are configuration files for Salt, which normally live in the `/etc/salt/` directory. Configuration files for packages other than Salt can and should be handled with a Salt State (using a `formula` type of package).

### Technical Information

Packages are built using BZ2-compressed tarballs. By default, the package database is stored using the `sqlite3` driver (see Loader Modules below).

Support for these are built into Python, and so no external dependencies are needed.

All other files belonging to SPM use YAML, for portability and ease of use and maintainability.

### SPM-Specific Loader Modules

SPM was designed to behave like traditional package managers, which apply files to the filesystem and store package metadata in a local database. However, because modern infrastructures often extend beyond those use cases, certain parts of SPM have been broken out into their own set of modules.

### Package Database

By default, the package database is stored using the `sqlite3` module. This module was chosen because support for SQLite3 is built into Python itself.

Please see the SPM Development Guide for information on creating new modules for package database management.

### Package Files

By default, package files are installed using the `local` module. This module applies files to the local filesystem, on the machine that the package is installed on.

Please see the *SPM Development Guide* for information on creating new modules for package file management.

### 2.13.2 Distributing SPM Packages

SPM packages can be distributed to Salt masters over HTTP(S), FTP, or through the file system. The SPM repo can be hosted on any system where you can install Salt. Salt is installed so you can run the `spm create_repo` command when you update or add a package to the repo. SPM repos do not require the salt-master, salt-minion, or any other process running on the system.

---

**Note:** If you are hosting the SPM repo on a system where you can not or do not want to install Salt, you can run the `spm create_repo` command on the build system and then copy the packages and the generated `SPM-METADATA` file to the repo. You can also install SPM files *directly on a Salt master*, bypassing the repository completely.

---

#### Setting up a Package Repository

After packages are built, the generated SPM files are placed in the `srv/spm_build` folder.

Where you place the built SPM files on your repository server depends on how you plan to make them available to your Salt masters.

You can share the `srv/spm_build` folder on the network, or copy the files to your FTP or Web server.

#### Adding a Package to the repository

New packages are added by simply copying the SPM file to the repo folder, and then generating repo metadata.

#### Generate Repo Metadata

Each time you update or add an SPM package to your repository, issue an `spm create_repo` command:

```
spm create_repo /srv/spm_build
```

SPM generates the repository metadata for all of the packages in that directory and places it in an `SPM-METADATA` file at the folder root. This command is used even if repository metadata already exists in that directory.

### 2.13.3 Installing SPM Packages

SPM packages are installed to your Salt master, where they are available to Salt minions using all of Salt's package management functions.

#### Configuring Remote Repositories

Before SPM can use a repository, two things need to happen. First, the Salt master needs to know where the repository is through a configuration process. Then it needs to pull down the repository metadata.

#### Repository Configuration Files

Repositories are configured by adding each of them to the `/etc/salt/spm.repos.d/spm.repo` file on each Salt master. This file contains the name of the repository, and the link to the repository:

```
my_repo:
  url: https://spm.example.com/
```

The URL can use `http`, `https`, `ftp`, or `file`.

```
my_repo:
  url: file:///srv/spm_build
```

### Updating Local Repository Metadata

After the repository is configured on the Salt master, repository metadata is downloaded using the `spm update_repo` command:

```
spm update_repo
```

**Note**: A file for each repo is placed in `/var/cache/salt/spm` on the Salt master after you run the *update_repo* command. If you add a repository and it does not seem to be showing up, check this path to verify that the repository was found.

### Update File Roots

SPM packages are installed to the `srv/spm/salt` folder on your Salt master. This path needs to be added to the file roots on your Salt master manually.

```
file_roots:
  base:
    1. /srv/salt
    2. /srv/spm/salt
```

Restart the salt-master service after updating the `file_roots` setting.

### Installing Packages

To install a package, use the `spm install` command:

```
spm install apache
```

**Warning**: Currently, SPM does not check to see if files are already in place before installing them. That means that existing files will be overwritten without warning.

### Installing directly from an SPM file

You can also install SPM packages using a local SPM file using the `spm local install` command:

```
spm local install /srv/spm/apache-201506-1.spm
```

An SPM repository is not required when using *spm local install*.

#### Pillars

If an installed package includes Pillar data, be sure to target the installed pillar to the necessary systems using the pillar Top file.

#### Removing Packages

Packages may be removed after they are installed using the `spm remove` command.

```
spm remove apache
```

If files have been modified, they will not be removed. Empty directories will also be removed.

### 2.13.4 SPM Configuration

There are a number of options that are specific to SPM. They may be configured in the `master` configuration file, or in SPM's own `spm` configuration file (normally located at `/etc/salt/spm`). If configured in both places, the `spm` file takes precedence. In general, these values will not need to be changed from the defaults.

#### spm_logfile

Default: `/var/log/salt/spm`

Where SPM logs messages.

#### spm_repos_config

Default: `/etc/salt/spm.repos`

SPM repositories are configured with this file. There is also a directory which corresponds to it, which ends in `.d`. For instance, if the filename is `/etc/salt/spm.repos`, the directory will be `/etc/salt/spm.repos.d/`.

#### spm_cache_dir

Default: `/var/cache/salt/spm`

When SPM updates package repository metadata and downloads packaged, they will be placed in this directory. The package database, normally called `packages.db`, also lives in this directory.

#### spm_db

Default: `/var/cache/salt/spm/packages.db`

The location and name of the package database. This database stores the names of all of the SPM packages installed on the system, the files that belong to them, and the metadata for those files.

#### spm_build_dir

Default: `/srv/spm`

When packages are built, they will be placed in this directory.

#### spm_build_exclude

Default: `['.git']`

When SPM builds a package, it normally adds all files in the formula directory to the package. Files listed here will be excluded from that package. This option requires a list to be specified.

```
spm_build_exclude:
  - .git
  - .svn
```

#### Types of Packages

SPM supports different types of formula packages. The function of each package is denoted by its name. For instance, packages which end in `-formula` are considered to be Salt States (the most common type of formula). Packages which end in `-conf` contain configuration which is to be placed in the `/etc/salt/` directory. Packages which do not contain one of these names are treated as if they have a `-formula` name.

#### formula

By default, most files from this type of package live in the `/srv/spm/salt/` directory. The exception is the `pillar.example` file, which will be renamed to `<package_name>.sls` and placed in the pillar directory (`/srv/spm/pillar/` by default).

#### reactor

By default, files from this type of package live in the `/srv/spm/reactor/` directory.

#### conf

The files in this type of package are configuration files for Salt, which normally live in the `/etc/salt/` directory. Configuration files for packages other than Salt can and should be handled with a Salt State (using a `formula` type of package).

### 2.13.5 FORMULA File

In addition to the formula itself, a `FORMULA` file must exist which describes the package. An example of this file is:

```
name: apache
os: RedHat, Debian, Ubuntu, Suse, FreeBSD
os_family: RedHat, Debian, Suse, FreeBSD
version: 201506
release: 2
summary: Formula for installing Apache
description: Formula for installing Apache
```

#### Required Fields

This file must contain at least the following fields:

#### name

The name of the package, as it will appear in the package filename, in the repository metadata, and the package database. Even if the source formula has `-formula` in its name, this name should probably not include that. For instance, when packaging the `apache-formula`, the name should be set to `apache`.

#### os

The value of the `os` grain that this formula supports. This is used to help users know which operating systems can support this package.

#### os_family

The value of the `os_family` grain that this formula supports. This is used to help users know which operating system families can support this package.

#### version

The version of the package. While it is up to the organization that manages this package, it is suggested that this version is specified in a `YYYYMM` format. For instance, if this version was released in June 2015, the package version should be `201506`. If multiple releases are made in a month, the `release` field should be used.

#### minimum_version

Minimum recommended version of Salt to use this formula. Not currently enforced.

#### release

This field refers primarily to a release of a version, but also to multiple versions within a month. In general, if a version has been made public, and immediate updates need to be made to it, this field should also be updated.

#### summary

A one-line description of the package.

#### description

A more detailed description of the package which can contain more than one line.

### Optional Fields

The following fields may also be present.

#### top_level_dir

This field is optional, but highly recommended. If it is not specified, the package name will be used.

Formula repositories typically do not store `.sls` files in the root of the repository; instead they are stored in a subdirectory. For instance, an `apache-formula` repository would contain a directory called `apache`, which would contain an `init.sls`, plus a number of other related files. In this instance, the `top_level_dir` should be set to `apache`.

Files outside the `top_level_dir`, such as `README.rst`, `FORMULA`, and `LICENSE` will not be installed. The exceptions to this rule are files that are already treated specially, such as `pillar.example` and `_modules/`.

#### recommended

A list of optional packages that are recommended to be installed with the package. This list is displayed in an informational message when the package is installed to SPM.

### Building a Package

Once a `FORMULA` file has been created, it is placed into the root of the formula that is to be turned into a package. The `spm build` command is used to turn that formula into a package:

```
spm build /path/to/saltstack-formulas/apache-formula
```

The resulting file will be placed in the build directory. By default this directory is located at `/srv/spm/`.

### Loader Modules

When an execution module is placed in `<file_roots>/_modules/` on the master, it will automatically be synced to minions, the next time a sync operation takes place. Other modules are also propagated this way: state modules can be placed in `_states/`, and so on.

When SPM detects a file in a package which resides in one of these directories, that directory will be placed in `<file_roots>` instead of in the formula directory with the rest of the files.

### Removing Packages

Packages may be removed once they are installed using the `spm remove` command.

```
spm remove apache
```

If files have been modified, they will not be removed. Empty directories will also be removed.

### Technical Information

Packages are built using BZ2-compressed tarballs. By default, the package database is stored using the `sqlite3` driver (see Loader Modules below).

Support for these are built into Python, and so no external dependencies are needed.

All other files belonging to SPM use YAML, for portability and ease of use and maintainability.

#### SPM-Specific Loader Modules

SPM was designed to behave like traditional package managers, which apply files to the filesystem and store package metadata in a local database. However, because modern infrastructures often extend beyond those use cases, certain parts of SPM have been broken out into their own set of modules.

#### Package Database

By default, the package database is stored using the `sqlite3` module. This module was chosen because support for SQLite3 is built into Python itself.

Please see the SPM Development Guide for information on creating new modules for package database management.

#### Package Files

By default, package files are installed using the `local` module. This module applies files to the local filesystem, on the machine that the package is installed on.

Please see the *SPM Development Guide* for information on creating new modules for package file management.

#### Types of Packages

SPM supports different types of formula packages. The function of each package is denoted by its name. For instance, packages which end in `-formula` are considered to be Salt States (the most common type of formula). Packages which end in `-conf` contain configuration which is to be placed in the `/etc/salt/` directory. Packages which do not contain one of these names are treated as if they have a `-formula` name.

#### formula

By default, most files from this type of package live in the `/srv/spm/salt/` directory. The exception is the `pillar.example` file, which will be renamed to `<package_name>.sls` and placed in the pillar directory (`/srv/spm/pillar/` by default).

#### reactor

By default, files from this type of package live in the `/srv/spm/reactor/` directory.

#### conf

The files in this type of package are configuration files for Salt, which normally live in the `/etc/salt/` directory. Configuration files for packages other than Salt can and should be handled with a Salt State (using a `formula` type of package).

### 2.13.6 SPM Development Guide

This document discusses developing additional code for SPM.

### SPM-Specific Loader Modules

SPM was designed to behave like traditional package managers, which apply files to the filesystem and store package metadata in a local database. However, because modern infrastructures often extend beyond those use cases, certain parts of SPM have been broken out into their own set of modules.

Each function that accepts arguments has a set of required and optional arguments. Take note that SPM will pass all arguments in, and therefore each function must accept each of those arguments. However, arguments that are marked as required are crucial to SPM's core functionality, while arguments that are marked as optional are provided as a benefit to the module, if it needs to use them.

### Package Database

By default, the package database is stored using the `sqlite3` module. This module was chosen because support for SQLite3 is built into Python itself.

Modules for managing the package database are stored in the `salt/spm/pkgdb/` directory. A number of functions must exist to support database management.

#### init()

Get a database connection, and initialize the package database if necessary.

This function accepts no arguments. If a database is used which supports a connection object, then that connection object is returned. For instance, the `sqlite3` module returns a `connect()` object from the `sqlite3` library:

```
conn = sqlite3.connect(__opts__['spm_db'], isolation_level=None)
...
return conn
```

SPM itself will not use this connection object; it will be passed in as-is to the other functions in the module. Therefore, when you set up this object, make sure to do so in a way that is easily usable throughout the module.

#### info()

Return information for a package. This generally consists of the information that is stored in the `FORMULA` file in the package.

The arguments that are passed in, in order, are `package` (required) and `conn` (optional).

`package` is the name of the package, as specified in the `FORMULA`. `conn` is the connection object returned from `init()`.

#### list_files()

Return a list of files for an installed package. Only the filename should be returned, and no other information.

The arguments that are passed in, in order, are `package` (required) and `conn` (optional).

`package` is the name of the package, as specified in the `FORMULA`. `conn` is the connection object returned from `init()`.

### register_pkg()

Register a package in the package database. Nothing is expected to be returned from this function.

The arguments that are passed in, in order, are `name` (required), `formula_def` (required), and `conn` (optional).

`name` is the name of the package, as specified in the `FORMULA`. `formula_def` is the contents of the `FORMULA` file, as a `dict`. `conn` is the connection object returned from `init()`.

### register_file()

Register a file in the package database. Nothing is expected to be returned from this function.

The arguments that are passed in are `name` (required), `member` (required), `path` (required), `digest` (optional), and `conn` (optional).

`name` is the name of the package.

`member` is a `tarfile` object for the package file. It is included, because it contains most of the information for the file.

`path` is the location of the file on the local filesystem.

`digest` is the SHA1 checksum of the file.

`conn` is the connection object returned from `init()`.

### unregister_pkg()

Unregister a package from the package database. This usually only involves removing the package's record from the database. Nothing is expected to be returned from this function.

The arguments that are passed in, in order, are `name` (required) and `conn` (optional).

`name` is the name of the package, as specified in the `FORMULA`. `conn` is the connection object returned from `init()`.

### unregister_file()

Unregister a package from the package database. This usually only involves removing the package's record from the database. Nothing is expected to be returned from this function.

The arguments that are passed in, in order, are `name` (required), `pkg` (optional) and `conn` (optional).

`name` is the path of the file, as it was installed on the filesystem.

`pkg` is the name of the package that the file belongs to.

`conn` is the connection object returned from `init()`.

### db_exists()

Check to see whether the package database already exists. This is the path to the package database file. This function will return `True` or `False`.

The only argument that is expected is `db_`, which is the package database file.

### Package Files

By default, package files are installed using the `local` module. This module applies files to the local filesystem, on the machine that the package is installed on.

Modules for managing the package database are stored in the `salt/spm/pkgfiles/` directory. A number of functions must exist to support file management.

### init()

Initialize the installation location for the package files. Normally these will be directory paths, but other external destinations such as databases can be used. For this reason, this function will return a connection object, which can be a database object. However, in the default `local` module, this object is a dict containing the paths. This object will be passed into all other functions.

Three directories are used for the destinations: `formula_path`, `pillar_path`, and `reactor_path`.

`formula_path` is the location of most of the files that will be installed. The default is specific to the operating system, but is normally `/srv/salt/`.

`pillar_path` is the location that the `pillar.example` file will be installed to. The default is specific to the operating system, but is normally `/srv/pillar/`.

`reactor_path` is the location that reactor files will be installed to. The default is specific to the operating system, but is normally `/srv/reactor/`.

### check_existing()

Check the filesystem for existing files. All files for the package will be checked, and if any are existing, then this function will normally state that SPM will refuse to install the package.

This function returns a list of the files that exist on the system.

The arguments that are passed into this function are, in order: `package` (required), `pkg_files` (required), `formula_def` (formula_def), and `conn` (optional).

`package` is the name of the package that is to be installed.

`pkg_files` is a list of the files to be checked.

`formula_def` is a copy of the information that is stored in the `FORMULA` file.

`conn` is the file connection object.

### install_file()

Install a single file to the destination (normally on the filesystem). Nothing is expected to be returned from this function.

This function returns the final location that the file was installed to.

The arguments that are passed into this function are, in order, `package` (required), `formula_tar` (required), `member` (required), `formula_def` (required), and `conn` (optional).

`package` is the name of the package that is to be installed.

`formula_tar` is the tarfile object for the package. This is passed in so that the function can call `formula_tar.extract()` for the file.

`member` is the tarfile object which represents the individual file. This may be modified as necessary, before being passed into `formula_tar.extract()`.

`formula_def` is a copy of the information from the `FORMULA` file.

`conn` is the file connection object.

#### remove_file()

Remove a single file from file system. Normally this will be little more than an `os.remove()`. Nothing is expected to be returned from this function.

The arguments that are passed into this function are, in order, `path` (required) and `conn` (optional).

`path` is the absolute path to the file to be removed.

`conn` is the file connection object.

#### hash_file()

Returns the hexdigest hash value of a file.

The arguments that are passed into this function are, in order, `path` (required), `hashobj` (required), and `conn` (optional).

`path` is the absolute path to the file.

`hashobj` is a reference to `hashlib.sha1()`, which is used to pull the `hexdigest()` for the file.

`conn` is the file connection object.

This function will not generally be more complex than:

```
def hash_file(path, hashobj, conn=None):
    with salt.utils.fopen(path, 'r') as f:
        hashobj.update(f.read())
        return hashobj.hexdigest()
```

#### path_exists()

Check to see whether the file already exists on the filesystem. Returns `True` or `False`.

This function expects a `path` argument, which is the absolute path to the file to be checked.

#### path_isdir()

Check to see whether the path specified is a directory. Returns `True` or `False`.

This function expects a `path` argument, which is the absolute path to be checked.

## 2.14 Storing Data in Other Databases

The SDB interface is designed to store and retrieve data that, unlike pillars and grains, is not necessarily minion-specific. The initial design goal was to allow passwords to be stored in a secure database, such as one managed by

the keyring package, rather than as plain-text files. However, as a generic database interface, it could conceptually be used for a number of other purposes.

SDB was added to Salt in version 2014.7.0.

### 2.14.1 SDB Configuration

In order to use the SDB interface, a configuration profile must be set up in either the master or minion configuration file. The configuration stanza includes the name/ID that the profile will be referred to as, a `driver` setting, and any other arguments that are necessary for the SDB module that will be used. For instance, a profile called `mykeyring`, which uses the `system` service in the `keyring` module would look like:

```
mykeyring:
  driver: keyring
  service: system
```

It is recommended to keep the name of the profile simple, as it is used in the SDB URI as well.

### 2.14.2 SDB URIs

SDB is designed to make small database queries (hence the name, SDB) using a compact URL. This allows users to reference a database value quickly inside a number of Salt configuration areas, without a lot of overhead. The basic format of an SDB URI is:

```
sdb://<profile>/<args>
```

The profile refers to the configuration profile defined in either the master or the minion configuration file. The args are specific to the module referred to in the profile, but will typically only need to refer to the key of a key/value pair inside the database. This is because the profile itself should define as many other parameters as possible.

For example, a profile might be set up to reference credentials for a specific OpenStack account. The profile might look like:

```
kevinopenstack:
  driver: keyring
  service: salt.cloud.openstack.kevin
```

And the URI used to reference the password might look like:

```
sdb://kevinopenstack/password
```

### 2.14.3 Getting and Setting SDB Values

Once an SDB driver is configured, you can use the `sdb` execution module to set and get values from it. There are two functions that will appear in any SDB module: `set` and `get`.

Getting a value requires only the SDB URI to be specified. To retrieve a value from the `kevinopenstack` profile above, you would use:

```
salt-call sdb.get sdb://kevinopenstack/password
```

Some drivers use slightly more complex URIs. For instance, the `vault` driver requires the full path to where the key is stored, followed by a question mark, followed by the key to be retrieved. If you were using a profile called `myvault`, you would use a URI that looks like:

```
salt-call sdb.get 'sdb://myvault/secret/salt?saltstack'
```

Setting a value uses the same URI as would be used to retrieve it, followed by the value as another argument. For the above `myvault` URI, you would set a new value using a command like:

```
salt-call sdb.set 'sdb://myvault/secret/salt?saltstack' 'super awesome'
```

The `sdb.get` and `sdb.set` functions are also available in the runner system:

```
salt-run sdb.get 'sdb://myvault/secret/salt?saltstack'
salt-run sdb.set 'sdb://myvault/secret/salt?saltstack' 'super awesome'
```

### 2.14.4 Using SDB URIs in Files

SDB URIs can be used in both configuration files, and files that are processed by the renderer system (jinja, mako, etc.). In a configuration file (such as `/etc/salt/master`, `/etc/salt/minion`, `/etc/salt/cloud`, etc.), make an entry as usual, and set the value to the SDB URI. For instance:

```
mykey: sdb://myetcd/mykey
```

To retrieve this value using a module, the module in question must use the `config.get` function to retrieve configuration values. This would look something like:

```
mykey = __salt__['config.get']('mykey')
```

Templating renderers use a similar construct. To get the `mykey` value from above in Jinja, you would use:

```
{{ salt['config.get']('mykey') }}
```

When retrieving data from configuration files using `config.get`, the SDB URI need only appear in the configuration file itself.

If you would like to retrieve a key directly from SDB, you would call the `sdb.get` function directly, using the SDB URI. For instance, in Jinja:

```
{{ salt['sdb.get']('sdb://myetcd/mykey') }}
```

When writing Salt modules, it is not recommended to call `sdb.get` directly, as it requires the user to provide values in SDB, using a specific URI. Use `config.get` instead.

### 2.14.5 Writing SDB Modules

There is currently one function that MUST exist in any SDB module (`get()`) and one that SHOULD exist (`set_()`). If using a (`set_()`) function, a `__func_alias__` dictionary MUST be declared in the module as well:

```
__func_alias__ = {
    'set_': 'set',
}
```

This is because `set` is a Python built-in, and therefore functions should not be created which are called `set()`. The `__func_alias__` functionality is provided via Salt's loader interfaces, and allows legally-named functions to be referred to using names that would otherwise be unwise to use.

The `get()` function is required, as it will be called via functions in other areas of the code which make use of the `sdb://` URI. For example, the `config.get` function in the `config` execution module uses this function.

The `set_()` function may be provided, but is not required, as some sources may be read-only, or may be otherwise unwise to access via a URI (for instance, because of SQL injection attacks).

A simple example of an SDB module is `salt/sdb/keyring_db.py`, as it provides basic examples of most, if not all, of the types of functionality that are available not only for SDB modules, but for Salt modules in general.

## 2.15 Running the Salt Master/Minion as an Unprivileged User

While the default setup runs the master and minion as the root user, some may consider it an extra measure of security to run the master as a non-root user. Keep in mind that doing so does not change the master's capability to access minions as the user they are running as. Due to this many feel that running the master as a non-root user does not grant any real security advantage which is why the master has remained as root by default.

---

**Note:** Some of Salt's operations cannot execute correctly when the master is not running as root, specifically the pam external auth system, as this system needs root access to check authentication.

---

As of Salt 0.9.10 it is possible to run Salt as a non-root user. This can be done by setting the *user* parameter in the master configuration file. and restarting the `salt-master` service.

The minion has it's own *user* parameter as well, but running the minion as an unprivileged user will keep it from making changes to things like users, installed packages, etc. unless access controls (sudo, etc.) are setup on the minion to permit the non-root user to make the needed changes.

In order to allow Salt to successfully run as a non-root user, ownership, and permissions need to be set such that the desired user can read from and write to the following directories (and their subdirectories, where applicable):

- /etc/salt
- /var/cache/salt
- /var/log/salt
- /var/run/salt

Ownership can be easily changed with `chown`, like so:

```
# chown -R user /etc/salt /var/cache/salt /var/log/salt /var/run/salt
```

**Warning:** Running either the master or minion with the *root_dir* parameter specified will affect these paths, as will setting options like *pki_dir*, *cachedir*, *log_file*, and other options that normally live in the above directories.

## 2.16 Using cron with Salt

The Salt Minion can initiate its own *highstate* using the `salt-call` command.

```
$ salt-call state.apply
```

This will cause the minion to check in with the master and ensure it is in the correct ``state''.

## 2.17 Use cron to initiate a highstate

If you would like the Salt Minion to regularly check in with the master you can use cron to run the `salt-call` command:

```
0 0 * * * salt-call state.apply
```

The above cron entry will run a *highstate* every day at midnight.

---

**Note**: When executing Salt using cron, keep in mind that the default PATH for cron may not include the path for any scripts or commands used by Salt, and it may be necessary to set the PATH accordingly in the crontab:

```
PATH=/bin:/sbin:/usr/bin:/usr/sbin:/usr/local/bin:/usr/local/sbin:/opt/bin

0 0 * * * salt-call state.apply
```

---

## 2.18 Hardening Salt

This topic contains tips you can use to secure and harden your Salt environment. How you best secure and harden your Salt environment depends heavily on how you use Salt, where you use Salt, how your team is structured, where you get data from, and what kinds of access (internal and external) you require.

### 2.18.1 General hardening tips

- Restrict who can directly log into your Salt master system.
- Use SSH keys secured with a passphrase to gain access to the Salt master system.
- Track and secure SSH keys and any other login credentials you and your team need to gain access to the Salt master system.
- Use a hardened bastion server or a VPN to restrict direct access to the Salt master from the internet.
- Don't expose the Salt master any more than what is required.
- Harden the system as you would with any high-priority target.
- Keep the system patched and up-to-date.
- Use tight firewall rules.

### 2.18.2 Salt hardening tips

- Subscribe to salt-users or salt-announce so you know when new Salt releases are available. Keep your systems up-to-date with the latest patches.
- Use Salt's Client *ACL system* to avoid having to give out root access in order to run Salt commands.
- Use Salt's Client *ACL system* to restrict which users can run what commands.
- Use *external Pillar* to pull data into Salt from external sources so that non-sysadmins (other teams, junior admins, developers, etc) can provide configuration data without needing access to the Salt master.

- Make heavy use of SLS files that are version-controlled and go through a peer-review/code-review process before they're deployed and run in production. This is good advice even for ``one-off'' CLI commands because it helps mitigate typos and mistakes.
- Use salt-api, SSL, and restrict authentication with the *external auth* system if you need to expose your Salt master to external services.
- Make use of Salt's event system and *reactor* to allow minions to signal the Salt master without requiring direct access.
- Run the `salt-master` daemon as non-root.
- Disable which modules are loaded onto minions with the `disable_modules` setting. (for example, disable the `cmd` module if it makes sense in your environment.)
- Look through the fully-commented sample *master* and *minion* config files. There are many options for securing an installation.
- Run *masterless-mode* minions on particularly sensitive minions. There is also *Salt SSH* or the `modules.sudo` if you need to further restrict a minion.

## 2.19 Security disclosure policy

**email** security@saltstack.com

**gpg key ID** 4EA0793D

**gpg key fingerprint** `8ABE 4EFC F0F4 B24B FF2A AF90 D570 F2D3 4EA0 793D`

**gpg public key**:

```
-----BEGIN PGP PUBLIC KEY BLOCK-----
Version: GnuPG/MacGPG2 v2.0.22 (Darwin)

mQINBFO15mMBEADa3CfQwk5ED9wAQ8fFDku277CegG3U1hVGdcxqKNvucblwoKCb
hRK6u9ihgaO9V9duV2glwgjytiBI/z6lyWqdaD37YXG/gTL+9Md+qdSDeaOa/9eg
7y+g4P+FvU9HWUlujRVlofUn5Dj/IZgUywbxwEybutuzvvFVTzsn+DFVwTH34Qoh
QIuNzQCSEz3Lhh8zq9LqkNy91ZZQO1ZIUrypafspH6GBHHcE8msBFgYiNBnVcUFH
u0r4j1Rav+621EtD5GZsOt05+NJI8pkaC/dDKjURcuiV6bhmeSpNzLaXUhwx6f29
Vhag5JhVGGNQxlRTxNEM86HEFp+4zJQ8m/wRDrGX5IAHsdESdhP+ljDVlAAX/ttP
/Ucl2fgpTnDKVHOA00E515Q87ZHv6awJ3GL1veqi8zfsLaag7rw1TuuHyGLOPkDt
t5PAjsS9R3KI7pGnhqI6bTOi591odUdgzUhZChWUUX1VStiIDi2jCvyoOOLMOGS5
AEYXuWYP7KgujZCDRaTNqRDdgPd93Mh9JI8UmkzXDUgijdzVpzPjYgFaWtyK8lsc
Fizqe3/Yzf9RCVX/lmRbiEH+ql/zSxcWlBQd17PKaL+TisQFXcmQzccYgAxFbj2r
QHp5ABEu9YjFme2Jzun7Mv9V4qo3JF5dmnUk31yupZeAOGZkirIsaWC3hwARAQAB
tDBTYWx0U3RhY2sgU2VjdXJpdHkgVGVhbSA8c2VjdXJpdHlAc2FsdHN0YWNrLmNv
bT6JAj4EEwECACgFAlO15mMCGwMFCQeGH4AGCwkIBwMCBhUIAgkKCwQWAgMBAh4B
AheAAAoJENVw8tNOoHk9z/MP/2vzY27fmVxU5X8joiiturjlgEqQw41IYEmWv1Bw
4WVXYCHP1yu/1MC1uuvOmOd5BlI8YO2C2oyW7d1B0NorguPtz55b7jabCElekVCh
h/H4ZVThiwqgPpthRv/2npXjIm7SLSs/kuaXo6Qy2JpszwDVFw+xCRVL0tH9KJxz
HuNBeVq7abWD5fzIWkmGM9hicG/R2D0RIlco1Q0VNKy8klG+pOFOW886KnwkSPc7
JUYp1oUlHsSlhTmkLEG54cyVzrTP/XuZuyMTdtyTc3mfgW0adneAL6MARtC5UB/h
q+v9dqMf4iD3wY6ctu8KWE8Vo5MUEsNNO9EA2dUR88LwFZ3ZnnXdQkizgR/Aa515
dm17vlNkSoomYCo84eN7GOTfxWcq+iXYSWcKWT4X+h/ra+LmNndQWQBRebVUtbKE
ZDwKmiQz/5LY5EhlWcuU4lVmMSFpWXt5FR/PtzgTdZAo9QKkBjcv97LYbXvsPI69
El1BLAg+m+1UpE1L7zJT1il6PqVyEFAWBxW46wXCCkGssFsvz2yRp0PDX8A6u4yq
rTkt09uYht1is61joLDJ/kq3+6k8gJWkDOW+2NMrmf+/qcdYCMYXmrtOpg/wF27W
GMNAkbdyzgeX/MbUBCGCMdzhevRuivOI5bu4vT5s3KdshG+yhzV45bapKRd5VN+1
mZRquQINBFO15mMBEAC5UuLii9ZLz6qHfIJp35IOW9U8SOf7QFhzXR7NZ3DmJsd3
```

```
f6Nb/habQFIHjm3K9wbpj+FvaW2oWRlFVvYdzjUq6c82GUUjW1dnqgUvFwdmM835
1n0YQ2TonmyaF882RvsRZrbJ65uvy7SQxlouXaAYOdqwLsPxBEOyOnMPSktW5V2U
IWyxsNP3sADchWIGq9p5D3Y/loyIMsS1dj+TjoQZOKSj7CuRT98+8yhGAY8YBEXu
9r3I9o6mDkuPpAljuMc8r09Im6az2egtK/szKt4Hy1bpSSBZU4W/XR7XwQNywmb3
wxjmYT6Od3Mwj0jtzc3gQiH8hcEy3+BO+NNmyzFVyIwOLziwjmEcw62S57wYKUVn
HD2nglMsQa8Ve0e6ABBMEY7zGEGStva59rfgeh0jUMJiccGiUDTMs0tdkC6knYKb
u/fdRqNYFoNuDcSeLEw4DdCuP01l2W4yY+fiK6hAcL25amjzc+yYo9eaaqTn6RAT
bzdhHQZdpAMxY+vNT0+NhP1Zo5gYBMR65Zp/VhFsf67ijb03FUtdw9N8dHwiR2m8
vVA8kO/gCD6wS2p9RdXqrJ9JhnHYWjiVuXR+f755ZAndyQfRtowMdQIoiXuJEXYw
6XN+/BX81gJaynJYc0uw0MnxWQX+A5m8HqEsbIFUXBYXPgbwXTm7c4IHGgXXdwAR
AQABiQIlBBgBAgAPBQJTteZjAhsMBQkHhh+AAAoJENVw8tNOoHk91rcQAIhxLv4g
duF/J1Cyf6Wixz4rqslBQ7DgNztdIUMjCThg3eB6pvIzY5d3DNROmwU5JvGP1rEw
hNiJhgBDFaB0J/y28uSci+orhKDTHb/cn30IxfuAuqrv9dujvmlgM7JUswOtLZhs
5FYGa6v1RORRWhUx2PQsF6ORg22QAaagc7OlaO3BXBoiE/FWsnEQCUsc7GnnPqi7
um45OJl/pJntsBUKvivEU20fj7j1UpjmeWz56NcjXoKtEvGh99gM5W2nSMLE3aPw
vcKhS4yRyLjOe19NfYbtID8m8oshUDji0XjQ1z5NdGcf2V1YNGHU5xyK6zwyGxgV
xZqaWnbhDTu1UnYBna8BiUobkuqclb4T9k2WjbrUSmTwKixokCOirFDZvqISkgmN
r6/g3w2TRi11/LtbUciF0FN2pd7rj5mWrOBPEFYJmrB6SQeswWNhr5RIsXrQd/Ho
zvNm0HnUNEe6w5YBfA6sXQy8B0Zs6pcgLogkFB15TuHIIIpxIsVRv5z8SlEnB7HQ
Io9hZT58yjhekJuzVQB9loU0C/W0lzci/pXTt6fd9puYQe1DG37pSifRG6kfHxrR
if6nRyrfdTlawqbqdkoqFDmEybAM9/hv3BqriGahGGH/hgplNQbYoXfNwYMYaHuB
aSkJvrOQW8bpuAzgVyd7TyNFv+t1kLlfaRYJ
=wBTJ
-----END PGP PUBLIC KEY BLOCK-----
```

The SaltStack Security Team is available at security@saltstack.com for security-related bug reports or questions.

We request the disclosure of any security-related bugs or issues be reported non-publicly until such time as the issue can be resolved and a security-fix release can be prepared. At that time we will release the fix and make a public announcement with upgrade instructions and download locations.

### 2.19.1 Security response procedure

SaltStack takes security and the trust of our customers and users very seriously. Our disclosure policy is intended to resolve security issues as quickly and safely as is possible.

1. A security report sent to security@saltstack.com is assigned to a team member. This person is the primary contact for questions and will coordinate the fix, release, and announcement.
2. The reported issue is reproduced and confirmed. A list of affected projects and releases is made.
3. Fixes are implemented for all affected projects and releases that are actively supported. Back-ports of the fix are made to any old releases that are actively supported.
4. Packagers are notified via the salt-packagers mailing list that an issue was reported and resolved, and that an announcement is incoming.
5. A new release is created and pushed to all affected repositories. The release documentation provides a full description of the issue, plus any upgrade instructions or other relevant details.
6. An announcement is made to the salt-users and salt-announce mailing lists. The announcement contains a description of the issue and a link to the full release documentation and download locations.

### 2.19.2 Receiving security announcements

The fastest place to receive security announcements is via the salt-announce mailing list. This list is low-traffic.

## 2.20 Salt Transport

One of fundamental features of Salt is remote execution. Salt has two basic ``channels'' for communicating with minions. Each channel requires a client (minion) and a server (master) implementation to work within Salt. These pairs of channels will work together to implement the specific message passing required by the channel interface.

### 2.20.1 Pub Channel

The pub channel, or publish channel, is how a master sends a job (payload) to a minion. This is a basic pub/sub paradigm, which has specific targeting semantics. All data which goes across the publish system should be encrypted such that only members of the Salt cluster can decrypt the publishes.

### 2.20.2 Req Channel

The req channel is how the minions send data to the master. This interface is primarily used for fetching files and returning job returns. The req channels have two basic interfaces when talking to the master. `send` is the basic method that guarantees the message is encrypted at least so that only minions attached to the same master can read it-- but no guarantee of minion-master confidentiality, whereas the `crypted_transfer_decode_dictentry` method does guarantee minion-master confidentiality.

#### Zeromq Transport

**Note:** Zeromq is the current default transport within Salt

Zeromq is a messaging library with bindings into many languages. Zeromq implements a socket interface for message passing, with specific semantics for the socket type.

#### Pub Channel

The pub channel is implemented using zeromq's pub/sub sockets. By default we don't use zeromq's filtering, which means that all publish jobs are sent to all minions and filtered minion side. Zeromq does have publisher side filtering which can be enabled in salt using `zmq_filtering`.

#### Req Channel

The req channel is implemented using zeromq's req/rep sockets. These sockets enforce a send/recv pattern, which forces salt to serialize messages through these socket pairs. This means that although the interface is asynchronous on the minion we cannot send a second message until we have received the reply of the first message.

#### TCP Transport

The tcp transport is an implementation of Salt's channels using raw tcp sockets. Since this isn't using a pre-defined messaging library we will describe the wire protocol, message semantics, etc. in this document.

The tcp transport is enabled by changing the *`transport`* setting to `tcp` on each Salt minion and Salt master.

```
transport: tcp
```

### Wire Protocol

This implementation over TCP focuses on flexibility over absolute efficiency. This means we are okay to spend a couple of bytes of wire space for flexibility in the future. That being said, the wire framing is quite efficient and looks like:

```
msgpack({'head': SOMEHEADER, 'body': SOMEBODY})
```

Since msgpack is an iterably parsed serialization, we can simply write the serialized payload to the wire. Within that payload we have two items ``head'' and ``body''. Head contains header information (such as ``message id''). The Body contains the actual message that we are sending. With this flexible wire protocol we can implement any message semantics that we'd like-- including multiplexed message passing on a single socket.

### Crypto

The current implementation uses the same crypto as the `zeromq` transport.

### Pub Channel

For the pub channel we send messages without ``message ids'' which the remote end interprets as a one-way send.

---

**Note**: As of today we send all publishes to all minions and rely on minion-side filtering.

---

### Req Channel

For the req channel we send messages with a ``message id''. This ``message id'' allows us to multiplex messages across the socket.

### The RAET Transport

---

**Note**: The RAET transport is in very early development, it is functional but no promises are yet made as to its reliability or security. As for reliability and security, the encryption used has been audited and our tests show that raet is reliable. With this said we are still conducting more security audits and pushing the reliability. This document outlines the encryption used in RAET

---

New in version 2014.7.0.

The Reliable Asynchronous Event Transport, or RAET, is an alternative transport medium developed specifically with Salt in mind. It has been developed to allow queuing to happen up on the application layer and comes with socket layer encryption. It also abstracts a great deal of control over the socket layer and makes it easy to bubble up errors and exceptions.

RAET also offers very powerful message routing capabilities, allowing for messages to be routed between processes on a single machine all the way up to processes on multiple machines. Messages can also be restricted, allowing processes to be sent messages of specific types from specific sources allowing for trust to be established.

### Using RAET in Salt

Using RAET in Salt is easy, the main difference is that the core dependencies change, instead of needing pycrypto, M2Crypto, ZeroMQ, and PYZMQ, the packages libsodium, libnacl, ioflo, and raet are required. Encryption is handled very cleanly by libnacl, while the queueing and flow control is handled by ioflo. Distribution packages are forthcoming, but libsodium can be easily installed from source, or many distributions do ship packages for it. The libnacl and ioflo packages can be easily installed from pypi, distribution packages are in the works.

Once the new deps are installed the 2014.7 release or higher of Salt needs to be installed.

Once installed, modify the configuration files for the minion and master to set the transport to raet:

`/etc/salt/master`:

```
transport: raet
```

`/etc/salt/minion`:

```
transport: raet
```

Now start salt as it would normally be started, the minion will connect to the master and share long term keys, which can then in turn be managed via salt-key. Remote execution and salt states will function in the same way as with Salt over ZeroMQ.

### Limitations

The 2014.7 release of RAET is not complete! The Syndic and Multi Master have not been completed yet and these are slated for completion in the 2015.5.0 release.

Also, Salt-Raet allows for more control over the client but these hooks have not been implemented yet, thereforre the client still uses the same system as the ZeroMQ client. This means that the extra reliability that RAET exposes has not yet been implemented in the CLI client.

### Why?

### Customer and User Request

Why make an alternative transport for Salt? There are many reasons, but the primary motivation came from customer requests, many large companies came with requests to run Salt over an alternative transport, the reasoning was varied, from performance and scaling improvements to licensing concerns. These customers have partnered with SaltStack to make RAET a reality.

### More Capabilities

RAET has been designed to allow salt to have greater communication capabilities. It has been designed to allow for development into features which out ZeroMQ topologies can't match.

Many of the proposed features are still under development and will be announced as they enter proof of concept phases, but these features include *salt-fuse* - a filesystem over salt, *salt-vt* - a parallel api driven shell over the salt transport and many others.

### RAET Reliability

RAET is reliable, hence the name (Reliable Asynchronous Event Transport).

The concern posed by some over RAET reliability is based on the fact that RAET uses UDP instead of TCP and UDP does not have built in reliability.

RAET itself implements the needed reliability layers that are not natively present in UDP, this allows RAET to dynamically optimize packet delivery in a way that keeps it both reliable and asynchronous.

### RAET and ZeroMQ

When using RAET, ZeroMQ is not required. RAET is a complete networking replacement. It is noteworthy that RAET is not a ZeroMQ replacement in a general sense, the ZeroMQ constructs are not reproduced in RAET, but they are instead implemented in such a way that is specific to Salt's needs.

RAET is primarily an async communication layer over truly async connections, defaulting to UDP. ZeroMQ is over TCP and abstracts async constructs within the socket layer.

Salt is not dropping ZeroMQ support and has no immediate plans to do so.

### Encryption

RAET uses Dan Bernstein's NACL encryption libraries and CurveCP handshake. The libnacl python binding binds to both libsodium and tweetnacl to execute the underlying cryptography. This allows us to completely rely on an externally developed cryptography system.

### Programming Intro

### Intro to RAET Programming

**Note:** This page is still under construction

The first thing to cover is that RAET does not present a socket api, it presents, and queueing api, all messages in RAET are made available to via queues. This is the single most differentiating factor with RAET vs other networking libraries, instead of making a socket, a stack is created. Instead of calling send() or recv(), messages are placed on the stack to be sent and messages that are received appear on the stack.

Different kinds of stacks are also available, currently two stacks exist, the UDP stack, and the UXD stack. The UDP stack is used to communicate over udp sockets, and the UXD stack is used to communicate over Unix Domain Sockets.

The UDP stack runs a context for communicating over networks, while the UXD stack has contexts for communicating between processes.

### UDP Stack Messages

To create a UDP stack in RAET, simply create the stack, manage the queues, and process messages:

```
from salt.transport.road.raet import stacking
from salt.transport.road.raet import estating

udp_stack = stacking.StackUdp(ha=('127.0.0.1', 7870))
r_estate = estating.Estate(stack=stack, name='foo', ha=('192.168.42.42', 7870))
msg = {'hello': 'world'}
udp_stack.transmit(msg, udp_stack.estates[r_estate.name])
udp_stack.serviceAll()
```

## 2.21 Master Tops System

In 0.10.4 the *external_nodes* system was upgraded to allow for modular subsystems to be used to generate the top file data for a *highstate* run on the master.

The old *external_nodes* option has been removed. The master tops system contains a number of subsystems that are loaded via the Salt loader interfaces like modules, states, returners, runners, etc.

Using the new *master_tops* option is simple:

```
master_tops:
  ext_nodes: cobbler-external-nodes
```

for *Cobbler* or:

```
master_tops:
  reclass:
    inventory_base_uri: /etc/reclass
    classes_uri: roles
```

for *Reclass*.

It's also possible to create custom master_tops modules. These modules must go in a subdirectory called *tops* in the *extension_modules* directory. The *extension_modules* directory is not defined by default (the default */srv/salt/_modules* will NOT work as of this release)

Custom tops modules are written like any other execution module, see the source for the two modules above for examples of fully functional ones. Below is a degenerate example:

/etc/salt/master:

```
extension_modules: /srv/salt/modules
master_tops:
  customtop: True
```

/srv/salt/modules/tops/customtop.py:

```
import logging
import sys
# Define the module's virtual name
__virtualname__ = 'customtop'

log = logging.getLogger(__name__)

def __virtual__():
    return __virtualname__
```

```
def top(**kwargs):
    log.debug('Calling top in customtop')
    return {'base': ['test']}
```

*salt minion state.show_top* should then display something like:

```
$ salt minion state.show_top

minion
    ----------
    base:
      - test
```

## 2.22 Returners

By default the return values of the commands sent to the Salt minions are returned to the Salt master, however anything at all can be done with the results data.

By using a Salt returner, results data can be redirected to external data-stores for analysis and archival.

Returners pull their configuration values from the Salt minions. Returners are only configured once, which is generally at load time.

The returner interface allows the return data to be sent to any system that can receive data. This means that return data can be sent to a Redis server, a MongoDB server, a MySQL server, or any system.

**See also**:

*Full list of builtin returners*

### 2.22.1 Using Returners

All Salt commands will return the command data back to the master. Specifying returners will ensure that the data is _also_ sent to the specified returner interfaces.

Specifying what returners to use is done when the command is invoked:

```
salt '*' test.ping --return redis_return
```

This command will ensure that the redis_return returner is used.

It is also possible to specify multiple returners:

```
salt '*' test.ping --return mongo_return,redis_return,cassandra_return
```

In this scenario all three returners will be called and the data from the test.ping command will be sent out to the three named returners.

### 2.22.2 Writing a Returner

A returner is a Python module containing at minimum a `returner` function. Other optional functions can be included to add support for master_job_cache, external_job_cache, and *Event Returners*.

**returner** The `returner` function must accept a single argument. The argument contains return data from the called minion function. If the minion function `test.ping` is called, the value of the argument will be a dictionary. Run the following command from a Salt master to get a sample of the dictionary:

```
salt-call --local --metadata test.ping --out=pprint
```

```
import redis
import json

def returner(ret):
    '''
    Return information to a redis server
    '''
    # Get a redis connection
    serv = redis.Redis(
                host='redis-serv.example.com',
                port=6379,
                db='0')
    serv.sadd("%(id)s:jobs" % ret, ret['jid'])
    serv.set("%(jid)s:%(id)s" % ret, json.dumps(ret['return']))
    serv.sadd('jobs', ret['jid'])
    serv.sadd(ret['jid'], ret['id'])
```

The above example of a returner set to send the data to a Redis server serializes the data as JSON and sets it in redis.

### Master Job Cache Support

master_job_cache, external_job_cache, and *Event Returners*. Salt's master_job_cache allows returners to be used as a pluggable replacement for the *Default Job Cache*. In order to do so, a returner must implement the following functions:

---

**Note:** The code samples contained in this section were taken from the cassandra_cql returner.

---

**prep_jid** Ensures that job ids (jid) don't collide, unless passed_jid is provided.

`nochache` is an optional boolean that indicates if return data should be cached. `passed_jid` is a caller provided jid which should be returned unconditionally.

```
def prep_jid(nocache, passed_jid=None):  # pylint: disable=unused-argument
    '''
    Do any work necessary to prepare a JID, including sending a custom id
    '''
    return passed_jid if passed_jid is not None else salt.utils.jid.gen_jid()
```

**save_load** Save job information. The `jid` is generated by `prep_jid` and should be considered a unique identifier for the job. The jid, for example, could be used as the primary/unique key in a database. The `load` is what is returned to a Salt master by a minion. The following code example stores the load as a JSON string in the salt.jids table.

```
def save_load(jid, load):
    '''
    Save the load to the specified jid id
    '''
    query = '''INSERT INTO salt.jids (
                 jid, load
```

```
                ) VALUES (
                  '{0}', '{1}'
                );'''.format(jid, json.dumps(load))

    # cassandra_cql.cql_query may raise a CommandExecutionError
    try:
        __salt__['cassandra_cql.cql_query'](query)
    except CommandExecutionError:
        log.critical('Could not save load in jids table.')
        raise
    except Exception as e:
        log.critical('''Unexpected error while inserting into
         jids: {0}'''.format(str(e)))
        raise
```

**get_load** must accept a job id (jid) and return the job load stored by `save_load`, or an empty dictionary when not found.

```
def get_load(jid):
    '''
    Return the load data that marks a specified jid
    '''
    query = '''SELECT load FROM salt.jids WHERE jid = '{0}';'''.format(jid)

    ret = {}

    # cassandra_cql.cql_query may raise a CommandExecutionError
    try:
        data = __salt__['cassandra_cql.cql_query'](query)
        if data:
            load = data[0].get('load')
            if load:
                ret = json.loads(load)
    except CommandExecutionError:
        log.critical('Could not get load from jids table.')
        raise
    except Exception as e:
        log.critical('''Unexpected error while getting load from
         jids: {0}'''.format(str(e)))
        raise

    return ret
```

### External Job Cache Support

Salt's external_job_cache extends the master_job_cache. External Job Cache support requires the following functions in addition to what is required for Master Job Cache support:

**get_jid** Return a dictionary containing the information (load) returned by each minion when the specified job id was executed.

Sample:

```
{
    "local": {
        "master_minion": {
            "fun_args": [],
```

```
            "jid": "20150330121011408195",
            "return": true,
            "retcode": 0,
            "success": true,
            "cmd": "_return",
            "_stamp": "2015-03-30T12:10:12.708663",
            "fun": "test.ping",
            "id": "master_minion"
        }
    }
}
```

**get_fun** Return a dictionary of minions that called a given Salt function as their last function call.

Sample:

```
{
    "local": {
        "minion1": "test.ping",
        "minion3": "test.ping",
        "minion2": "test.ping"
    }
}
```

**get_jids** Return a list of all job ids.

Sample:

```
{
    "local": [
        "20150330121011408195",
        "20150330195922139916"
    ]
}
```

**get_minions** Returns a list of minions

Sample:

```
{
     "local": [
         "minion3",
         "minion2",
         "minion1",
         "master_minion"
     ]
}
```

Please refer to one or more of the existing returners (i.e. mysql, cassandra_cql) if you need further clarification.

### Event Support

An `event_return` function must be added to the returner module to allow events to be logged from a master via the returner. A list of events are passed to the function by the master.

The following example was taken from the MySQL returner. In this example, each event is inserted into the salt_events table keyed on the event tag. The tag contains the jid and therefore is guaranteed to be unique.

```
def event_return(events):
    '''
    Return event to mysql server

    Requires that configuration be enabled via 'event_return'
    option in master config.
    '''
    with _get_serv(events, commit=True) as cur:
        for event in events:
            tag = event.get('tag', '')
            data = event.get('data', '')
            sql = '''INSERT INTO `salt_events` (`tag`, `data`, `master_id` )
                     VALUES (%s, %s, %s)'''
            cur.execute(sql, (tag, json.dumps(data), __opts__['id']))
```

### Custom Returners

Place custom returners in a `_returners` directory within the *`file_roots`* specified by the master config file.

Custom returners are distributed when any of the following are called:

- `state.apply`
- *`saltutil.sync_returners`*
- *`saltutil.sync_all`*

Any custom returners which have been synced to a minion that are named the same as one of Salt's default set of returners will take the place of the default returner with the same name.

### Naming the Returner

Note that a returner's default name is its filename (i.e. `foo.py` becomes returner `foo`), but that its name can be overridden by using a *__virtual__ function*. A good example of this can be found in the redis returner, which is named `redis_return.py` but is loaded as simply `redis`:

```
try:
    import redis
    HAS_REDIS = True
except ImportError:
    HAS_REDIS = False

__virtualname__ = 'redis'

def __virtual__():
    if not HAS_REDIS:
        return False
    return __virtualname__
```

### Testing the Returner

The `returner`, `prep_jid`, `save_load`, `get_load`, and `event_return` functions can be tested by configuring the master_job_cache and *Event Returners* in the master config file and submitting a job to `test.ping` each minion from the master.

Once you have successfully exercised the Master Job Cache functions, test the External Job Cache functions using the `ret` execution module.

```
salt-call ret.get_jids cassandra_cql --output=json
salt-call ret.get_fun cassandra_cql test.ping --output=json
salt-call ret.get_minions cassandra_cql --output=json
salt-call ret.get_jid cassandra_cql 20150330121011408195 --output=json
```

### 2.22.3 Event Returners

For maximum visibility into the history of events across a Salt infrastructure, all events seen by a salt master may be logged to a returner.

To enable event logging, set the `event_return` configuration option in the master config to returner which should be designated as the handler for event returns.

**Note:** Not all returners support event returns. Verify a returner has an `event_return()` function before using.

**Note:** On larger installations, many hundreds of events may be generated on a busy master every second. Be certain to closely monitor the storage of a given returner as Salt can easily overwhelm an underpowered server with thousands of returns.

### 2.22.4 Full List of Returners

#### returner modules

| | |
|---|---|
| *carbon_return* | Take data from salt and ``return'' it into a carbon receiver |
| *cassandra_cql_return* | Return data to a cassandra server |
| *cassandra_return* | Return data to a Cassandra ColumnFamily |
| *couchbase_return* | Simple returner for Couchbase. |
| *couchdb_return* | Simple returner for CouchDB. |
| *django_return* | A returner that will infor a Django system that returns are available using Django's signal system. |
| *elasticsearch_return* | Return data to an elasticsearch server for indexing. |
| *etcd_return* | Return data to an etcd server or cluster |
| *hipchat_return* | Return salt data via hipchat. |
| *influxdb_return* | Return data to an influxdb server. |
| *kafka_return* | Return data to a Kafka topic |
| *local* | The local returner is used to test the returner interface, it just prints the |
| *local_cache* | Return data to local job cache |
| *memcache_return* | Return data to a memcache server |
| *mongo_future_return* | Return data to a mongodb server |
| *mongo_return* | Return data to a mongodb server |
| *multi_returner* | Read/Write multiple returners |
| *mysql* | Return data to a mysql server |
| *nagios_return* | Return salt data to Nagios |

Continued on next page

Table 2.1 -- continued from previous page

| | |
|---|---|
| *odbc* | Return data to an ODBC compliant server. |
| *pgjsonb* | Return data to a PostgreSQL server with json data stored in Pg's jsonb data type |
| *postgres* | Return data to a postgresql server |
| *postgres_local_cache* | Use a postgresql server for the master job cache. |
| *pushover_returner* | Return salt data via pushover (http://www.pushover.net) |
| *redis_return* | Return data to a redis server |
| *sentry_return* | Salt returner that reports execution results back to sentry. |
| *slack_returner* | Return salt data via slack |
| *sms_return* | Return data by SMS. |
| *smtp_return* | Return salt data via email |
| *sqlite3_return* | Insert minion return data into a sqlite3 database |
| *syslog_return* | Return data to the host operating system's syslog facility |
| *xmpp_return* | Return salt data via xmpp |

### salt.returners.carbon_return

Take data from salt and ``return'' it into a carbon receiver

Add the following configuration to the minion configuration file:

```
carbon.host: <server ip address>
carbon.port: 2003
```

Errors when trying to convert data to numbers may be ignored by setting `carbon.skip_on_error` to *True*:

```
carbon.skip_on_error: True
```

By default, data will be sent to carbon using the plaintext protocol. To use the pickle protocol, set `carbon.mode` to `pickle`:

```
carbon.mode: pickle
```

**You can also specify the pattern used for the metric base path (except for virt modules metrics)**:
carbon.metric_base_pattern: carbon.[minion_id].[module].[function]

**These tokens can used** : [module]: salt module [function]: salt function [minion_id]: minion id

**Default is** : carbon.metric_base_pattern: [module].[function].[minion_id]

Carbon settings may also be configured as:

```
carbon:
  host: <server IP or hostname>
  port: <carbon port>
  skip_on_error: True
  mode: (pickle|text)
  metric_base_pattern: <pattern> | [module].[function].[minion_id]
```

Alternative configuration values can be used by prefacing the configuration. Any values not found in the alternative configuration will be pulled from the default location:

```
alternative.carbon:
  host: <server IP or hostname>
  port: <carbon port>
```

```
  skip_on_error: True
  mode: (pickle|text)
```

To use the carbon returner, append `--return carbon' to the salt command.

```
salt '*' test.ping --return carbon
```

To use the alternative configuration, append `--return_config alternative' to the salt command.

New in version 2015.5.0.

```
salt '*' test.ping --return carbon --return_config alternative
```

To override individual configuration items, append --return_kwargs `{``key:'': ``value''}' to the salt command.

New in version 2016.3.0.

```
salt '*' test.ping --return carbon --return_kwargs '{"skip_on_error": False}'
```

`salt.returners.carbon_return.`**`event_return`**(*events*)
Return event data to remote carbon server

Provide a list of events to be stored in carbon

`salt.returners.carbon_return.`**`prep_jid`**(*nocache=False*, *passed_jid=None*)
Do any work necessary to prepare a JID, including sending a custom id

`salt.returners.carbon_return.`**`returner`**(*ret*)
Return data to a remote carbon server using the text metric protocol

Each metric will look like:

```
[module].[function].[minion_id].[metric path [...]].[metric name]
```

### salt.returners.cassandra_cql_return

Return data to a cassandra server

New in version 2015.5.0.

**maintainer** Corin Kochenower<ckochenower@saltstack.com>

**maturity** new as of 2015.2

**depends** salt.modules.cassandra_cql

**depends** DataStax Python Driver for Apache Cassandra https://github.com/datastax/python-driver pip install cassandra-driver

**platform** all

**configuration** To enable this returner, the minion will need the DataStax Python Driver for Apache Cassandra ( https://github.com/datastax/python-driver ) installed and the following values configured in the minion or master config. The list of cluster IPs must include at least one cassandra node IP address. No assumption or default will be used for the cluster IPs. The cluster IPs will be tried in the order listed. The port, username, and password values shown below will be the assumed defaults if you do not provide values.:

```
cassandra:
  cluster:
    - 192.168.50.11
    - 192.168.50.12
    - 192.168.50.13
  port: 9042
  username: salt
  password: salt
```

Use the following cassandra database schema:

```
CREATE KEYSPACE IF NOT EXISTS salt
    WITH replication = {'class': 'SimpleStrategy', 'replication_factor' :
 ↪1};

CREATE USER IF NOT EXISTS salt WITH PASSWORD 'salt' NOSUPERUSER;

GRANT ALL ON KEYSPACE salt TO salt;

USE salt;

CREATE TABLE IF NOT EXISTS salt.salt_returns (
    jid text,
    minion_id text,
    fun text,
    alter_time timestamp,
    full_ret text,
    return text,
    success boolean,
    PRIMARY KEY (jid, minion_id, fun)
) WITH CLUSTERING ORDER BY (minion_id ASC, fun ASC);
CREATE INDEX IF NOT EXISTS salt_returns_minion_id ON salt.salt_returns
 ↪(minion_id);
CREATE INDEX IF NOT EXISTS salt_returns_fun ON salt.salt_returns (fun);

CREATE TABLE IF NOT EXISTS salt.jids (
    jid text PRIMARY KEY,
    load text
);

CREATE TABLE IF NOT EXISTS salt.minions (
    minion_id text PRIMARY KEY,
    last_fun text
);
CREATE INDEX IF NOT EXISTS minions_last_fun ON salt.minions (last_fun);

CREATE TABLE IF NOT EXISTS salt.salt_events (
    id timeuuid,
    tag text,
    alter_time timestamp,
    data text,
    master_id text,
    PRIMARY KEY (id, tag)
) WITH CLUSTERING ORDER BY (tag ASC);
CREATE INDEX tag ON salt.salt_events (tag);
```

Required python modules: cassandra-driver

To use the cassandra returner, append `--return cassandra_cql' to the salt command. ex:

```
salt '*' test.ping --return_cql cassandra
```

Note: if your Cassandra instance has not been tuned much you may benefit from altering some timeouts in *cassandra.yaml* like so:

```
# How long the coordinator should wait for read operations to complete
read_request_timeout_in_ms: 5000
# How long the coordinator should wait for seq or index scans to complete
range_request_timeout_in_ms: 20000
# How long the coordinator should wait for writes to complete
write_request_timeout_in_ms: 20000
# How long the coordinator should wait for counter writes to complete
counter_write_request_timeout_in_ms: 10000
# How long a coordinator should continue to retry a CAS operation
# that contends with other proposals for the same row
cas_contention_timeout_in_ms: 5000
# How long the coordinator should wait for truncates to complete
# (This can be much longer, because unless auto_snapshot is disabled
# we need to flush first so we can snapshot before removing the data.)
truncate_request_timeout_in_ms: 60000
# The default timeout for other, miscellaneous operations
request_timeout_in_ms: 20000
```

As always, your mileage may vary and your Cassandra cluster may have different needs. SaltStack has seen situations where these timeouts can resolve some stacktraces that appear to come from the Datastax Python driver.

`salt.returners.cassandra_cql_return.`**`event_return`**(*events*)
Return event to one of potentially many clustered cassandra nodes

Requires that configuration be enabled via `event_return' option in master config.

Cassandra does not support an auto-increment feature due to the highly inefficient nature of creating a monotonically increasing number across all nodes in a distributed database. Each event will be assigned a uuid by the connecting client.

`salt.returners.cassandra_cql_return.`**`get_fun`**(*fun*)
Return a dict of the last function called for all minions

`salt.returners.cassandra_cql_return.`**`get_jid`**(*jid*)
Return the information returned when the specified job id was executed

`salt.returners.cassandra_cql_return.`**`get_jids`**()
Return a list of all job ids

`salt.returners.cassandra_cql_return.`**`get_load`**(*jid*)
Return the load data that marks a specified jid

`salt.returners.cassandra_cql_return.`**`get_minions`**()
Return a list of minions

`salt.returners.cassandra_cql_return.`**`prep_jid`**(*nocache*, *passed_jid=None*)
Do any work necessary to prepare a JID, including sending a custom id

`salt.returners.cassandra_cql_return.`**`returner`**(*ret*)
Return data to one of potentially many clustered cassandra nodes

`salt.returners.cassandra_cql_return.`**`save_load`**(*jid*, *load*, *minions=None*)
Save the load to the specified jid id

### salt.returners.cassandra_return

Return data to a Cassandra ColumnFamily

Here's an example Keyspace / ColumnFamily setup that works with this returner:

```
create keyspace salt;
use salt;
create column family returns
  with key_validation_class='UTF8Type'
  and comparator='UTF8Type'
  and default_validation_class='UTF8Type';
```

Required python modules: pycassa

To use the cassandra returner, append `--return cassandra' to the salt command. ex:

salt `*' test.ping --return cassandra

`salt.returners.cassandra_return.`**`prep_jid`**(*nocache=False*, *passed_jid=None*)
Do any work necessary to prepare a JID, including sending a custom id

`salt.returners.cassandra_return.`**`returner`**(*ret*)
Return data to a Cassandra ColumnFamily

### salt.returners.couchbase_return

Simple returner for Couchbase. Optional configuration settings are listed below, along with sane defaults.

```
couchbase.host:   'salt'
couchbase.port:   8091
couchbase.bucket: 'salt'
couchbase.ttl: 24
couchbase.password: 'password'
couchbase.skip_verify_views: False
```

To use the couchbase returner, append `--return couchbase' to the salt command. ex:

```
salt '*' test.ping --return couchbase
```

To use the alternative configuration, append `--return_config alternative' to the salt command.

New in version 2015.5.0.

```
salt '*' test.ping --return couchbase --return_config alternative
```

To override individual configuration items, append --return_kwargs `{``key:": ``value"}' to the salt command.

New in version 2016.3.0.

```
salt '*' test.ping --return couchbase --return_kwargs '{"bucket": "another-salt"}'
```

All of the return data will be stored in documents as follows:

### JID

load: load obj tgt_minions: list of minions targeted nocache: should we not cache the return data

### JID/MINION_ID

return: return_data full_ret: full load of job return

salt.returners.couchbase_return.**get_jid**(*jid*)
Return the information returned when the specified job id was executed

salt.returners.couchbase_return.**get_jids**()
Return a list of all job ids

salt.returners.couchbase_return.**get_load**(*jid*)
Return the load data that marks a specified jid

salt.returners.couchbase_return.**prep_jid**(*nocache=False*, *passed_jid=None*)
Return a job id and prepare the job id directory This is the function responsible for making sure jids don't collide (unless its passed a jid) So do what you have to do to make sure that stays the case

salt.returners.couchbase_return.**returner**(*load*)
Return data to couchbase bucket

salt.returners.couchbase_return.**save_load**(*jid*, *clear_load*, *minion=None*)
Save the load to the specified jid

salt.returners.couchbase_return.**save_minions**(*jid*, *minions*, *syndic_id=None*)
Save/update the minion list for a given jid. The syndic_id argument is included for API compatibility only.

## salt.returners.couchdb_return

Simple returner for CouchDB. Optional configuration settings are listed below, along with sane defaults:

```
couchdb.db: 'salt'
couchdb.url: 'http://salt:5984/'
```

Alternative configuration values can be used by prefacing the configuration. Any values not found in the alternative configuration will be pulled from the default location:

```
alternative.couchdb.db: 'salt'
alternative.couchdb.url: 'http://salt:5984/'
```

To use the couchdb returner, append `--return couchdb` to the salt command. Example:

```
salt '*' test.ping --return couchdb
```

To use the alternative configuration, append `--return_config alternative` to the salt command.

New in version 2015.5.0.

```
salt '*' test.ping --return couchdb --return_config alternative
```

To override individual configuration items, append --return_kwargs `{``key:": ``value"}' to the salt command.

New in version 2016.3.0.

```
salt '*' test.ping --return couchdb --return_kwargs '{"db": "another-salt"}'
```

### On concurrent database access

As this returner creates a couchdb document with the salt job id as document id and as only one document with a given id can exist in a given couchdb database, it is advised for most setups that every minion be configured to write to it own database (the value of `couchdb.db` may be suffixed with the minion id), otherwise multi-minion targeting can lead to losing output:

- the first returning minion is able to create a document in the database
- other minions fail with `{'error': 'HTTP Error 409: Conflict'}`

`salt.returners.couchdb_return.`**`ensure_views`**`()`
This function makes sure that all the views that should exist in the design document do exist.

`salt.returners.couchdb_return.`**`get_fun`**`(`*`fun`*`)`
Return a dict with key being minion and value being the job details of the last run of function `fun'.

`salt.returners.couchdb_return.`**`get_jid`**`(`*`jid`*`)`
Get the document with a given JID.

`salt.returners.couchdb_return.`**`get_jids`**`()`
List all the jobs that we have..

`salt.returners.couchdb_return.`**`get_minions`**`()`
Return a list of minion identifiers from a request of the view.

`salt.returners.couchdb_return.`**`get_valid_salt_views`**`()`
Returns a dict object of views that should be part of the salt design document.

`salt.returners.couchdb_return.`**`prep_jid`**`(`*`nocache=False, passed_jid=None`*`)`
Do any work necessary to prepare a JID, including sending a custom id

`salt.returners.couchdb_return.`**`returner`**`(`*`ret`*`)`
Take in the return and shove it into the couchdb database.

`salt.returners.couchdb_return.`**`set_salt_view`**`()`
Helper function that sets the salt design document. Uses get_valid_salt_views and some hardcoded values.

### salt.returners.django_return

A returner that will infor a Django system that returns are available using Django's signal system.

https://docs.djangoproject.com/en/dev/topics/signals/

It is up to the Django developer to register necessary handlers with the signals provided by this returner and process returns as necessary.

The easiest way to use signals is to import them from this returner directly and then use a decorator to register them.

An example Django module that registers a function called `returner_callback' with this module's `returner' function:

```
import salt.returners.django_return
from django.dispatch import receiver

@receiver(salt.returners.django_return, sender=returner)
def returner_callback(sender, ret):
    print('I received {0} from {1}'.format(ret, sender))
```

`salt.returners.django_return.`**`prep_jid`**`(`*`nocache=False, passed_jid=None`*`)`
Do any work necessary to prepare a JID, including sending a custom ID

salt.returners.django_return.**returner**(*ret*)
Signal a Django server that a return is available

salt.returners.django_return.**save_load**(*jid*, *load*, *minions=None*)
Save the load to the specified jid

### salt.returners.elasticsearch_return

Return data to an elasticsearch server for indexing.

**maintainer** Jurnell Cockhren <jurnell.cockhren@sophicware.com>, Arnold Bechtoldt <mail@arnoldbechtoldt.com>

**maturity** New

**depends** elasticsearch-py

**platform** all

To enable this returner the elasticsearch python client must be installed on the desired minions (all or some subset).

Please see documentation of *elasticsearch execution module* for a valid connection configuration.

**Warning**: The index that you wish to store documents will be created by Elasticsearch automatically if doesn't exist yet. It is highly recommended to create predefined index templates with appropriate mapping(s) that will be used by Elasticsearch upon index creation. Otherwise you will have problems as described in #20826.

To use the returner per salt call:

```
salt '*' test.ping --return elasticsearch
```

In order to have the returner apply to all minions:

```
ext_job_cache: elasticsearch
```

salt.returners.elasticsearch_return.**get_load**(*jid*)
Return the load data that marks a specified jid

New in version 2015.8.1.

salt.returners.elasticsearch_return.**prep_jid**(*nocache=False*, *passed_jid=None*)
Do any work necessary to prepare a JID, including sending a custom id

salt.returners.elasticsearch_return.**returner**(*ret*)
Process the return from Salt

salt.returners.elasticsearch_return.**save_load**(*jid*, *load*, *minions=None*)
Save the load to the specified jid id

New in version 2015.8.1.

### salt.returners.etcd_return

Return data to an etcd server or cluster

**depends**

- python-etcd

In order to return to an etcd server, a profile should be created in the master configuration file:

```
my_etcd_config:
  etcd.host: 127.0.0.1
  etcd.port: 4001
```

It is technically possible to configure etcd without using a profile, but this is not considered to be a best practice, especially when multiple etcd servers or clusters are available.

```
etcd.host: 127.0.0.1
etcd.port: 4001
```

Additionally, two more options must be specified in the top-level configuration in order to use the etcd returner:

```
etcd.returner: my_etcd_config
etcd.returner_root: /salt/return
```

The `etcd.returner` option specifies which configuration profile to use. The `etcd.returner_root` option specifies the path inside etcd to use as the root of the returner system.

Once the etcd options are configured, the returner may be used:

CLI Example:

salt `*' test.ping --return etcd

A username and password can be set:

```
etcd.username: larry  # Optional; requires etcd.password to be set
etcd.password: 123pass  # Optional; requires etcd.username to be set
```

You can also set a TTL (time to live) value for the returner:

```
etcd.ttl: 5
```

Authentication with username and password, and ttl, currently requires the `master` branch of `python-etcd`.

You may also specify different roles for read and write operations. First, create the profiles as specified above. Then add:

```
etcd.returner_read_profile: my_etcd_read
etcd.returner_write_profile: my_etcd_write
```

`salt.returners.etcd_return.`**`get_fun`**`()`
Return a dict of the last function called for all minions

`salt.returners.etcd_return.`**`get_jid`**`(`*jid*`)`
Return the information returned when the specified job id was executed

`salt.returners.etcd_return.`**`get_jids`**`()`
Return a list of all job ids

`salt.returners.etcd_return.`**`get_load`**`(`*jid*`)`
Return the load data that marks a specified jid

`salt.returners.etcd_return.`**`get_minions`**`()`
Return a list of minions

`salt.returners.etcd_return.`**`prep_jid`**`(`*nocache=False*, *passed_jid=None*`)`
Do any work necessary to prepare a JID, including sending a custom id

salt.returners.etcd_return.**returner**(*ret*)
Return data to an etcd server or cluster

salt.returners.etcd_return.**save_load**(*jid, load, minions=None*)
Save the load to the specified jid

### salt.returners.hipchat_return

Return salt data via hipchat.

New in version 2015.5.0.

The following fields can be set in the minion conf file:

```
hipchat.room_id (required)
hipchat.api_key (required)
hipchat.api_version (required)
hipchat.from_name (required)
hipchat.color (optional)
hipchat.notify (optional)
hipchat.profile (optional)
hipchat.url (optional)
```

**Note**: When using Hipchat's API v2, `api_key` needs to be assigned to the room with the ``Label'' set to what you would have been set in the hipchat.from_name field. The v2 API disregards the `from_name` in the data sent for the room notification and uses the Label assigned through the Hipchat control panel.

Alternative configuration values can be used by prefacing the configuration. Any values not found in the alternative configuration will be pulled from the default location:

```
hipchat.room_id
hipchat.api_key
hipchat.api_version
hipchat.from_name
```

Hipchat settings may also be configured as:

```
hipchat:
  room_id: RoomName
  api_key: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
  api_version: v1
  from_name: user@email.com

alternative.hipchat:
  room_id: RoomName
  api_key: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
  api_version: v1
  from_name: user@email.com

hipchat_profile:
  hipchat.api_key: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
  hipchat.api_version: v1
  hipchat.from_name: user@email.com

hipchat:
  profile: hipchat_profile
```

```
  room_id: RoomName

alternative.hipchat:
  profile: hipchat_profile
  room_id: RoomName

hipchat:
  room_id: RoomName
  api_key: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
  api_version: v1
  api_url: api.hipchat.com
  from_name: user@email.com
```

To use the HipChat returner, append `--return hipchat' to the salt command.

```
salt '*' test.ping --return hipchat
```

To use the alternative configuration, append `--return_config alternative' to the salt command.

New in version 2015.5.0.

```
salt '*' test.ping --return hipchat --return_config alternative
```

To override individual configuration items, append --return_kwargs `{``key:'': ``value''}' to the salt command.

New in version 2016.3.0.

```
salt '*' test.ping --return hipchat --return_kwargs '{"room_id": "another-room"}'
```

salt.returners.hipchat_return.**event_return**(*events*)
Return event data to hipchat

salt.returners.hipchat_return.**returner**(*ret*)
Send an hipchat message with the return data from a job

### salt.returners.influxdb_return

Return data to an influxdb server.

New in version 2015.8.0.

To enable this returner the minion will need the python client for influxdb installed and the following values configured in the minion or master config, these are the defaults:

```
influxdb.db: 'salt'
influxdb.user: 'salt'
influxdb.password: 'salt'
influxdb.host: 'localhost'
influxdb.port: 8086
```

Alternative configuration values can be used by prefacing the configuration. Any values not found in the alternative configuration will be pulled from the default location:

```
alternative.influxdb.db: 'salt'
alternative.influxdb.user: 'salt'
alternative.influxdb.password: 'salt'
alternative.influxdb.host: 'localhost'
alternative.influxdb.port: 6379
```

To use the influxdb returner, append `--return influxdb' to the salt command.

```
salt '*' test.ping --return influxdb
```

To use the alternative configuration, append `--return_config alternative' to the salt command.

```
salt '*' test.ping --return influxdb --return_config alternative
```

To override individual configuration items, append --return_kwargs `{``key:'': ``value''}' to the salt command.

New in version 2016.3.0.

```
salt '*' test.ping --return influxdb --return_kwargs '{"db": "another-salt"}'
```

salt.returners.influxdb_return.**get_fun**(*fun*)
Return a dict of the last function called for all minions

salt.returners.influxdb_return.**get_jid**(*jid*)
Return the information returned when the specified job id was executed

salt.returners.influxdb_return.**get_jids**()
Return a list of all job ids

salt.returners.influxdb_return.**get_load**(*jid*)
Return the load data that marks a specified jid

salt.returners.influxdb_return.**get_minions**()
Return a list of minions

salt.returners.influxdb_return.**prep_jid**(*nocache=False*, *passed_jid=None*)
Do any work necessary to prepare a JID, including sending a custom id

salt.returners.influxdb_return.**returner**(*ret*)
Return data to a influxdb data store

salt.returners.influxdb_return.**save_load**(*jid*, *load*, *minions=None*)
Save the load to the specified jid

### salt.returners.kafka_return

Return data to a Kafka topic

**maintainer** Christer Edwards (christer.edwards@gmail.com)

**maturity** 0.1

**depends** kafka-python

**platform** all

To enable this returner install kafka-python and enable the following settings in the minion config:

**returner.kafka.hostnames**:

- ``server1''
- ``server2''
- ``server3''

returner.kafka.topic: `topic'

To use the kafka returner, append `--return kafka' to the Salt command, eg;

salt `*' test.ping --return kafka

salt.returners.kafka_return.**returner**(*ret*)
Return information to a Kafka server

### salt.returners.local

The local returner is used to test the returner interface, it just prints the return data to the console to verify that it is being passed properly

To use the local returner, append `--return local' to the salt command. ex:

salt `*' test.ping --return local

salt.returners.local.**event_return**(*event*)
Print event return data to the terminal to verify functionality

salt.returners.local.**returner**(*ret*)
Print the return data to the terminal to verify functionality

### salt.returners.local_cache

Return data to local job cache

salt.returners.local_cache.**clean_old_jobs**()
Clean out the old jobs from the job cache

salt.returners.local_cache.**get_endtime**(*jid*)
Retrieve the stored endtime for a given job

Returns False if no endtime is present

salt.returners.local_cache.**get_jid**(*jid*)
Return the information returned when the specified job id was executed

salt.returners.local_cache.**get_jids**()
Return a dict mapping all job ids to job information

salt.returners.local_cache.**get_jids_filter**(*count*, *filter_find_job=True*)
Return a list of all jobs information filtered by the given criteria. :param int count: show not more than the count of most recent jobs :param bool filter_find_jobs: filter out `saltutil.find_job' jobs

salt.returners.local_cache.**get_load**(*jid*)
Return the load data that marks a specified jid

salt.returners.local_cache.**prep_jid**(*nocache=False*, *passed_jid=None*, *recurse_count=0*)
Return a job id and prepare the job id directory.

This is the function responsible for making sure jids don't collide (unless it is passed a jid). So do what you have to do to make sure that stays the case

salt.returners.local_cache.**returner**(*load*)
Return data to the local job cache

salt.returners.local_cache.**save_load**(*jid*, *clear_load*, *minions=None*, *recurse_count=0*)
Save the load to the specified jid

minions argument is to provide a pre-computed list of matched minions for the job, for cases when this function can't compute that list itself (such as for salt-ssh)

salt.returners.local_cache.**save_minions**(*jid*, *minions*, *syndic_id=None*)
Save/update the serialized list of minions for a given job

salt.returners.local_cache.**update_endtime**(*jid*, *time*)
Update (or store) the end time for a given job

Endtime is stored as a plain text string

### salt.returners.memcache_return

Return data to a memcache server

To enable this returner the minion will need the python client for memcache installed and the following values configured in the minion or master config, these are the defaults.

```
memcache.host: 'localhost'
memcache.port: '11211'
```

Alternative configuration values can be used by prefacing the configuration. Any values not found in the alternative configuration will be pulled from the default location.

```
alternative.memcache.host: 'localhost'
alternative.memcache.port: '11211'
```

python2-memcache uses `localhost' and `11211' as syntax on connection.

To use the memcache returner, append `--return memcache' to the salt command.

```
salt '*' test.ping --return memcache
```

To use the alternative configuration, append `--return_config alternative' to the salt command.

New in version 2015.5.0.

```
salt '*' test.ping --return memcache --return_config alternative
```

To override individual configuration items, append --return_kwargs `{``key:": ``value"}' to the salt command.

New in version 2016.3.0.

```
salt '*' test.ping --return memcache --return_kwargs '{"host": "hostname.domain.com"}'
```

salt.returners.memcache_return.**get_fun**(*fun*)
Return a dict of the last function called for all minions

salt.returners.memcache_return.**get_jid**(*jid*)
Return the information returned when the specified job id was executed

salt.returners.memcache_return.**get_jids**()
Return a list of all job ids

salt.returners.memcache_return.**get_load**(*jid*)
Return the load data that marks a specified jid

salt.returners.memcache_return.**get_minions**()
Return a list of minions

salt.returners.memcache_return.**prep_jid**(*nocache=False*, *passed_jid=None*)
Do any work necessary to prepare a JID, including sending a custom id

salt.returners.memcache_return.**returner**(*ret*)
Return data to a memcache data store

salt.returners.memcache_return.**save_load**(*jid*, *load*, *minions=None*)
Save the load to the specified jid

### salt.returners.mongo_future_return

Return data to a mongodb server

Required python modules: pymongo

This returner will send data from the minions to a MongoDB server. To configure the settings for your MongoDB server, add the following lines to the minion config files:

```
mongo.db: <database name>
mongo.host: <server ip address>
mongo.user: <MongoDB username>
mongo.password: <MongoDB user password>
mongo.port: 27017
```

You can also ask for indexes creation on the most common used fields, which should greatly improve performance. Indexes are not created by default.

```
mongo.indexes: true
```

Alternative configuration values can be used by prefacing the configuration. Any values not found in the alternative configuration will be pulled from the default location:

```
alternative.mongo.db: <database name>
alternative.mongo.host: <server ip address>
alternative.mongo.user: <MongoDB username>
alternative.mongo.password: <MongoDB user password>
alternative.mongo.port: 27017
```

This mongo returner is being developed to replace the default mongodb returner in the future and should not be considered API stable yet.

To use the mongo returner, append `--return mongo' to the salt command.

```
salt '*' test.ping --return mongo
```

To use the alternative configuration, append `--return_config alternative' to the salt command.

New in version 2015.5.0.

```
salt '*' test.ping --return mongo --return_config alternative
```

To override individual configuration items, append --return_kwargs `{``key:": ``value"}' to the salt command.

New in version 2016.3.0.

```
salt '*' test.ping --return mongo --return_kwargs '{"db": "another-salt"}'
```

salt.returners.mongo_future_return.**get_fun**(*fun*)
Return the most recent jobs that have executed the named function

salt.returners.mongo_future_return.**get_jid**(*jid*)
Return the return information associated with a jid

salt.returners.mongo_future_return.**get_jids**()
Return a list of job ids

salt.returners.mongo_future_return.**get_load**(*jid*)
Return the load associated with a given job id

salt.returners.mongo_future_return.**get_minions**()
Return a list of minions

salt.returners.mongo_future_return.**prep_jid**(*nocache=False*, *passed_jid=None*)
Do any work necessary to prepare a JID, including sending a custom id

salt.returners.mongo_future_return.**returner**(*ret*)
Return data to a mongodb server

salt.returners.mongo_future_return.**save_load**(*jid*, *load*, *minions=None*)
Save the load for a given job id

### salt.returners.mongo_return

Return data to a mongodb server

Required python modules: pymongo

This returner will send data from the minions to a MongoDB server. To configure the settings for your MongoDB server, add the following lines to the minion config files.

```
mongo.db: <database name>
mongo.host: <server ip address>
mongo.user: <MongoDB username>
mongo.password: <MongoDB user password>
mongo.port: 27017
```

Alternative configuration values can be used by prefacing the configuration. Any values not found in the alternative configuration will be pulled from the default location.

```
alternative.mongo.db: <database name>
alternative.mongo.host: <server ip address>
alternative.mongo.user: <MongoDB username>
alternative.mongo.password: <MongoDB user password>
alternative.mongo.port: 27017
```

To use the mongo returner, append `--return mongo' to the salt command.

```
salt '*' test.ping --return mongo_return
```

To use the alternative configuration, append `--return_config alternative' to the salt command.

New in version 2015.5.0.

```
salt '*' test.ping --return mongo_return --return_config alternative
```

To override individual configuration items, append --return_kwargs `{``key:": ``value"}' to the salt command.

New in version 2016.3.0.

```
salt '*' test.ping --return mongo --return_kwargs '{"db": "another-salt"}'
```

To override individual configuration items, append --return_kwargs `{``key:'': ``value''}' to the salt command.

New in version 2016.3.0.

```
salt '*' test.ping --return mongo --return_kwargs '{"db": "another-salt"}'
```

salt.returners.mongo_return.**get_fun**(*fun*)
Return the most recent jobs that have executed the named function

salt.returners.mongo_return.**get_jid**(*jid*)
Return the return information associated with a jid

salt.returners.mongo_return.**prep_jid**(*nocache=False*, *passed_jid=None*)
Do any work necessary to prepare a JID, including sending a custom id

salt.returners.mongo_return.**returner**(*ret*)
Return data to a mongodb server

### salt.returners.multi_returner

Read/Write multiple returners

salt.returners.multi_returner.**clean_old_jobs**()
Clean out the old jobs from all returners (if you have it)

salt.returners.multi_returner.**get_jid**(*jid*)
Merge the return data from all returners

salt.returners.multi_returner.**get_jids**()
Return all job data from all returners

salt.returners.multi_returner.**get_load**(*jid*)
Merge the load data from all returners

salt.returners.multi_returner.**prep_jid**(*nocache=False*, *passed_jid=None*)
Call both with prep_jid on all returners in multi_returner

TODO: finish this, what do do when you get different jids from 2 returners... since our jids are time based, this make this problem hard, because they aren't unique, meaning that we have to make sure that no one else got the jid and if they did we spin to get a new one, which means ``locking'' the jid in 2 returners is non-trivial

salt.returners.multi_returner.**returner**(*load*)
Write return to all returners in multi_returner

salt.returners.multi_returner.**save_load**(*jid*, *clear_load*, *minions=None*)
Write load to all returners in multi_returner

### salt.returners.mysql

Return data to a mysql server

**maintainer** Dave Boucha <dave@saltstack.com>, Seth House <shouse@saltstack.com>

**maturity** new

**depends** python-mysqldb

**platform** all

To enable this returner, the minion will need the python client for mysql installed and the following values configured in the minion or master config. These are the defaults:

```
mysql.host: 'salt'
mysql.user: 'salt'
mysql.pass: 'salt'
mysql.db: 'salt'
mysql.port: 3306
```

SSL is optional. The defaults are set to None. If you do not want to use SSL, either exclude these options or set them to None.

```
mysql.ssl_ca: None
mysql.ssl_cert: None
mysql.ssl_key: None
```

Alternative configuration values can be used by prefacing the configuration with *alternative.*. Any values not found in the alternative configuration will be pulled from the default location. As stated above, SSL configuration is optional. The following ssl options are simply for illustration purposes:

```
alternative.mysql.host: 'salt'
alternative.mysql.user: 'salt'
alternative.mysql.pass: 'salt'
alternative.mysql.db: 'salt'
alternative.mysql.port: 3306
alternative.mysql.ssl_ca: '/etc/pki/mysql/certs/localhost.pem'
alternative.mysql.ssl_cert: '/etc/pki/mysql/certs/localhost.crt'
alternative.mysql.ssl_key: '/etc/pki/mysql/certs/localhost.key'
```

Use the following mysql database schema:

```
CREATE DATABASE  `salt`
  DEFAULT CHARACTER SET utf8
  DEFAULT COLLATE utf8_general_ci;

USE `salt`;

--
-- Table structure for table `jids`
--

DROP TABLE IF EXISTS `jids`;
CREATE TABLE `jids` (
  `jid` varchar(255) NOT NULL,
  `load` mediumtext NOT NULL,
  UNIQUE KEY `jid` (`jid`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
CREATE INDEX jid ON jids(jid) USING BTREE;

--
-- Table structure for table `salt_returns`
--

DROP TABLE IF EXISTS `salt_returns`;
CREATE TABLE `salt_returns` (
  `fun` varchar(50) NOT NULL,
  `jid` varchar(255) NOT NULL,
  `return` mediumtext NOT NULL,
```

```
  `id` varchar(255) NOT NULL,
  `success` varchar(10) NOT NULL,
  `full_ret` mediumtext NOT NULL,
  `alter_time` TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  KEY `id` (`id`),
  KEY `jid` (`jid`),
  KEY `fun` (`fun`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;

--
-- Table structure for table `salt_events`
--

DROP TABLE IF EXISTS `salt_events`;
CREATE TABLE `salt_events` (
`id` BIGINT NOT NULL AUTO_INCREMENT,
`tag` varchar(255) NOT NULL,
`data` mediumtext NOT NULL,
`alter_time` TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
`master_id` varchar(255) NOT NULL,
PRIMARY KEY (`id`),
KEY `tag` (`tag`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Required python modules: MySQLdb

To use the mysql returner, append `--return mysql' to the salt command.

```
salt '*' test.ping --return mysql
```

To use the alternative configuration, append `--return_config alternative' to the salt command.

New in version 2015.5.0.

```
salt '*' test.ping --return mysql --return_config alternative
```

To override individual configuration items, append --return_kwargs `{``key:": ``value"}' to the salt command.

New in version 2016.3.0.

```
salt '*' test.ping --return mysql --return_kwargs '{"db": "another-salt"}'
```

`salt.returners.mysql.`**`event_return`**(*events*)
Return event to mysql server

Requires that configuration be enabled via `event_return' option in master config.

`salt.returners.mysql.`**`get_fun`**(*fun*)
Return a dict of the last function called for all minions

`salt.returners.mysql.`**`get_jid`**(*jid*)
Return the information returned when the specified job id was executed

`salt.returners.mysql.`**`get_jids`**()
Return a list of all job ids

`salt.returners.mysql.`**`get_jids_filter`**(*count*, *filter_find_job=True*)
Return a list of all job ids :param int count: show not more than the count of most recent jobs :param bool filter_find_jobs: filter out `saltutil.find_job' jobs

salt.returners.mysql.**get_load**(*jid*)
Return the load data that marks a specified jid

salt.returners.mysql.**get_minions**()
Return a list of minions

salt.returners.mysql.**prep_jid**(*nocache=False*, *passed_jid=None*)
Do any work necessary to prepare a JID, including sending a custom id

salt.returners.mysql.**returner**(*ret*)
Return data to a mysql server

salt.returners.mysql.**save_load**(*jid*, *load*, *minions=None*)
Save the load to the specified jid id

### salt.returners.nagios_return

Return salt data to Nagios

The following fields can be set in the minion conf file:

```
nagios.url (required)
nagios.token (required)
nagios.service (optional)
nagios.check_type (optional)
```

Alternative configuration values can be used by prefacing the configuration. Any values not found in the alternative configuration will be pulled from the default location:

```
nagios.url
nagios.token
nagios.service
```

Nagios settings may also be configured as:

```
  nagios:
      url: http://localhost/nrdp
      token: r4nd0mt0k3n
      service: service-check

  alternative.nagios:
      url: http://localhost/nrdp
      token: r4nd0mt0k3n
      service: another-service-check

To use the Nagios returner, append '--return nagios' to the salt command. ex:

.. code-block:: bash

  salt '*' test.ping --return nagios

To use the alternative configuration, append '--return_config alternative' to the salt
 ↪command. ex:

  salt '*' test.ping --return nagios --return_config alternative
```

To override individual configuration items, append --return_kwargs `{``key:": ``value"}' to the salt command.

New in version 2016.3.0.

```
salt '*' test.ping --return nagios --return_kwargs '{"service": "service-name"}'
```

salt.returners.nagios_return.**returner**(*ret*)
Send a message to Nagios with the data

### salt.returners.odbc

Return data to an ODBC compliant server. This driver was developed with Microsoft SQL Server in mind, but theoretically could be used to return data to any compliant ODBC database as long as there is a working ODBC driver for it on your minion platform.

**maintainer**

3. (a) Oldham (cr@saltstack.com)

**maturity** New

**depends** unixodbc, pyodbc, freetds (for SQL Server)

**platform** all

To enable this returner the minion will need

On Linux:

unixodbc (http://www.unixodbc.org) pyodbc (*pip install pyodbc*) The FreeTDS ODBC driver for SQL Server (http://www.freetds.org) or another compatible ODBC driver

On Windows:

TBD

unixODBC and FreeTDS need to be configured via /etc/odbcinst.ini and /etc/odbc.ini.

/etc/odbcinst.ini:

```
[TDS]
Description=TDS
Driver=/usr/lib/x86_64-linux-gnu/odbc/libtdsodbc.so
```

(Note the above Driver line needs to point to the location of the FreeTDS shared library. This example is for Ubuntu 14.04.)

/etc/odbc.ini:

```
[TS]
Description = "Salt Returner"
Driver=TDS
Server = <your server ip or fqdn>
Port = 1433
Database = salt
Trace = No
```

Also you need the following values configured in the minion or master config. Configure as you see fit:

```
returner.odbc.dsn: 'TS'
returner.odbc.user: 'salt'
returner.odbc.passwd: 'salt'
```

Alternative configuration values can be used by prefacing the configuration. Any values not found in the alternative configuration will be pulled from the default location:

```
alternative.returner.odbc.dsn: 'TS'
alternative.returner.odbc.user: 'salt'
alternative.returner.odbc.passwd: 'salt'
```

Running the following commands against Microsoft SQL Server in the desired database as the appropriate user should create the database tables correctly. Replace with equivalent SQL for other ODBC-compliant servers

```
  --
  -- Table structure for table 'jids'
  --

  if OBJECT_ID('dbo.jids', 'U') is not null
      DROP TABLE dbo.jids

  CREATE TABLE dbo.jids (
     jid   varchar(255) PRIMARY KEY,
     load  varchar(MAX) NOT NULL
   );

  --
  -- Table structure for table 'salt_returns'
  --
  IF OBJECT_ID('dbo.salt_returns', 'U') IS NOT NULL
      DROP TABLE dbo.salt_returns;

  CREATE TABLE dbo.salt_returns (
     added     datetime not null default (getdate()),
     fun       varchar(100) NOT NULL,
     jid       varchar(255) NOT NULL,
     retval    varchar(MAX) NOT NULL,
     id        varchar(255) NOT NULL,
     success   bit default(0) NOT NULL,
     full_ret  varchar(MAX)
   );

  CREATE INDEX salt_returns_added on dbo.salt_returns(added);
  CREATE INDEX salt_returns_id on dbo.salt_returns(id);
  CREATE INDEX salt_returns_jid on dbo.salt_returns(jid);
  CREATE INDEX salt_returns_fun on dbo.salt_returns(fun);

To use this returner, append '--return odbc' to the salt command.

.. code-block:: bash

  salt '*' status.diskusage --return odbc

To use the alternative configuration, append '--return_config alternative' to the salt
 ↪command.

.. versionadded:: 2015.5.0

.. code-block:: bash

  salt '*' test.ping --return odbc --return_config alternative
```

To override individual configuration items, append --return_kwargs `{``key:": ``value"}' to the salt command.

New in version 2016.3.0.

```
salt '*' test.ping --return odbc --return_kwargs '{"dsn": "dsn-name"}'
```

salt.returners.odbc.**get_fun**(*fun*)
Return a dict of the last function called for all minions

salt.returners.odbc.**get_jid**(*jid*)
Return the information returned when the specified job id was executed

salt.returners.odbc.**get_jids**()
Return a list of all job ids

salt.returners.odbc.**get_load**(*jid*)
Return the load data that marks a specified jid

salt.returners.odbc.**get_minions**()
Return a list of minions

salt.returners.odbc.**prep_jid**(*nocache=False*, *passed_jid=None*)
Do any work necessary to prepare a JID, including sending a custom id

salt.returners.odbc.**returner**(*ret*)
Return data to an odbc server

salt.returners.odbc.**save_load**(*jid*, *load*, *minions=None*)
Save the load to the specified jid id

### salt.returners.pgjsonb

Return data to a PostgreSQL server with json data stored in Pg's jsonb data type

**maintainer** Dave Boucha <dave@saltstack.com>, Seth House <shouse@saltstack.com>, C. R. Oldham <cr@saltstack.com>

**maturity** Stable

**depends** python-psycopg2

**platform** all

---

**Note**: There are three PostgreSQL returners. Any can function as an external *master job cache*. but each has different features. SaltStack recommends *returners.pgjsonb* if you are working with a version of PostgreSQL that has the appropriate native binary JSON types. Otherwise, review *returners.postgres* and *returners.postgres_local_cache* to see which module best suits your particular needs.

---

To enable this returner, the minion will need the python client for PostgreSQL installed and the following values configured in the minion or master config. These are the defaults:

```
returner.pgjsonb.host: 'salt'
returner.pgjsonb.user: 'salt'
returner.pgjsonb.pass: 'salt'
returner.pgjsonb.db: 'salt'
returner.pgjsonb.port: 5432
```

SSL is optional. The defaults are set to None. If you do not want to use SSL, either exclude these options or set them to None.

```
returner.pgjsonb.ssl_ca: None
returner.pgjsonb.ssl_cert: None
returner.pgjsonb.ssl_key: None
```

Alternative configuration values can be used by prefacing the configuration with *alternative.*. Any values not found in the alternative configuration will be pulled from the default location. As stated above, SSL configuration is optional. The following ssl options are simply for illustration purposes:

```
alternative.pgjsonb.host: 'salt'
alternative.pgjsonb.user: 'salt'
alternative.pgjsonb.pass: 'salt'
alternative.pgjsonb.db: 'salt'
alternative.pgjsonb.port: 5432
alternative.pgjsonb.ssl_ca: '/etc/pki/mysql/certs/localhost.pem'
alternative.pgjsonb.ssl_cert: '/etc/pki/mysql/certs/localhost.crt'
alternative.pgjsonb.ssl_key: '/etc/pki/mysql/certs/localhost.key'
```

Use the following Pg database schema:

```
CREATE DATABASE  salt
  WITH ENCODING 'utf-8';

--
-- Table structure for table `jids`
--
DROP TABLE IF EXISTS jids;
CREATE TABLE jids (
   jid varchar(255) NOT NULL primary key,
   load jsonb NOT NULL
);
CREATE INDEX idx_jids_jsonb on jids
       USING gin (load)
       WITH (fastupdate=on);

--
-- Table structure for table `salt_returns`
--

DROP TABLE IF EXISTS salt_returns;
CREATE TABLE salt_returns (
  fun varchar(50) NOT NULL,
  jid varchar(255) NOT NULL,
  return jsonb NOT NULL,
  id varchar(255) NOT NULL,
  success varchar(10) NOT NULL,
  full_ret jsonb NOT NULL,
  alter_time TIMESTAMP WITH TIME ZONE DEFAULT NOW());

CREATE INDEX idx_salt_returns_id ON salt_returns (id);
CREATE INDEX idx_salt_returns_jid ON salt_returns (jid);
CREATE INDEX idx_salt_returns_fun ON salt_returns (fun);
CREATE INDEX idx_salt_returns_return ON salt_returns
    USING gin (return) with (fastupdate=on);
CREATE INDEX idx_salt_returns_full_ret ON salt_returns
    USING gin (full_ret) with (fastupdate=on);

--
-- Table structure for table `salt_events`
```

```
--

DROP TABLE IF EXISTS salt_events;
DROP SEQUENCE IF EXISTS seq_salt_events_id;
CREATE SEQUENCE seq_salt_events_id;
CREATE TABLE salt_events (
    id BIGINT NOT NULL UNIQUE DEFAULT nextval('seq_salt_events_id'),
    tag varchar(255) NOT NULL,
    data jsonb NOT NULL,
    alter_time TIMESTAMP WITH TIME ZONE DEFAULT NOW(),
    master_id varchar(255) NOT NULL);

CREATE INDEX idx_salt_events_tag on
    salt_events (tag);
CREATE INDEX idx_salt_events_data ON salt_events
    USING gin (data) with (fastupdate=on);
```

Required python modules: Psycopg2

To use this returner, append `--return pgjsonb' to the salt command.

```
salt '*' test.ping --return pgjsonb
```

To use the alternative configuration, append `--return_config alternative' to the salt command.

New in version 2015.5.0.

```
salt '*' test.ping --return pgjsonb --return_config alternative
```

To override individual configuration items, append --return_kwargs `{``key:": ``value"}' to the salt command.

New in version 2016.3.0.

```
salt '*' test.ping --return pgjsonb --return_kwargs '{"db": "another-salt"}'
```

salt.returners.pgjsonb.**event_return**(*events*)
Return event to Pg server

Requires that configuration be enabled via `event_return' option in master config.

salt.returners.pgjsonb.**get_fun**(*fun*)
Return a dict of the last function called for all minions

salt.returners.pgjsonb.**get_jid**(*jid*)
Return the information returned when the specified job id was executed

salt.returners.pgjsonb.**get_jids**()
Return a list of all job ids

salt.returners.pgjsonb.**get_load**(*jid*)
Return the load data that marks a specified jid

salt.returners.pgjsonb.**get_minions**()
Return a list of minions

salt.returners.pgjsonb.**prep_jid**(*nocache=False*, *passed_jid=None*)
Do any work necessary to prepare a JID, including sending a custom id

salt.returners.pgjsonb.**returner**(*ret*)
Return data to a Pg server

salt.returners.pgjsonb.**save_load**(*jid*, *load*, *minions=None*)
Save the load to the specified jid id

### salt.returners.postgres

Return data to a postgresql server

---

**Note**: There are three PostgreSQL returners. Any can function as an external *master job cache*. but each has different features. SaltStack recommends *returners.pgjsonb* if you are working with a version of PostgreSQL that has the appropriate native binary JSON types. Otherwise, review *returners.postgres* and *returners.postgres_local_cache* to see which module best suits your particular needs.

---

**maintainer** None

**maturity** New

**depends** psycopg2

**platform** all

To enable this returner the minion will need the psycopg2 installed and the following values configured in the minion or master config:

```
returner.postgres.host: 'salt'
returner.postgres.user: 'salt'
returner.postgres.passwd: 'salt'
returner.postgres.db: 'salt'
returner.postgres.port: 5432
```

Alternative configuration values can be used by prefacing the configuration. Any values not found in the alternative configuration will be pulled from the default location:

```
alternative.returner.postgres.host: 'salt'
alternative.returner.postgres.user: 'salt'
alternative.returner.postgres.passwd: 'salt'
alternative.returner.postgres.db: 'salt'
alternative.returner.postgres.port: 5432
```

Running the following commands as the postgres user should create the database correctly:

```
psql << EOF
CREATE ROLE salt WITH PASSWORD 'salt';
CREATE DATABASE salt WITH OWNER salt;
EOF

psql -h localhost -U salt << EOF
--
-- Table structure for table 'jids'
--

DROP TABLE IF EXISTS jids;
CREATE TABLE jids (
  jid   varchar(20) PRIMARY KEY,
  load  text NOT NULL
);

--
```

```
-- Table structure for table 'salt_returns'
--

DROP TABLE IF EXISTS salt_returns;
CREATE TABLE salt_returns (
  added     TIMESTAMP WITH TIME ZONE DEFAULT now(),
  fun       text NOT NULL,
  jid       varchar(20) NOT NULL,
  return    text NOT NULL,
  id        text NOT NULL,
  success   boolean
);
CREATE INDEX ON salt_returns (added);
CREATE INDEX ON salt_returns (id);
CREATE INDEX ON salt_returns (jid);
CREATE INDEX ON salt_returns (fun);
EOF
```

Required python modules: psycopg2

To use the postgres returner, append `--return postgres' to the salt command.

```
salt '*' test.ping --return postgres
```

To use the alternative configuration, append `--return_config alternative' to the salt command.

New in version 2015.5.0.

```
salt '*' test.ping --return postgres --return_config alternative
```

To override individual configuration items, append --return_kwargs `{``key:'': ``value''}' to the salt command.

New in version 2016.3.0.

```
salt '*' test.ping --return postgres --return_kwargs '{"db": "another-salt"}'
```

salt.returners.postgres.**get_fun**(*fun*)
Return a dict of the last function called for all minions

salt.returners.postgres.**get_jid**(*jid*)
Return the information returned when the specified job id was executed

salt.returners.postgres.**get_jids**()
Return a list of all job ids

salt.returners.postgres.**get_load**(*jid*)
Return the load data that marks a specified jid

salt.returners.postgres.**get_minions**()
Return a list of minions

salt.returners.postgres.**prep_jid**(*nocache=False*, *passed_jid=None*)
Do any work necessary to prepare a JID, including sending a custom id

salt.returners.postgres.**returner**(*ret*)
Return data to a postgres server

salt.returners.postgres.**save_load**(*jid*, *load*, *minions=None*)
Save the load to the specified jid id

### salt.returners.postgres_local_cache

Use a postgresql server for the master job cache. This helps the job cache to cope with scale.

---

**Note:** There are three PostgreSQL returners. Any can function as an external *master job cache*. but each has different features. SaltStack recommends *returners.pgjsonb* if you are working with a version of PostgreSQL that has the appropriate native binary JSON types. Otherwise, review *returners.postgres* and *returners.postgres_local_cache* to see which module best suits your particular needs.

---

**maintainer** gjredelinghuys@gmail.com

**maturity** Stable

**depends** psycopg2

**platform** all

To enable this returner the minion will need the psycopg2 installed and the following values configured in the master config:

```
master_job_cache: postgres_local_cache
master_job_cache.postgres.host: 'salt'
master_job_cache.postgres.user: 'salt'
master_job_cache.postgres.passwd: 'salt'
master_job_cache.postgres.db: 'salt'
master_job_cache.postgres.port: 5432
```

Running the following command as the postgres user should create the database correctly:

```
psql << EOF
CREATE ROLE salt WITH PASSWORD 'salt';
CREATE DATABASE salt WITH OWNER salt;
EOF
```

In case the postgres database is a remote host, you'll need this command also:

```
ALTER ROLE salt WITH LOGIN;
```

and then:

```
psql -h localhost -U salt << EOF
--
-- Table structure for table 'jids'
--

DROP TABLE IF EXISTS jids;
CREATE TABLE jids (
  jid   varchar(20) PRIMARY KEY,
  started TIMESTAMP WITH TIME ZONE DEFAULT now(),
  tgt_type text NOT NULL,
  cmd text NOT NULL,
  tgt text NOT NULL,
  kwargs text NOT NULL,
  ret text NOT NULL,
  username text NOT NULL,
  arg text NOT NULL,
  fun text NOT NULL
);
```

```
--
-- Table structure for table 'salt_returns'
--
-- note that 'success' must not have NOT NULL constraint, since
-- some functions don't provide it.

DROP TABLE IF EXISTS salt_returns;
CREATE TABLE salt_returns (
  added     TIMESTAMP WITH TIME ZONE DEFAULT now(),
  fun       text NOT NULL,
  jid       varchar(20) NOT NULL,
  return    text NOT NULL,
  id        text NOT NULL,
  success   boolean
);
CREATE INDEX ON salt_returns (added);
CREATE INDEX ON salt_returns (id);
CREATE INDEX ON salt_returns (jid);
CREATE INDEX ON salt_returns (fun);

DROP TABLE IF EXISTS salt_events;
CREATE TABLE salt_events (
  id SERIAL,
  tag text NOT NULL,
  data text NOT NULL,
  alter_time TIMESTAMP WITH TIME ZONE DEFAULT now(),
  master_id text NOT NULL
);
CREATE INDEX ON salt_events (tag);
CREATE INDEX ON salt_events (data);
CREATE INDEX ON salt_events (id);
CREATE INDEX ON salt_events (master_id);
EOF
```

Required python modules: psycopg2

salt.returners.postgres_local_cache.**clean_old_jobs**()
Clean out the old jobs from the job cache

salt.returners.postgres_local_cache.**event_return**(*events*)
Return event to a postgres server

Require that configuration be enabled via `event_return' option in master config.

salt.returners.postgres_local_cache.**get_jid**(*jid*)
Return the information returned when the specified job id was executed

salt.returners.postgres_local_cache.**get_jids**()
Return a list of all job ids For master job cache this also formats the output and returns a string

salt.returners.postgres_local_cache.**get_load**(*jid*)
Return the load data that marks a specified jid

salt.returners.postgres_local_cache.**prep_jid**(*nocache=False*, *passed_jid=None*)
Return a job id and prepare the job id directory This is the function responsible for making sure jids don't collide (unless its passed a jid). So do what you have to do to make sure that stays the case

salt.returners.postgres_local_cache.**returner**(*load*)
Return data to a postgres server

salt.returners.postgres_local_cache.**save_load**(*jid*, *clear_load*, *minions=None*)
Save the load to the specified jid id

### salt.returners.pushover_returner

Return salt data via pushover (http://www.pushover.net)

New in version 2016.3.0.

The following fields can be set in the minion conf file:

```
pushover.user (required)
pushover.token (required)
pushover.title (optional)
pushover.device (optional)
pushover.priority (optional)
pushover.expire (optional)
pushover.retry (optional)
pushover.profile (optional)
```

Alternative configuration values can be used by prefacing the configuration. Any values not found in the alternative configuration will be pulled from the default location:

```
alternative.pushover.user
alternative.pushover.token
alternative.pushover.title
alternative.pushover.device
alternative.pushover.priority
alternative.pushover.expire
alternative.pushover.retry
```

PushOver settings may also be configured as:

```
  pushover:
      user: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
      token: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
      title: Salt Returner
      device: phone
      priority: -1
      expire: 3600
      retry: 5

  alternative.pushover:
      user: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
      token: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
      title: Salt Returner
      device: phone
      priority: 1
      expire: 4800
      retry: 2

  pushover_profile:
      pushover.token: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

  pushover:
      user: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
      profile: pushover_profile
```

```
  alternative.pushover:
      user: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
      profile: pushover_profile

To use the PushOver returner, append '--return pushover' to the salt command. ex:

.. code-block:: bash

  salt '*' test.ping --return pushover

To use the alternative configuration, append '--return_config alternative' to the salt
↪command. ex:

  salt '*' test.ping --return pushover --return_config alternative
```

To override individual configuration items, append --return_kwargs `{``key:": ``value"}' to the salt command.

```
salt '*' test.ping --return pushover --return_kwargs '{"title": "Salt is awesome!"}'
```

salt.returners.pushover_returner.**returner**(*ret*)
Send an PushOver message with the data

### salt.returners.redis_return

Return data to a redis server

To enable this returner the minion will need the python client for redis installed and the following values configured in the minion or master config, these are the defaults:

```
redis.db: '0'
redis.host: 'salt'
redis.port: 6379
```

Alternative configuration values can be used by prefacing the configuration. Any values not found in the alternative configuration will be pulled from the default location:

```
alternative.redis.db: '0'
alternative.redis.host: 'salt'
alternative.redis.port: 6379
```

To use the redis returner, append `--return redis' to the salt command.

```
salt '*' test.ping --return redis
```

To use the alternative configuration, append `--return_config alternative' to the salt command.

New in version 2015.5.0.

```
salt '*' test.ping --return redis --return_config alternative
```

To override individual configuration items, append --return_kwargs `{``key:": ``value"}' to the salt command.

New in version 2016.3.0.

```
salt '*' test.ping --return redis --return_kwargs '{"db": "another-salt"}'
```

salt.returners.redis_return.**clean_old_jobs**()
Clean out minions's return data for old jobs.

Normally, hset `ret:<jid>' are saved with a TTL, and will eventually get cleaned by redis.But for jobs with some very late minion return, the corresponding hset's TTL will be refreshed to a too late timestamp, we'll do manually cleaning here.

salt.returners.redis_return.**get_fun**(*fun*)
Return a dict of the last function called for all minions

salt.returners.redis_return.**get_jid**(*jid*)
Return the information returned when the specified job id was executed

salt.returners.redis_return.**get_jids**()
Return a dict mapping all job ids to job information

salt.returners.redis_return.**get_load**(*jid*)
Return the load data that marks a specified jid

salt.returners.redis_return.**get_minions**()
Return a list of minions

salt.returners.redis_return.**prep_jid**(*nocache=False*, *passed_jid=None*)
Do any work necessary to prepare a JID, including sending a custom id

salt.returners.redis_return.**returner**(*ret*)
Return data to a redis data store

salt.returners.redis_return.**save_load**(*jid*, *load*, *minions=None*)
Save the load to the specified jid

#### salt.returners.sentry_return

Salt returner that reports execution results back to sentry. The returner will inspect the payload to identify errors and flag them as such.

Pillar needs something like:

```
raven:
  servers:
    - http://192.168.1.1
    - https://sentry.example.com
  public_key: deadbeefdeadbeefdeadbeefdeadbeef
  secret_key: beefdeadbeefdeadbeefdeadbeefdead
  project: 1
  tags:
    - os
    - master
    - saltversion
    - cpuarch
```

and https://pypi.python.org/pypi/raven installed

The tags list (optional) specifies grains items that will be used as sentry tags, allowing tagging of events in the sentry ui.

salt.returners.sentry_return.**prep_jid**(*nocache=False*, *passed_jid=None*)
Do any work necessary to prepare a JID, including sending a custom id

salt.returners.sentry_return.**returner**(*ret*)

Log outcome to sentry. The returner tries to identify errors and report them as such. All other messages will be reported at info level.

### salt.returners.slack_returner

Return salt data via slack

New in version 2015.5.0.

The following fields can be set in the minion conf file:

```
.. code-block:: yaml
```

slack.channel (required) slack.api_key (required) slack.username (required) slack.as_user (required to see the profile picture of your bot) slack.profile (optional) slack.changes(optional, only show changes and failed states) slack.yaml_format(optional, format the json in yaml format)

Alternative configuration values can be used by prefacing the configuration. Any values not found in the alternative configuration will be pulled from the default location:

```
slack.channel
slack.api_key
slack.username
slack.as_user
```

Slack settings may also be configured as:

```
slack:
    channel: RoomName
    api_key: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
    username: user
    as_user: true

alternative.slack:
    room_id: RoomName
    api_key: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
    from_name: user@email.com

slack_profile:
    slack.api_key: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
    slack.from_name: user@email.com

slack:
    profile: slack_profile
    channel: RoomName

alternative.slack:
    profile: slack_profile
    channel: RoomName
```

To use the Slack returner, append `--return slack' to the salt command.

```
salt '*' test.ping --return slack
```

To use the alternative configuration, append `--return_config alternative' to the salt command.

```
salt '*' test.ping --return slack --return_config alternative
```

To override individual configuration items, append --return_kwargs `{``key:": ``value"}' to the salt command.

New in version 2016.3.0.

```
salt '*' test.ping --return slack --return_kwargs '{"channel": "#random"}'
```

salt.returners.slack_returner.**returner**(*ret*)
Send an slack message with the data

### salt.returners.sms_return

Return data by SMS.

New in version 2015.5.0.

**maintainer** Damian Myerscough

**maturity** new

**depends** twilio

**platform** all

To enable this returner the minion will need the python twilio library installed and the following values configured in the minion or master config:

```
twilio.sid: 'XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX'
twilio.token: 'XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX'
twilio.to: '+1415XXXXXXX'
twilio.from: '+1650XXXXXXX'
```

To use the sms returner, append `--return sms' to the salt command.

```
salt '*' test.ping --return sms
```

salt.returners.sms_return.**returner**(*ret*)
Return a response in an SMS message

### salt.returners.smtp_return

Return salt data via email

The following fields can be set in the minion conf file. Fields are optional unless noted otherwise.

- `from` (required) The name/address of the email sender.
- `to` (required) The name/address of the email recipient.
- `host` (required) The SMTP server hostname or address.
- `port` The SMTP server port; defaults to `25`.
- **`username` The username used to authenticate to the server. If specified a** password is also required. It is recommended but not required to also use TLS with this option.
- `password` The password used to authenticate to the server.
- `tls` Whether to secure the connection using TLS; defaults to `False`

- `subject` The email subject line.
- **`fields` Which fields from the returned data to include in the subject line** of the email; comma-delimited. For example: `id,fun`. Please note, *the subject line is not encrypted.*
- **`gpgowner` A user's `~/.gpg` directory. This must contain a gpg** public key matching the address the mail is sent to. If left unset, no encryption will be used. Requires **`python-gnupg`** to be installed.
- `template` The path to a file to be used as a template for the email body.
- **`renderer` A Salt renderer, or render-pipe, to use to render the email** template. Default `jinja`.

Below is an example of the above settings in a Salt Minion configuration file:

```
smtp.from: me@example.net
smtp.to: you@example.com
smtp.host: localhost
smtp.port: 1025
```

Alternative configuration values can be used by prefacing the configuration. Any values not found in the alternative configuration will be pulled from the default location. For example:

```
alternative.smtp.username: saltdev
alternative.smtp.password: saltdev
alternative.smtp.tls: True
```

To use the SMTP returner, append `--return smtp' to the salt command.

```
salt '*' test.ping --return smtp
```

To use the alternative configuration, append `--return_config alternative' to the salt command.

New in version 2015.5.0.

```
salt '*' test.ping --return smtp --return_config alternative
```

To override individual configuration items, append --return_kwargs `{``key:": ``value"}' to the salt command.

New in version 2016.3.0.

```
salt '*' test.ping --return smtp --return_kwargs '{"to": "user@domain.com"}'
```

An easy way to test the SMTP returner is to use the development SMTP server built into Python. The command below will start a single-threaded SMTP server that prints any email it receives to the console.

```
python -m smtpd -n -c DebuggingServer localhost:1025
```

`salt.returners.smtp_return.`**`prep_jid`**(*nocache=False*, *passed_jid=None*)
Do any work necessary to prepare a JID, including sending a custom id

`salt.returners.smtp_return.`**`returner`**(*ret*)
Send an email with the data

### salt.returners.sqlite3

Insert minion return data into a sqlite3 database

**maintainer** Mickey Malone <mickey.malone@gmail.com>

**maturity** New

**depends** None

**platform** All

Sqlite3 is a serverless database that lives in a single file. In order to use this returner the database file must exist, have the appropriate schema defined, and be accessible to the user whom the minion process is running as. This returner requires the following values configured in the master or minion config:

```
sqlite3.database: /usr/lib/salt/salt.db
sqlite3.timeout: 5.0
```

Alternative configuration values can be used by prefacing the configuration. Any values not found in the alternative configuration will be pulled from the default location:

```
alternative.sqlite3.database: /usr/lib/salt/salt.db
alternative.sqlite3.timeout: 5.0
```

Use the commands to create the sqlite3 database and tables:

```
sqlite3 /usr/lib/salt/salt.db << EOF
--
-- Table structure for table 'jids'
--

CREATE TABLE jids (
  jid TEXT PRIMARY KEY,
  load TEXT NOT NULL
  );

--
-- Table structure for table 'salt_returns'
--

CREATE TABLE salt_returns (
  fun TEXT KEY,
  jid TEXT KEY,
  id TEXT KEY,
  fun_args TEXT,
  date TEXT NOT NULL,
  full_ret TEXT NOT NULL,
  success TEXT NOT NULL
  );
EOF
```

To use the sqlite returner, append `--return sqlite3' to the salt command.

```
salt '*' test.ping --return sqlite3
```

To use the alternative configuration, append `--return_config alternative' to the salt command.

New in version 2015.5.0.

```
salt '*' test.ping --return sqlite3 --return_config alternative
```

To override individual configuration items, append --return_kwargs `{``key:": ``value"}' to the salt command.

New in version 2016.3.0.

```
salt '*' test.ping --return sqlite3 --return_kwargs '{"db": "/var/lib/salt/another-
↪salt.db"}'
```

salt.returners.sqlite3_return.**get_fun**(*fun*)
Return a dict of the last function called for all minions

salt.returners.sqlite3_return.**get_jid**(*jid*)
Return the information returned from a specified jid

salt.returners.sqlite3_return.**get_jids**()
Return a list of all job ids

salt.returners.sqlite3_return.**get_load**(*jid*)
Return the load from a specified jid

salt.returners.sqlite3_return.**get_minions**()
Return a list of minions

salt.returners.sqlite3_return.**prep_jid**(*nocache=False*, *passed_jid=None*)
Do any work necessary to prepare a JID, including sending a custom id

salt.returners.sqlite3_return.**returner**(*ret*)
Insert minion return data into the sqlite3 database

salt.returners.sqlite3_return.**save_load**(*jid*, *load*, *minions=None*)
Save the load to the specified jid

### salt.returners.syslog_return

Return data to the host operating system's syslog facility

Required python modules: syslog, json

The syslog returner simply reuses the operating system's syslog facility to log return data

To use the syslog returner, append `--return syslog' to the salt command.

```
salt '*' test.ping --return syslog
```

**Note**: Syslog server implementations may have limits on the maximum record size received by the client. This may lead to job return data being truncated in the syslog server's logs. For example, for rsyslog on RHEL-based systems, the default maximum record size is approximately 2KB (which return data can easily exceed). This is configurable in rsyslog.conf via the $MaxMessageSize config parameter. Please consult your syslog implmentation's documentation to determine how to adjust this limit.

salt.returners.syslog_return.**prep_jid**(*nocache=False*, *passed_jid=None*)
Do any work necessary to prepare a JID, including sending a custom id

salt.returners.syslog_return.**returner**(*ret*)
Return data to the local syslog

### salt.returners.xmpp_return

Return salt data via xmpp

**depends** sleekxmpp >= 1.3.1

The following fields can be set in the minion conf file:

```
xmpp.jid (required)
xmpp.password (required)
xmpp.recipient (required)
xmpp.profile (optional)
```

Alternative configuration values can be used by prefacing the configuration. Any values not found in the alternative configuration will be pulled from the default location:

```
xmpp.jid
xmpp.password
xmpp.recipient
xmpp.profile
```

XMPP settings may also be configured as:

```
xmpp:
    jid: user@xmpp.domain.com/resource
    password: password
    recipient: user@xmpp.example.com

alternative.xmpp:
    jid: user@xmpp.domain.com/resource
    password: password
    recipient: someone@xmpp.example.com

xmpp_profile:
    xmpp.jid: user@xmpp.domain.com/resource
    xmpp.password: password

xmpp:
    profile: xmpp_profile
    recipient: user@xmpp.example.com

alternative.xmpp:
    profile: xmpp_profile
    recipient: someone-else@xmpp.example.com
```

To use the XMPP returner, append `--return xmpp' to the salt command.

```
salt '*' test.ping --return xmpp
```

To use the alternative configuration, append `--return_config alternative' to the salt command.

New in version 2015.5.0.

```
salt '*' test.ping --return xmpp --return_config alternative
```

To override individual configuration items, append --return_kwargs `{``key:": ``value"}' to the salt command.

New in version 2016.3.0.

```
salt '*' test.ping --return xmpp --return_kwargs '{"recipient": "someone-else@xmpp.
↪example.com"}'
```

class salt.returners.xmpp_return.**SendMsgBot**(*jid*, *password*, *recipient*, *msg*)

**start**(*event*)

salt.returners.xmpp_return.**returner**(*ret*)
Send an xmpp message with the data

## 2.23 Renderers

The Salt state system operates by gathering information from common data types such as lists, dictionaries, and strings that would be familiar to any developer.

SLS files are translated from whatever data templating format they are written in back into Python data types to be consumed by Salt.

By default SLS files are rendered as Jinja templates and then parsed as YAML documents. But since the only thing the state system cares about is raw data, the SLS files can be any structured format that can be dreamed up.

Currently there is support for `Jinja + YAML`, `Mako + YAML`, `Wempy + YAML`, `Jinja + json`, `Mako + json` and `Wempy + json`.

Renderers can be written to support any template type. This means that the Salt states could be managed by XML files, HTML files, Puppet files, or any format that can be translated into the Pythonic data structure used by the state system.

### 2.23.1 Multiple Renderers

A default renderer is selected in the master configuration file by providing a value to the `renderer` key.

When evaluating an SLS, more than one renderer can be used.

When rendering SLS files, Salt checks for the presence of a Salt-specific shebang line.

The shebang line directly calls the name of the renderer as it is specified within Salt. One of the most common reasons to use multiple renderers is to use the Python or `py` renderer.

Below, the first line is a shebang that references the `py` renderer.

```
#!py

def run():
    '''
    Install the python-mako package
    '''
    return {'include': ['python'],
            'python-mako': {'pkg': ['installed']}}
```

### 2.23.2 Composing Renderers

A renderer can be composed from other renderers by connecting them in a series of pipes(`|`).

In fact, the default `Jinja + YAML` renderer is implemented by connecting a YAML renderer to a Jinja renderer. Such renderer configuration is specified as: `jinja | yaml`.

Other renderer combinations are possible:

**`yaml`** i.e, just YAML, no templating.

**`mako | yaml`** pass the input to the `mako` renderer, whose output is then fed into the `yaml` renderer.

**`jinja | mako | yaml`** This one allows you to use both jinja and mako templating syntax in the input and then parse the final rendered output as YAML.

The following is a contrived example SLS file using the `jinja | mako | yaml` renderer:

```
#!jinja|mako|yaml

An_Example:
  cmd.run:
    - name: |
        echo "Using Salt ${grains['saltversion']}" \
             "from path {{grains['saltpath']}}."
    - cwd: /

<%doc> ${...} is Mako's notation, and so is this comment. </%doc>
{#     Similarly, {{...}} is Jinja's notation, and so is this comment. #}
```

For backward compatibility, `jinja | yaml` can also be written as `yaml_jinja`, and similarly, the `yaml_mako`, `yaml_wempy`, `json_jinja`, `json_mako`, and `json_wempy` renderers are all supported.

Keep in mind that not all renderers can be used alone or with any other renderers. For example, the template renderers shouldn't be used alone as their outputs are just strings, which still need to be parsed by another renderer to turn them into highstate data structures.

For example, it doesn't make sense to specify `yaml | jinja` because the output of the YAML renderer is a highstate data structure (a dict in Python), which cannot be used as the input to a template renderer. Therefore, when combining renderers, you should know what each renderer accepts as input and what it returns as output.

### 2.23.3 Writing Renderers

A custom renderer must be a Python module placed in the renderers directory and the module implement the `render` function.

The `render` function will be passed the path of the SLS file as an argument.

The purpose of of `render` function is to parse the passed file and to return the Python data structure derived from the file.

Custom renderers must be placed in a `_renderers` directory within the *`file_roots`* specified by the master config file.

Custom renderers are distributed when any of the following are run:

- `state.apply`
- *`saltutil.sync_renderers`*
- *`saltutil.sync_all`*

Any custom renderers which have been synced to a minion, that are named the same as one of Salt's default set of renderers, will take the place of the default renderer with the same name.

### 2.23.4 Examples

The best place to find examples of renderers is in the Salt source code.

Documentation for renderers included with Salt can be found here:

https://github.com/saltstack/salt/blob/develop/salt/renderers

Here is a simple YAML renderer example:

```
import yaml
def render(yaml_data, env='', sls='', **kws):
    if not isinstance(yaml_data, basestring):
        yaml_data = yaml_data.read()
    data = yaml.load(yaml_data)
    return data if data else {}
```

### 2.23.5 Full List of Renderers

#### renderer modules

| | |
|---|---|
| *cheetah* | Cheetah Renderer for Salt |
| *genshi* | Genshi Renderer for Salt |
| *gpg* | Renderer that will decrypt GPG ciphers |
| *hjson* | Hjson Renderer for Salt |
| *jinja* | Jinja loading utils to enable a more powerful backend for jinja templates |
| *json* | JSON Renderer for Salt |
| *json5* | JSON5 Renderer for Salt |
| *mako* | Mako Renderer for Salt |
| *msgpack* | |
| *py* | Pure python state renderer |
| *pydsl* | A Python-based DSL |
| *pyobjects* | Python renderer that includes a Pythonic Object based interface |
| *stateconf* | A flexible renderer that takes a templating engine and a data format |
| *wempy* | |
| yaml | |
| *yamlex* | |

#### salt.renderers.cheetah

Cheetah Renderer for Salt

salt.renderers.cheetah.**render**(*cheetah_data*, *saltenv='base'*, *sls=''*, *method='xml'*, ***kws*)

Render a Cheetah template.

**Return type** A Python data structure

#### salt.renderers.genshi

Genshi Renderer for Salt

salt.renderers.genshi.**render**(*genshi_data*, *saltenv='base'*, *sls=''*, *method='xml'*, ***kws*)

Render a Genshi template. A method should be passed in as part of the kwargs. If no method is passed in, xml is assumed. Valid methods are:

Note that the `text` method will call `NewTextTemplate`. If `oldtext` is desired, it must be called explicitly

**Return type** A Python data structure

### salt.renderers.gpg

Renderer that will decrypt GPG ciphers

Any key in the SLS file can be a GPG cipher, and this renderer will decrypt it before passing it off to Salt. This allows you to safely store secrets in source control, in such a way that only your Salt master can decrypt them and distribute them only to the minions that need them.

The typical use-case would be to use ciphers in your pillar data, and keep a secret key on your master. You can put the public key in source control so that developers can add new secrets quickly and easily.

This renderer requires the gpg binary. No python libraries are required as of the 2015.8.0 release.

#### Setup

To set things up, first generate a keypair. On the master, run the following:

```
# mkdir -p /etc/salt/gpgkeys
# chmod 0700 /etc/salt/gpgkeys
# gpg --gen-key --homedir /etc/salt/gpgkeys
```

Do not supply a password for the keypair, and use a name that makes sense for your application. Be sure to back up the `gpgkeys` directory someplace safe!

---

**Note:** Unfortunately, there are some scenarios - for example, on virtual machines which don't have real hardware - where insufficient entropy causes key generation to be extremely slow. In these cases, there are usually means of increasing the system entropy. On virtualised Linux systems, this can often be achieved by installing the `rng-tools` package.

---

#### Export the Public Key

```
# gpg --homedir /etc/salt/gpgkeys --armor --export <KEY-NAME> > exported_pubkey.gpg
```

#### Import the Public Key

To encrypt secrets, copy the public key to your local machine and run:

```
$ gpg --import exported_pubkey.gpg
```

To generate a cipher from a secret:

```
$ echo -n "supersecret" | gpg --armor --batch --trust-model always --encrypt -r <KEY-
↪name>
```

To apply the renderer on a file-by-file basis add the following line to the top of any pillar with gpg data in it:

```
#!yaml|gpg
```

Now with your renderer configured, you can include your ciphers in your pillar data like so:

```
#!yaml|gpg

a-secret: |
  -----BEGIN PGP MESSAGE-----
  Version: GnuPG v1

  hQEMAweRHKaPCfNeAQf9GLTN16hCfXAbPwU6BbBK0unOc7i9/etGuVc5CyU9Q6um
  QuetdvQVLFO/HkrC4lgeNQdM6D9E8PKonMlgJPyUvC8ggxhj0/IPFEKmrsnv2k6+
  cnEfmVexS7o/U1VOVjoyUeliMCJlAz/30RXaME49Cpi6No2+vKD8a4q4nZN1UZcG
  RhkhC0S22zNxOXQ38TBkmtJcqxnqT6YWKTUsjVubW3bVC+u2HGqJHu79wmwuN8tz
  m4wBkfCAd8Eyo2jEnWQcM4TcXiF01XPL4z4g1/9AAxh+Q4d8RIRP4fbw7ct4nCJv
  Gr9v2DTF7HNigIMl4ivMIn9fp+EZurJNiQskLgNbktJGAeEKYkqX5iCuB1b693hJ
  FKlwHiJt5yA8X2dDtfk8/Ph1Jx2TwGS+lGjlZaNqp3R1xuAZzXzZMLyZDe5+i3RJ
  skqmFTbOiA===Eqsm
  -----END PGP MESSAGE-----
```

### Encrypted CLI Pillar Data

New in version 2016.3.0.

Functions like *state.highstate* and *state.sls* allow for pillar data to be passed on the CLI.

```
salt myminion state.highstate pillar="{'mypillar': 'foo'}"
```

Starting with the 2016.3.0 release of Salt, it is now possible for this pillar data to be GPG-encrypted, and to use the GPG renderer to decrypt it.

### Replacing Newlines

To pass encrypted pillar data on the CLI, the ciphertext must have its newlines replaced with a literal backslash-n (\n), as newlines are not supported within Salt CLI arguments. There are a number of ways to do this:

With awk or Perl:

```
# awk
ciphertext=`echo -n "supersecret" | gpg --armor --batch --trust-model always --encrypt
 ↪-r user@domain.com | awk '{printf "%s\\n",$0} END {print ""}'`
# Perl
ciphertext=`echo -n "supersecret" | gpg --armor --batch --trust-model always --encrypt
 ↪-r user@domain.com | perl -pe 's/\n/\\n/g'`
```

With Python:

```
import subprocess

secret, stderr = subprocess.Popen(
    ['gpg', '--armor', '--batch', '--trust-model', 'always', '--encrypt',
     '-r', 'user@domain.com'],
    stdin=subprocess.PIPE,
    stdout=subprocess.PIPE,
    stderr=subprocess.PIPE).communicate(input='supersecret')

if secret:
    print(secret.replace('\n', r'\n'))
```

```
else:
    raise ValueError('No ciphertext found: {0}'.format(stderr))
```

```
ciphertext=`python /path/to/script.py`
```

The ciphertext can be included in the CLI pillar data like so:

```
salt myminion state.sls secretstuff pillar_enc=gpg pillar="{secret_pillar: '$ciphertext
 ↪'}"
```

The `pillar_enc=gpg` argument tells Salt that there is GPG-encrypted pillar data, so that the CLI pillar data is passed through the GPG renderer, which will iterate recursively though the CLI pillar dictionary to decrypt any encrypted values.

#### Encrypting the Entire CLI Pillar Dictionary

If several values need to be encrypted, it may be more convenient to encrypt the entire CLI pillar dictionary. Again, this can be done in several ways:

With awk or Perl:

```
# awk
ciphertext=`echo -n "{'secret_a': 'CorrectHorseBatteryStaple', 'secret_b': 'GPG is fun!
 ↪'}" | gpg --armor --batch --trust-model always --encrypt -r user@domain.com | awk '
 ↪{printf "%s\\n",$0} END {print ""}'`
# Perl
ciphertext=`echo -n "{'secret_a': 'CorrectHorseBatteryStaple', 'secret_b': 'GPG is fun!
 ↪'}" | gpg --armor --batch --trust-model always --encrypt -r user@domain.com | perl -
 ↪pe 's/\n/\\n/g'`
```

With Python:

```
import subprocess

pillar_data = {'secret_a': 'CorrectHorseBatteryStaple',
               'secret_b': 'GPG is fun!'}

secret, stderr = subprocess.Popen(
    ['gpg', '--armor', '--batch', '--trust-model', 'always', '--encrypt',
     '-r', 'user@domain.com'],
    stdin=subprocess.PIPE,
    stdout=subprocess.PIPE,
    stderr=subprocess.PIPE).communicate(input=repr(pillar_data))

if secret:
    print(secret.replace('\n', r'\n'))
else:
    raise ValueError('No ciphertext found: {0}'.format(stderr))
```

```
ciphertext=`python /path/to/script.py`
```

With the entire pillar dictionary now encrypted, it can be included in the CLI pillar data like so:

```
salt myminion state.sls secretstuff pillar_enc=gpg pillar="$ciphertext"
```

salt.renderers.gpg.**render**(*gpg_data*, *saltenv='base'*, *sls=''*, *argline=''*, ***kwargs*)
Create a gpg object given a gpg_keydir, and then use it to try to decrypt the data to be rendered.

### salt.renderers.hjson

Hjson Renderer for Salt http://laktak.github.io/hjson/

salt.renderers.hjson.**render**(*hjson_data*, *saltenv='base'*, *sls=''*, ***kws*)
Accepts HJSON as a string or as a file object and runs it through the HJSON parser.

**Return type** A Python data structure

### salt.renderers.jinja

Jinja loading utils to enable a more powerful backend for jinja templates

For Jinja usage information see Understanding Jinja.

salt.renderers.jinja.**render**(*template_file*, *saltenv='base'*, *sls=''*, *argline=''*, *context=None*, *tmplpath=None*, ***kws*)
Render the template_file, passing the functions and grains into the Jinja rendering system.

**Return type** *string*

class salt.utils.jinja.**SerializerExtension**(*environment*)
Yaml and Json manipulation.

**Format filters**

Allows jsonifying or yamlifying any data structure. For example, this dataset:

```
data = {
    'foo': True,
    'bar': 42,
    'baz': [1, 2, 3],
    'qux': 2.0
}
```

```
yaml = {{ data|yaml }}
json = {{ data|json }}
python = {{ data|python }}
```

will be rendered as:

```
yaml = {bar: 42, baz: [1, 2, 3], foo: true, qux: 2.0}
json = {"baz": [1, 2, 3], "foo": true, "bar": 42, "qux": 2.0}
python = {'bar': 42, 'baz': [1, 2, 3], 'foo': True, 'qux': 2.0}
```

The yaml filter takes an optional flow_style parameter to control the default-flow-style parameter of the YAML dumper.

```
{{ data|yaml(False) }}
```

will be rendered as:

```
bar: 42
baz:
  - 1
```

```
  - 2
  - 3
foo: true
qux: 2.0
```

#### Load filters

Strings and variables can be deserialized with **load_yaml** and **load_json** tags and filters. It allows one to manipulate data directly in templates, easily:

```
{%- set yaml_src = "{foo: it works}"|load_yaml %}
{%- set json_src = "{'bar': 'for real'}"|load_json %}
Dude, {{ yaml_src.foo }} {{ json_src.bar }}!
```

will be rendered as:

```
Dude, it works for real!
```

#### Load tags

Salt implements `load_yaml` and `load_json` tags. They work like the import tag, except that the document is also deserialized.

Syntaxes are `{% load_yaml as [VARIABLE] %}[YOUR DATA]{% endload %}` and `{% load_json as [VARIABLE] %}[YOUR DATA]{% endload %}`

For example:

```
{% load_yaml as yaml_src %}
    foo: it works
{% endload %}
{% load_json as json_src %}
    {
        "bar": "for real"
    }
{% endload %}
Dude, {{ yaml_src.foo }} {{ json_src.bar }}!
```

will be rendered as:

```
Dude, it works for real!
```

#### Import tags

External files can be imported and made available as a Jinja variable.

```
{% import_yaml "myfile.yml" as myfile %}
{% import_json "defaults.json" as defaults %}
{% import_text "completeworksofshakespeare.txt" as poems %}
```

#### Catalog

`import_*` and `load_*` tags will automatically expose their target variable to import. This feature makes catalog of data to handle.

for example:

```
# doc1.sls
{% load_yaml as var1 %}
    foo: it works
```

```
{% endload %}
{% load_yaml as var2 %}
    bar: for real
{% endload %}
```

```
# doc2.sls
{% from "doc1.sls" import var1, var2 as local2 %}
{{ var1.foo }} {{ local2.bar }}
```

### salt.renderers.json

JSON Renderer for Salt

salt.renderers.json.**render**(*json_data*, *saltenv='base'*, *sls=''*, ***kws*)

Accepts JSON as a string or as a file object and runs it through the JSON parser.

**Return type** A Python data structure

### salt.renderers.json5

JSON5 Renderer for Salt

New in version 2016.3.0.

JSON5 is an unofficial extension to JSON. See http://json5.org/ for more information.

This renderer requires the json5 python bindings, installable via pip.

salt.renderers.json5.**render**(*json_data*, *saltenv='base'*, *sls=''*, ***kws*)

Accepts JSON as a string or as a file object and runs it through the JSON parser.

**Return type** A Python data structure

### salt.renderers.mako

Mako Renderer for Salt

salt.renderers.mako.**render**(*template_file*, *saltenv='base'*, *sls=''*, *context=None*, *tmplpath=None*, ***kws*)

Render the template_file, passing the functions and grains into the Mako rendering system.

**Return type** *string*

### salt.renderers.msgpack

salt.renderers.msgpack.**render**(*msgpack_data*, *saltenv='base'*, *sls=''*, ***kws*)

Accepts a message pack string or a file object, renders said data back to a python dict.

**Return type** A Python data structure

### salt.renderers.py

Pure python state renderer

The SLS file should contain a function called `run` which returns high state data.

In this module, a few objects are defined for you, giving access to Salt's execution functions, grains, pillar, etc. They are:

- `__salt__` - Execution functions (i.e. `__salt__['test.echo']('foo')`)
- `__grains__` - *Grains* (i.e. `__grains__['os']`)
- `__pillar__` - *Pillar data* (i.e. `__pillar__['foo']`)
- `__opts__` - Minion configuration options
- `__env__` - The effective salt fileserver environment (i.e. `base`). Also referred to as a ``saltenv''. `__env__` should not be modified in a pure python SLS file. To use a different environment, the environment should be set when executing the state. This can be done in a couple different ways:
  - Using the `saltenv` argument on the salt CLI (i.e. `salt '*' state.sls foo.bar.baz saltenv=env_name`).
  - By adding a `saltenv` argument to an individual state within the SLS file. In other words, adding a line like this to the state's data structure: `{'saltenv': 'env_name'}`
- `__sls__` - The SLS path of the file. For example, if the root of the base environment is `/srv/salt`, and the SLS file is `/srv/salt/foo/bar/baz.sls`, then `__sls__` in that file will be `foo.bar.baz`.

```
#!py

def run():
    config = {}

    if __grains__['os'] == 'Ubuntu':
        user = 'ubuntu'
        group = 'ubuntu'
        home = '/home/{0}'.format(user)
    else:
        user = 'root'
        group = 'root'
        home = '/root/'

    config['s3cmd'] = {
        'pkg': [
            'installed',
            {'name': 's3cmd'},
        ],
    }

    config[home + '/.s3cfg'] = {
        'file.managed': [
            {'source': 'salt://s3cfg/templates/s3cfg'},
            {'template': 'jinja'},
            {'user': user},
            {'group': group},
            {'mode': 600},
            {'context': {
                'aws_key': __pillar__['AWS_ACCESS_KEY_ID'],
                'aws_secret_key': __pillar__['AWS_SECRET_ACCESS_KEY'],
```

```
                },
            },
        ],
    }

    return config
```

salt.renderers.py.**render**(*template*, *saltenv='base'*, *sls=''*, *tmplpath=None*, ***kws*)
Render the python module's components

**Return type** *string*

### salt.renderers.pydsl

A Python-based DSL

**maintainer** Jack Kuan <kjkuan@gmail.com>

**maturity** new

**platform** all

The *pydsl* renderer allows one to author salt formulas (.sls files) in pure Python using a DSL that's easy to write and easy to read. Here's an example:

```
#!pydsl

apache = state('apache')
apache.pkg.installed()
apache.service.running()
state('/var/www/index.html') \
    .file('managed',
          source='salt://webserver/index.html') \
    .require(pkg='apache')
```

Notice that any Python code is allow in the file as it's really a Python module, so you have the full power of Python at your disposal. In this module, a few objects are defined for you, including the usual (with `__` added) `__salt__` dictionary, `__grains__`, `__pillar__`, `__opts__`, `__env__`, and `__sls__`, plus a few more:

`__file__`

local file system path to the sls module.

`__pydsl__`

Salt PyDSL object, useful for configuring DSL behavior per sls rendering.

`include`

Salt PyDSL function for creating *Include declaration*`s.

`extend`

Salt PyDSL function for creating *Extend declaration*`s.

`state`

Salt PyDSL function for creating *ID declaration*`s.

A state *ID declaration* is created with a `state(id)` function call. Subsequent `state(id)` call with the same id returns the same object. This singleton access pattern applies to all declaration objects created with the DSL.

```
state('example')
assert state('example') is state('example')
assert state('example').cmd is state('example').cmd
assert state('example').cmd.running is state('example').cmd.running
```

The *id* argument is optional. If omitted, an UUID will be generated and used as the *id*.

`state(id)` returns an object under which you can create a *State declaration* object by accessing an attribute named after *any* state module available in Salt.

```
state('example').cmd
state('example').file
state('example').pkg
...
```

Then, a *Function declaration* object can be created from a *State declaration* object by one of the following two ways:

1. by calling a method named after the state function on the *State declaration* object.

```
state('example').file.managed(...)
```

2. by directly calling the attribute named for the *State declaration*, and supplying the state function name as the first argument.

```
state('example').file('managed', ...)
```

With either way of creating a *Function declaration* object, any *Function arg declaration*`s can be passed as keyword arguments to the call. Subsequent calls of a *Function declaration* will update the arg declarations.

```
state('example').file('managed', source='salt://webserver/index.html')
state('example').file.managed(source='salt://webserver/index.html')
```

As a shortcut, the special *name* argument can also be passed as the first or second positional argument depending on the first or second way of calling the *State declaration* object. In the following two examples *ls -la* is the *name* argument.

```
state('example').cmd.run('ls -la', cwd='/')
state('example').cmd('run', 'ls -la', cwd='/')
```

Finally, a *Requisite declaration* object with its *Requisite reference*`s can be created by invoking one of the requisite methods (see *State Requisites*) on either a *Function declaration* object or a *State declaration* object. The return value of a requisite call is also a *Function declaration* object, so you can chain several requisite calls together.

Arguments to a requisite call can be a list of *State declaration* objects and/or a set of keyword arguments whose names are state modules and values are IDs of *ID declaration*`s or names of *Name declaration*`s.

```
apache2 = state('apache2')
apache2.pkg.installed()
state('libapache2-mod-wsgi').pkg.installed()

# you can call requisites on function declaration
apache2.service.running() \
               .require(apache2.pkg,
                        pkg='libapache2-mod-wsgi') \
               .watch(file='/etc/apache2/httpd.conf')

# or you can call requisites on state declaration.
# this actually creates an anonymous function declaration object
```

```
# to add the requisites.
apache2.service.require(state('libapache2-mod-wsgi').pkg,
                        pkg='apache2') \
               .watch(file='/etc/apache2/httpd.conf')

# we still need to set the name of the function declaration.
apache2.service.running()
```

*Include declaration* objects can be created with the `include` function, while *Extend declaration* objects can be created with the `extend` function, whose arguments are just *Function declaration* objects.

```
include('edit.vim', 'http.server')
extend(state('apache2').service.watch(file='/etc/httpd/httpd.conf')
```

The `include` function, by default, causes the included sls file to be rendered as soon as the `include` function is called. It returns a list of rendered module objects; sls files not rendered with the pydsl renderer return `None`s. This behavior creates no *Include declaration*`s in the resulting high state data structure.

```
import types

# including multiple sls returns a list.
_, mod = include('a-non-pydsl-sls', 'a-pydsl-sls')

assert _ is None
assert isinstance(slsmods[1], types.ModuleType)

# including a single sls returns a single object
mod = include('a-pydsl-sls')

# myfunc is a function that calls state(...) to create more states.
mod.myfunc(1, 2, "three")
```

Notice how you can define a reusable function in your pydsl sls module and then call it via the module returned by `include`.

It's still possible to do late includes by passing the `delayed=True` keyword argument to `include`.

```
include('edit.vim', 'http.server', delayed=True)
```

Above will just create a *Include declaration* in the rendered result, and such call always returns `None`.

### Special integration with the *cmd* state

Taking advantage of rendering a Python module, PyDSL allows you to declare a state that calls a pre-defined Python function when the state is executed.

```
greeting = "hello world"
def helper(something, *args, **kws):
    print greeting                  # hello world
    print something, args, kws      # test123 ['a', 'b', 'c'] {'x': 1, 'y': 2}

state().cmd.call(helper, "test123", 'a', 'b', 'c', x=1, y=2)
```

The *cmd.call* state function takes care of calling our `helper` function with the arguments we specified in the states, and translates the return value of our function into a structure expected by the state system. See *salt.states.cmd.call()* for more information.

### Implicit ordering of states

Salt states are explicitly ordered via *Requisite declaration*`s. However, with *pydsl* it's possible to let the renderer track the order of creation for *Function declaration* objects, and implicitly add `require` requisites for your states to enforce the ordering. This feature is enabled by setting the `ordered` option on `__pydsl__`.

**Note**: this feature is only available if your minions are using Python >= 2.7.

```
include('some.sls.file')

A = state('A').cmd.run(cwd='/var/tmp')
extend(A)

__pydsl__.set(ordered=True)

for i in range(10):
    i = str(i)
    state(i).cmd.run('echo '+i, cwd='/')
state('1').cmd.run('echo one')
state('2').cmd.run(name='echo two')
```

Notice that the `ordered` option needs to be set after any `extend` calls. This is to prevent *pydsl* from tracking the creation of a state function that's passed to an `extend` call.

Above example should create states from `0` to `9` that will output `0`, `one`, `two`, `3`, ... `9`, in that order.

It's important to know that *pydsl* tracks the *creations* of *Function declaration* objects, and automatically adds a `require` requisite to a *Function declaration* object that requires the last *Function declaration* object created before it in the sls file.

This means later calls (perhaps to update the function's *Function arg declaration*) to a previously created function declaration will not change the order.

### Render time state execution

When Salt processes a salt formula file, the file is rendered to salt's high state data representation by a renderer before the states can be executed. In the case of the *pydsl* renderer, the .sls file is executed as a python module as it is being rendered which makes it easy to execute a state at render time. In *pydsl*, executing one or more states at render time can be done by calling a configured *ID declaration* object.

```
#!pydsl

s = state() # save for later invocation

# configure it
s.cmd.run('echo at render time', cwd='/')
s.file.managed('target.txt', source='salt://source.txt')

s() # execute the two states now
```

Once an *ID declaration* is called at render time it is detached from the sls module as if it was never defined.

**Note:** If *implicit ordering* is enabled (i.e., via `__pydsl__.set(ordered=True)`) then the *first* invocation of a *ID declaration* object must be done before a new *Function declaration* is created.

### Integration with the stateconf renderer

The `salt.renderers.stateconf` renderer offers a few interesting features that can be leveraged by the *pydsl* renderer. In particular, when using with the *pydsl* renderer, we are interested in *stateconf*`s sls namespacing feature (via dot-prefixed id declarations), as well as, the automatic *start* and *goal* states generation.

Now you can use *pydsl* with *stateconf* like this:

```
#!pydsl|stateconf -ps

include('xxx', 'yyy')

# ensure that states in xxx run BEFORE states in this file.
extend(state('.start').stateconf.require(stateconf='xxx::goal'))

# ensure that states in yyy run AFTER states in this file.
extend(state('.goal').stateconf.require_in(stateconf='yyy::start'))

__pydsl__.set(ordered=True)

...
```

`-s` enables the generation of a stateconf *start* state, and `-p` lets us pipe high state data rendered by *pydsl* to *stateconf*. This example shows that by `require`-ing or `require_in`-ing the included sls' *start* or *goal* states, it's possible to ensure that the included sls files can be made to execute before or after a state in the including sls file.

### Importing custom Python modules

To use a custom Python module inside a PyDSL state, place the module somewhere that it can be loaded by the Salt loader, such as *_modules* in the */srv/salt* directory.

Then, copy it to any minions as necessary by using *saltutil.sync_modules*.

To import into a PyDSL SLS, one must bypass the Python importer and insert it manually by getting a reference from Python's *sys.modules* dictionary.

For example:

```
#!pydsl|stateconf -ps

def main():
    my_mod = sys.modules['salt.loaded.ext.module.my_mod']
```

`salt.renderers.pydsl.`**`render`**(*template*, *saltenv='base'*, *sls=''*, *tmplpath=None*, *rendered_sls=None*, ***kws*)

### salt.renderers.pyobjects

Python renderer that includes a Pythonic Object based interface

**maintainer** Evan Borgstrom <evan@borgstrom.ca>

Let's take a look at how you use pyobjects in a state file. Here's a quick example that ensures the `/tmp` directory is in the correct state.

```
#!pyobjects

File.managed("/tmp", user='root', group='root', mode='1777')
```

Nice and Pythonic!

By using the ``shebang'' syntax to switch to the pyobjects renderer we can now write our state data using an object based interface that should feel at home to python developers. You can import any module and do anything that you'd like (with caution, importing sqlalchemy, django or other large frameworks has not been tested yet). Using the pyobjects renderer is exactly the same as using the built-in Python renderer with the exception that pyobjects provides you with an object based interface for generating state data.

### Creating state data

Pyobjects takes care of creating an object for each of the available states on the minion. Each state is represented by an object that is the CamelCase version of its name (i.e. `File`, `Service`, `User`, etc), and these objects expose all of their available state functions (i.e. `File.managed`, `Service.running`, etc).

The name of the state is split based upon underscores (_), then each part is capitalized and finally the parts are joined back together.

Some examples:

- `postgres_user` becomes `PostgresUser`
- `ssh_known_hosts` becomes `SshKnownHosts`

### Context Managers and requisites

How about something a little more complex. Here we're going to get into the core of how to use pyobjects to write states.

```
#!pyobjects

with Pkg.installed("nginx"):
    Service.running("nginx", enable=True)

    with Service("nginx", "watch_in"):
        File.managed("/etc/nginx/conf.d/mysite.conf",
                     owner='root', group='root', mode='0444',
                     source='salt://nginx/mysite.conf')
```

The objects that are returned from each of the magic method calls are setup to be used a Python context managers (`with`) and when you use them as such all declarations made within the scope will **automatically** use the enclosing state as a requisite!

The above could have also been written use direct requisite statements as.

```
#!pyobjects

Pkg.installed("nginx")
Service.running("nginx", enable=True, require=Pkg("nginx"))
```

```
File.managed("/etc/nginx/conf.d/mysite.conf",
             owner='root', group='root', mode='0444',
             source='salt://nginx/mysite.conf',
             watch_in=Service("nginx"))
```

You can use the direct requisite statement for referencing states that are generated outside of the current file.

```
#!pyobjects

# some-other-package is defined in some other state file
Pkg.installed("nginx", require=Pkg("some-other-package"))
```

The last thing that direct requisites provide is the ability to select which of the SaltStack requisites you want to use (require, require_in, watch, watch_in, use & use_in) when using the requisite as a context manager.

```
#!pyobjects

with Service("my-service", "watch_in"):
    ...
```

The above example would cause all declarations inside the scope of the context manager to automatically have their `watch_in` set to `Service("my-service")`.

### Including and Extending

To include other states use the `include()` function. It takes one name per state to include.

To extend another state use the `extend()` function on the name when creating a state.

```
#!pyobjects

include('http', 'ssh')

Service.running(extend('apache'),
                watch=[File('/etc/httpd/extra/httpd-vhosts.conf')])
```

### Importing from other state files

Like any Python project that grows you will likely reach a point where you want to create reusability in your state tree and share objects between state files, Map Data (described below) is a perfect example of this.

To facilitate this Python's `import` statement has been augmented to allow for a special case when working with a Salt state tree. If you specify a Salt url (`salt://...`) as the target for importing from then the pyobjects renderer will take care of fetching the file for you, parsing it with all of the pyobjects features available and then place the requested objects in the global scope of the template being rendered.

This works for all types of import statements; `import X`, `from X import Y`, and `from X import Y as Z`.

```
#!pyobjects

import salt://myfile.sls
from salt://something/data.sls import Object
from salt://something/data.sls import Object as Other
```

See the Map Data section for a more practical use.

Caveats:

- Imported objects are ALWAYS put into the global scope of your template, regardless of where your import statement is.

### Salt object

In the spirit of the object interface for creating state data pyobjects also provides a simple object interface to the `__salt__` object.

A function named `salt` exists in scope for your sls files and will dispatch its attributes to the `__salt__` dictionary.

The following lines are functionally equivalent:

```
#!pyobjects

ret = salt.cmd.run(bar)
ret = __salt__['cmd.run'](bar)
```

### Pillar, grain, mine & config data

Pyobjects provides shortcut functions for calling `pillar.get`, `grains.get`, `mine.get` & `config.get` on the `__salt__` object. This helps maintain the readability of your state files.

Each type of data can be access by a function of the same name: `pillar()`, `grains()`, `mine()` and `config()`.

The following pairs of lines are functionally equivalent:

```
#!pyobjects

value = pillar('foo:bar:baz', 'qux')
value = __salt__['pillar.get']('foo:bar:baz', 'qux')

value = grains('pkg:apache')
value = __salt__['grains.get']('pkg:apache')

value = mine('os:Fedora', 'network.interfaces', 'grain')
value = __salt__['mine.get']('os:Fedora', 'network.interfaces', 'grain')

value = config('foo:bar:baz', 'qux')
value = __salt__['config.get']('foo:bar:baz', 'qux')
```

### Map Data

When building complex states or formulas you often need a way of building up a map of data based on grain data. The most common use of this is tracking the package and service name differences between distributions.

To build map data using pyobjects we provide a class named Map that you use to build your own classes with inner classes for each set of values for the different grain matches.

```
#!pyobjects

class Samba(Map):
    merge = 'samba:lookup'
```

```
    class Debian:
        server = 'samba'
        client = 'samba-client'
        service = 'samba'

    class Ubuntu:
        __grain__ = 'os'
        service = 'smbd'

    class RedHat:
        server = 'samba'
        client = 'samba'
        service = 'smb'
```

To use this new data you can import it into your state file and then access your attributes. To access the data in the map you simply access the attribute name on the base class that is extending Map. Assuming the above Map was in the file `samba/map.sls`, you could do the following.

```
#!pyobjects

from salt://samba/map.sls import Samba

with Pkg.installed("samba", names=[Samba.server, Samba.client]):
    Service.running("samba", name=Samba.service)
```

### TODO

- Interface for working with reactor files

**class** salt.renderers.pyobjects.**PyobjectsModule**(*name*, *attrs*)
This provides a wrapper for bare imports.

salt.renderers.pyobjects.**load_states**()
This loads our states into the salt __context__

salt.renderers.pyobjects.**render**(*template*, *saltenv='base'*, *sls=''*, *salt_data=True*, ***kwargs*)

### salt.renderers.stateconf

**maintainer** Jack Kuan <kjkuan@gmail.com>

**maturity** new

**platform** all

This module provides a custom renderer that processes a salt file with a specified templating engine (e.g. Jinja) and a chosen data renderer (e.g. YAML), extracts arguments for any `stateconf.set` state, and provides the extracted arguments (including Salt-specific args, such as `require`, etc) as template context. The goal is to make writing reusable/configurable/parameterized salt files easier and cleaner.

To use this renderer, either set it as the default renderer via the `renderer` option in master/minion's config, or use the shebang line in each individual sls file, like so: `#!stateconf`. Note, due to the way this renderer works, it must be specified as the first renderer in a render pipeline. That is, you cannot specify `#!mako|yaml|stateconf`, for example. Instead, you specify them as renderer arguments: `#!stateconf mako . yaml`.

Here's a list of features enabled by this renderer.

- Prefixes any state id (declaration or reference) that starts with a dot (`.`) to avoid duplicated state ids when the salt file is included by other salt files.

  For example, in the *salt://some/file.sls*, a state id such as `.sls_params` will be turned into `some.file::sls_params`. Example:

```
#!stateconf yaml . jinja

.vim:
  pkg.installed
```

  Above will be translated into:

```
some.file::vim:
  pkg.installed:
    - name: vim
```

  Notice how that if a state under a dot-prefixed state id has no `name` argument then one will be added automatically by using the state id with the leading dot stripped off.

  The leading dot trick can be used with extending state ids as well, so you can include relatively and extend relatively. For example, when extending a state in *salt://some/other_file.sls*, e.g.:

```
#!stateconf yaml . jinja

include:
  - .file

extend:
  .file::sls_params:
    stateconf.set:
      - name1: something
```

  Above will be pre-processed into:

```
include:
  - some.file

extend:
  some.file::sls_params:
    stateconf.set:
      - name1: something
```

- Adds a `sls_dir` context variable that expands to the directory containing the rendering salt file. So, you can write `salt://{{sls_dir}}/...` to reference templates files used by your salt file.
- Recognizes the special state function, `stateconf.set`, that configures a default list of named arguments usable within the template context of the salt file. Example:

```
#!stateconf yaml . jinja

.sls_params:
  stateconf.set:
    - name1: value1
    - name2: value2
    - name3:
      - value1
      - value2
      - value3
```

```
    - require_in:
      - cmd: output

# --- end of state config ---

.output:
  cmd.run:
    - name: |
        echo 'name1={{sls_params.name1}}
              name2={{sls_params.name2}}
              name3[1]={{sls_params.name3[1]}}
        '
```

This even works with `include` + `extend` so that you can override the default configured arguments by including the salt file and then `extend` the `stateconf.set` states that come from the included salt file. (*IMPORTANT: Both the included and the extending sls files must use the stateconf renderer for this ``extend`` to work!*)

Notice that the end of configuration marker (`# ---end of state config --`) is needed to separate the use of `stateconf.set' form the rest of your salt file. The regex that matches such marker can be configured via the `stateconf_end_marker` option in your master or minion config file.

Sometimes, it is desirable to set a default argument value that's based on earlier arguments in the same `stateconf.set`. For example, it may be tempting to do something like this:

```
#!stateconf yaml . jinja

.apache:
  stateconf.set:
    - host: localhost
    - port: 1234
    - url: 'http://{{host}}:{{port}}/'

# --- end of state config ---

.test:
  cmd.run:
    - name: echo '{{apache.url}}'
    - cwd: /
```

However, this won't work. It can however be worked around like so:

```
#!stateconf yaml . jinja

.apache:
  stateconf.set:
    - host: localhost
    - port: 1234
{#  - url: 'http://{{host}}:{{port}}/' #}

# --- end of state config ---
# {{ apache.setdefault('url', "http://%(host)s:%(port)s/" % apache) }}

.test:
  cmd.run:
    - name: echo '{{apache.url}}'
    - cwd: /
```

- Adds support for relative include and exclude of .sls files. Example:

```
#!stateconf yaml . jinja

include:
  - .apache
  - .db.mysql
  - ..app.django

exclude:
  - sls: .users
```

  If the above is written in a salt file at *salt://some/where.sls* then it will include *salt://some/apache.sls*, *salt://some/db/mysql.sls* and *salt://app/django.sls*, and exclude *salt://some/users.ssl*. Actually, it does that by rewriting the above `include` and `exclude` into:

```
include:
  - some.apache
  - some.db.mysql
  - app.django

exclude:
  - sls: some.users
```

- Optionally (enabled by default, *disable* via the *-G* renderer option, e.g. in the shebang line: `#!stateconf -G`), generates a `stateconf.set` goal state (state id named as `.goal` by default, configurable via the master/minion config option, `stateconf_goal_state`) that requires all other states in the salt file. Note, the `.goal` state id is subject to dot-prefix rename rule mentioned earlier.

  Such goal state is intended to be required by some state in an including salt file. For example, in your webapp salt file, if you include a sls file that is supposed to setup Tomcat, you might want to make sure that all states in the Tomcat sls file will be executed before some state in the webapp sls file.

- Optionally (enable via the *-o* renderer option, e.g. in the shebang line: `#!stateconf -o`), orders the states in a sls file by adding a `require` requisite to each state such that every state requires the state defined just before it. The order of the states here is the order they are defined in the sls file. (Note: this feature is only available if your minions are using Python >= 2.7. For Python2.6, it should also work if you install the *ordereddict* module from PyPI)

  By enabling this feature, you are basically agreeing to author your sls files in a way that gives up the explicit (or implicit?) ordering imposed by the use of `require`, `watch`, `require_in` or `watch_in` requisites, and instead, you rely on the order of states you define in the sls files. This may or may not be a better way for you. However, if there are many states defined in a sls file, then it tends to be easier to see the order they will be executed with this feature.

  You are still allowed to use all the requisites, with a few restrictions. You cannot `require` or `watch` a state defined *after* the current state. Similarly, in a state, you cannot `require_in` or `watch_in` a state defined *before* it. Breaking any of the two restrictions above will result in a state loop. The renderer will check for such incorrect uses if this feature is enabled.

  Additionally, `names` declarations cannot be used with this feature because the way they are compiled into low states make it impossible to guarantee the order in which they will be executed. This is also checked by the renderer. As a workaround for not being able to use `names`, you can achieve the same effect, by generate your states with the template engine available within your sls file.

  Finally, with the use of this feature, it becomes possible to easily make an included sls file execute all its states *after* some state (say, with id `X`) in the including sls file. All you have to do is to make state, `X`, `require_in` the first state defined in the included sls file.

When writing sls files with this renderer, one should avoid using what can be defined in a `name` argument of a state as the state's id. That is, avoid writing states like this:

```
/path/to/some/file:
  file.managed:
    - source: salt://some/file

cp /path/to/some/file file2:
  cmd.run:
    - cwd: /
    - require:
      - file: /path/to/some/file
```

Instead, define the state id and the `name` argument separately for each state. Also, the ID should be something meaningful and easy to reference within a requisite (which is a good habit anyway, and such extra indirection would also makes the sls file easier to modify later). Thus, the above states should be written like this:

```
add-some-file:
  file.managed:
    - name: /path/to/some/file
    - source: salt://some/file

copy-files:
  cmd.run:
    - name: cp /path/to/some/file file2
    - cwd: /
    - require:
      - file: add-some-file
```

Moreover, when referencing a state from a requisite, you should reference the state's id plus the state name rather than the state name plus its `name` argument. (Yes, in the above example, you can actually `require` the `file: /path/to/some/file`, instead of the `file: add-some-file`). The reason is that this renderer will re-write or rename state id's and their references for state id's prefixed with `.`. So, if you reference `name` then there's no way to reliably rewrite such reference.

### salt.renderers.wempy

`salt.renderers.wempy.`**`render`**(*template_file*, *saltenv='base'*, *sls=''*, *argline=''*, *context=None*, ***kws*)

Render the data passing the functions and grains into the rendering system

**Return type** *string*

### salt.renderers.yamlex

YAMLEX renderer is a replacement of the YAML renderer. It's 100% YAML with a pinch of Salt magic:

- All mappings are automatically OrderedDict
- All strings are automatically str obj
- data aggregation with !aggregation yaml tag, based on the `salt.utils.aggregation` module.
- data aggregation over documents for pillar

Instructed aggregation within the `!aggregation` and the `!reset` tags:

```
#!yamlex
foo: !aggregate first
foo: !aggregate second
bar: !aggregate {first: foo}
bar: !aggregate {second: bar}
baz: !aggregate 42
qux: !aggregate default
!reset qux: !aggregate my custom data
```

is roughly equivalent to

```
foo: [first, second]
bar: {first: foo, second: bar}
baz: [42]
qux: [my custom data]
```

### Reference

salt.renderers.yamlex.**render**(*sls_data*, *saltenv='base'*, *sls=''*, ***kws*)

Accepts YAML_EX as a string or as a file object and runs it through the YAML_EX parser.

**Return type** A Python data structure

CHAPTER 3

# Using Salt

This section describes the fundamental components and concepts that you need to understand to use Salt.

## 3.1 Grains

Salt comes with an interface to derive information about the underlying system. This is called the grains interface, because it presents salt with grains of information. Grains are collected for the operating system, domain name, IP address, kernel, OS type, memory, and many other system properties.

The grains interface is made available to Salt modules and components so that the right salt minion commands are automatically available on the right systems.

Grain data is relatively static, though if system information changes (for example, if network settings are changed), or if a new value is assigned to a custom grain, grain data is refreshed.

**Note**: Grains resolve to lowercase letters. For example, `FOO`, and `foo` target the same grain.

### 3.1.1 Listing Grains

Available grains can be listed by using the `grains.ls' module:

```
salt '*' grains.ls
```

Grains data can be listed by using the `grains.items' module:

```
salt '*' grains.items
```

### 3.1.2 Grains in the Minion Config

Grains can also be statically assigned within the minion configuration file. Just add the option *grains* and pass options to it:

```
grains:
  roles:
    - webserver
    - memcache
  deployment: datacenter4
```

```
  cabinet: 13
  cab_u: 14-15
```

Then status data specific to your servers can be retrieved via Salt, or used inside of the State system for matching. It also makes targeting, in the case of the example above, simply based on specific data about your deployment.

### 3.1.3 Grains in /etc/salt/grains

If you do not want to place your custom static grains in the minion config file, you can also put them in `/etc/salt/grains` on the minion. They are configured in the same way as in the above example, only without a top-level `grains:` key:

```
roles:
  - webserver
  - memcache
deployment: datacenter4
cabinet: 13
cab_u: 14-15
```

### 3.1.4 Matching Grains in the Top File

With correctly configured grains on the Minion, the top file used in Pillar or during Highstate can be made very efficient. For example, consider the following configuration:

```
'node_type:webserver':
  - match: grain
  - webserver

'node_type:postgres':
  - match: grain
  - postgres

'node_type:redis':
  - match: grain
  - redis

'node_type:lb':
  - match: grain
  - lb
```

For this example to work, you would need to have defined the grain `node_type` for the minions you wish to match. This simple example is nice, but too much of the code is similar. To go one step further, Jinja templating can be used to simplify the top file.

```
{% set the_node_type = salt['grains.get']('node_type', '') %}

{% if the_node_type %}
  'node_type:{{ the_node_type }}':
    - match: grain
    - {{ the_node_type }}
{% endif %}
```

Using Jinja templating, only one match entry needs to be defined.

**Note:** The example above uses the *grains.get* function to account for minions which do not have the `node_type` grain set.

### 3.1.5 Writing Grains

The grains are derived by executing all of the ``public'' functions (i.e. those which do not begin with an underscore) found in the modules located in the Salt's core grains code, followed by those in any custom grains modules. The functions in a grains module must return a Python dict, where the dictionary keys are the names of grains, and each key's value is that value for that grain.

Custom grains modules should be placed in a subdirectory named `_grains` located under the *file_roots* specified by the master config file. The default path would be `/srv/salt/_grains`. Custom grains modules will be distributed to the minions when *state.highstate* is run, or by executing the *saltutil.sync_grains* or *saltutil.sync_all* functions.

Grains modules are easy to write, and (as noted above) only need to return a dictionary. For example:

```
def yourfunction():
    # initialize a grains dictionary
    grains = {}
    # Some code for logic that sets grains like
    grains['yourcustomgrain'] = True
    grains['anothergrain'] = 'somevalue'
    return grains
```

The name of the function does not matter and will not factor into the grains data at all; only the keys/values returned become part of the grains.

#### When to Use a Custom Grain

Before adding new grains, consider what the data is and remember that grains should (for the most part) be static data.

If the data is something that is likely to change, consider using *Pillar* or an execution module instead. If it's a simple set of key/value pairs, pillar is a good match. If compiling the information requires that system commands be run, then putting this information in an execution module is likely a better idea.

Good candidates for grains are data that is useful for targeting minions in the *top file* or the Salt CLI. The name and data structure of the grain should be designed to support many platforms, operating systems or applications. Also, keep in mind that Jinja templating in Salt supports referencing pillar data as well as invoking functions from execution modules, so there's no need to place information in grains to make it available to Jinja templates. For example:

```
...
...
{{ salt['module.function_name']('argument_1', 'argument_2') }}
{{ pillar['my_pillar_key'] }}
...
...
```

**Warning**: Custom grains will not be available in the top file until after the first *highstate*. To make custom grains available on a minion's first highstate, it is recommended to use *this example* to ensure that the custom grains are synced when the minion starts.

### Loading Custom Grains

If you have multiple functions specifying grains that are called from a `main` function, be sure to prepend grain function names with an underscore. This prevents Salt from including the loaded grains from the grain functions in the final grain data structure. For example, consider this custom grain file:

```
#!/usr/bin/env python
def _my_custom_grain():
    my_grain = {'foo': 'bar', 'hello': 'world'}
    return my_grain


def main():
    # initialize a grains dictionary
    grains = {}
    grains['my_grains'] = _my_custom_grain()
    return grains
```

The output of this example renders like so:

```
# salt-call --local grains.items
local:
    ----------
    <Snipped for brevity>
    my_grains:
        ----------
        foo:
            bar
        hello:
            world
```

However, if you don't prepend the `my_custom_grain` function with an underscore, the function will be rendered twice by Salt in the items output: once for the `my_custom_grain` call itself, and again when it is called in the `main` function:

```
# salt-call --local grains.items
local:
----------
    <Snipped for brevity>
    foo:
        bar
    <Snipped for brevity>
    hello:
        world
    <Snipped for brevity>
    my_grains:
        ----------
        foo:
            bar
        hello:
            world
```

### 3.1.6 Precedence

Core grains can be overridden by custom grains. As there are several ways of defining custom grains, there is an order of precedence which should be kept in mind when defining them. The order of evaluation is as follows:

1. Core grains.
2. Custom grains in `/etc/salt/grains`.
3. Custom grains in `/etc/salt/minion`.
4. Custom grain modules in `_grains` directory, synced to minions.

Each successive evaluation overrides the previous ones, so any grains defined by custom grains modules synced to minions that have the same name as a core grain will override that core grain. Similarly, grains from `/etc/salt/minion` override both core grains and custom grain modules, and grains in `_grains` will override *any* grains of the same name.

### 3.1.7 Examples of Grains

The core module in the grains package is where the main grains are loaded by the Salt minion and provides the principal example of how to write grains:

https://github.com/saltstack/salt/blob/develop/salt/grains/core.py

### 3.1.8 Syncing Grains

Syncing grains can be done a number of ways, they are automatically synced when `state.highstate` is called, or (as noted above) the grains can be manually synced and reloaded by calling the `saltutil.sync_grains` or `saltutil.sync_all` functions.

## 3.2 Storing Static Data in the Pillar

Pillar is an interface for Salt designed to offer global values that can be distributed to all minions. Pillar data is managed in a similar way as the Salt State Tree.

Pillar was added to Salt in version 0.9.8

---

**Note**: Storing sensitive data

Pillar data is compiled on the master. Additionally, pillar data for a given minion is only accessible by the minion for which it is targeted in the pillar configuration. This makes pillar useful for storing sensitive data specific to a particular minion.

---

### 3.2.1 Declaring the Master Pillar

The Salt Master server maintains a `pillar_roots` setup that matches the structure of the `file_roots` used in the Salt file server. Like `file_roots`, the `pillar_roots` option mapps environments to directories. The pillar data is then mapped to minions based on matchers in a top file which is laid out in the same way as the state top file. Salt pillars can use the same matcher types as the standard *top file*.

conf_master:*pillar_roots* is configured just like `file_roots`. For example:

```
pillar_roots:
  base:
    - /srv/pillar
```

This example configuration declares that the base environment will be located in the `/srv/pillar` directory. It must not be in a subdirectory of the state tree.

The top file used matches the name of the top file used for States, and has the same structure:

`/srv/pillar/top.sls`

```
base:
  '*':
    - packages
```

In the above top file, it is declared that in the `base` environment, the glob matching all minions will have the pillar data found in the `packages` pillar available to it. Assuming the `pillar_roots` value of `/srv/pillar` taken from above, the `packages` pillar would be located at `/srv/pillar/packages.sls`.

Any number of matchers can be added to the base environment. For example, here is an expanded version of the Pillar top file stated above:

/srv/pillar/top.sls:

```
base:
  '*':
    - packages
  'web*':
    - vim
```

In this expanded top file, minions that match `web*` will have access to the `/srv/pillar/pacakges.sls` file, as well as the `/srv/pillar/vim.sls` file.

Another example shows how to use other standard top matching types to deliver specific salt pillar data to minions with different properties.

Here is an example using the `grains` matcher to target pillars to minions by their `os` grain:

```
dev:
  'os:Debian':
    - match: grain
    - servers
```

`/srv/pillar/packages.sls`

```
{% if grains['os'] == 'RedHat' %}
apache: httpd
git: git
{% elif grains['os'] == 'Debian' %}
apache: apache2
git: git-core
{% endif %}

company: Foo Industries
```

**Important**: See *Is Targeting using Grain Data Secure?* for important security information.

The above pillar sets two key/value pairs. If a minion is running RedHat, then the `apache` key is set to `httpd` and the `git` key is set to the value of `git`. If the minion is running Debian, those values are changed to `apache2` and `git-core` respectively. All minions that have this pillar targeting to them via a top file will have the key of `company` with a value of `Foo Industries`.

Consequently this data can be used from within modules, renderers, State SLS files, and more via the shared pillar dict:

```
apache:
  pkg.installed:
    - name: {{ pillar['apache'] }}
```

```
git:
  pkg.installed:
    - name: {{ pillar['git'] }}
```

Finally, the above states can utilize the values provided to them via Pillar. All pillar values targeted to a minion are available via the `pillar' dictionary. As seen in the above example, Jinja substitution can then be utilized to access the keys and values in the Pillar dictionary.

Note that you cannot just list key/value-information in `top.sls`. Instead, target a minion to a pillar file and then list the keys and values in the pillar. Here is an example top file that illustrates this point:

```
base:
  '*':
    - common_pillar
```

And the actual pillar file at `/srv/pillar/common_pillar.sls':

```
foo: bar
boo: baz
```

### 3.2.2 Pillar Namespace Flattening

The separate pillar SLS files all merge down into a single dictionary of key-value pairs. When the same key is defined in multiple SLS files, this can result in unexpected behavior if care is not taken to how the pillar SLS files are laid out.

For example, given a `top.sls` containing the following:

```
base:
  '*':
    - packages
    - services
```

with `packages.sls` containing:

```
bind: bind9
```

and `services.sls` containing:

```
bind: named
```

Then a request for the `bind` pillar key will only return `named`. The `bind9` value will be lost, because `services.sls` was evaluated later.

**Note:** Pillar files are applied in the order they are listed in the top file. Therefore conflicting keys will be overwritten in a `last one wins' manner! For example, in the above scenario conflicting key values in `services` will overwrite those in `packages` because it's at the bottom of the list.

It can be better to structure your pillar files with more hierarchy. For example the `package.sls` file could be configured like so:

```
packages:
  bind: bind9
```

This would make the `packages` pillar key a nested dictionary containing a `bind` key.

### 3.2.3 Pillar Dictionary Merging

If the same pillar key is defined in multiple pillar SLS files, and the keys in both files refer to nested dictionaries, then the content from these dictionaries will be recursively merged.

For example, keeping the `top.sls` the same, assume the following modifications to the pillar SLS files:

`packages.sls`:

```
bind:
  package-name: bind9
  version: 9.9.5
```

`services.sls`:

```
bind:
  port: 53
  listen-on: any
```

The resulting pillar dictionary will be:

```
$ salt-call pillar.get bind
local:
    ----------
    listen-on:
        any
    package-name:
        bind9
    port:
        53
    version:
        9.9.5
```

Since both pillar SLS files contained a `bind` key which contained a nested dictionary, the pillar dictionary's `bind` key contains the combined contents of both SLS files' `bind` keys.

### 3.2.4 Including Other Pillars

New in version 0.16.0.

Pillar SLS files may include other pillar files, similar to State files. Two syntaxes are available for this purpose. The simple form simply includes the additional pillar as if it were part of the same file:

```
include:
  - users
```

The full include form allows two additional options -- passing default values to the templating engine for the included pillar file as well as an optional key under which to nest the results of the included pillar:

```
include:
  - users:
      defaults:
          sudo: ['bob', 'paul']
      key: users
```

With this form, the included file (users.sls) will be nested within the `users' key of the compiled pillar. Additionally, the `sudo' value will be available as a template variable to users.sls.

### 3.2.5 In-Memory Pillar Data vs. On-Demand Pillar Data

Since compiling pillar data is computationally expensive, the minion will maintain a copy of the pillar data in memory to avoid needing to ask the master to recompile and send it a copy of the pillar data each time pillar data is requested. This in-memory pillar data is what is returned by the *pillar.item*, *pillar.get*, and *pillar.raw* functions.

Also, for those writing custom execution modules, or contributing to Salt's existing execution modules, the in-memory pillar data is available as the `__pillar__` dunder dictionary.

The in-memory pillar data is generated on minion start, and can be refreshed using the *saltutil.refresh_pillar* function:

```
salt '*' saltutil.refresh_pillar
```

This function triggers the minion to asynchronously refresh the in-memory pillar data and will always return `None`.

In contrast to in-memory pillar data, certain actions trigger pillar data to be compiled to ensure that the most up-to-date pillar data is available. These actions include:

- Running states
- Running *pillar.items*

Performing these actions will *not* refresh the in-memory pillar data. So, if pillar data is modified, and then states are run, the states will see the updated pillar data, but *pillar.item*, *pillar.get*, and *pillar.raw* will not see this data unless refreshed using *saltutil.refresh_pillar*.

### 3.2.6 How Pillar Environments Are Handled

When multiple pillar environments are used, the default behavior is for the pillar data from all environments to be merged together. The pillar dictionary will therefore contain keys from all configured environments.

The *pillarenv* minion config option can be used to force the minion to only consider pillar configuration from a single environment. This can be useful in cases where one needs to run states with alternate pillar data, either in a testing/QA environment or to test changes to the pillar data before pushing them live.

For example, assume that the following is set in the minion config file:

```
pillarenv: base
```

This would cause that minion to ignore all other pillar environments besides `base` when compiling the in-memory pillar data. Then, when running states, the `pillarenv` CLI argument can be used to override the minion's *pillarenv* config value:

```
salt '*' state.apply mystates pillarenv=testing
```

The above command will run the states with pillar data sourced exclusively from the `testing` environment, without modifying the in-memory pillar data.

---

**Note:** When running states, the `pillarenv` CLI option does not require a *pillarenv* option to be set in the minion config file. When *pillarenv* is left unset, as mentioned above all configured environments will be combined. Running states with `pillarenv=testing` in this case would still restrict the states' pillar data to just that of the `testing` pillar environment.

---

### 3.2.7 Viewing Pillar Data

To view pillar data, use the *pillar* execution module. This module includes several functions, each of them with their own use. These functions include:

- *pillar.item* - Retrieves the value of one or more keys from the *in-memory pillar datj*.
- *pillar.items* - Compiles a fresh pillar dictionary and returns it, leaving the *in-memory pillar data* untouched. If pillar keys are passed to this function however, this function acts like *pillar.item* and returns their values from the *in-memory pillar data*.
- *pillar.raw* - Like *pillar.items*, it returns the entire pillar dictionary, but from the *in-memory pillar data* instead of compiling fresh pillar data.
- *pillar.get* - Described in detail below.

### 3.2.8 The `pillar.get` Function

New in version 0.14.0.

The *pillar.get* function works much in the same way as the `get` method in a python dict, but with an enhancement: nested dictonaries can be traversed using a colon as a delimiter.

If a structure like this is in pillar:

```
foo:
  bar:
    baz: qux
```

Extracting it from the raw pillar in an sls formula or file template is done this way:

```
{{ pillar['foo']['bar']['baz'] }}
```

Now, with the new *pillar.get* function the data can be safely gathered and a default can be set, allowing the template to fall back if the value is not available:

```
{{ salt['pillar.get']('foo:bar:baz', 'qux') }}
```

This makes handling nested structures much easier.

---

**Note:** `pillar.get()` vs `salt['pillar.get']()`

It should be noted that within templating, the `pillar` variable is just a dictionary. This means that calling `pillar.get()` inside of a template will just use the default dictionary `.get()` function which does not include the extra `:` delimiter functionality. It must be called using the above syntax (`salt['pillar.get']('foo:bar:baz','qux')`) to get the salt function, instead of the default dictionary behavior.

### 3.2.9 Setting Pillar Data at the Command Line

Pillar data can be set at the command line like the following example:

```
salt '*' state.apply pillar='{"cheese": "spam"}'
```

This will add a pillar key of `cheese` with its value set to `spam`.

**Note:** Be aware that when sending sensitive data via pillar on the command-line that the publication containing that data will be received by all minions and will not be restricted to the targeted minions. This may represent a security concern in some cases.

### 3.2.10 Master Config in Pillar

For convenience the data stored in the master configuration file can be made available in all minion's pillars. This makes global configuration of services and systems very easy but may not be desired if sensitive data is stored in the master configuration. This option is disabled by default.

To enable the master config from being added to the pillar set `pillar_opts` to `True` in the minion config file:

```
pillar_opts: True
```

### 3.2.11 Minion Config in Pillar

Minion configuration options can be set on pillars. Any option that you want to modify, should be in the first level of the pillars, in the same way you set the options in the config file. For example, to configure the MySQL root password to be used by MySQL Salt execution module, set the following pillar variable:

```
mysql.pass: hardtoguesspassword
```

### 3.2.12 Master Provided Pillar Error

By default if there is an error rendering a pillar, the detailed error is hidden and replaced with:

```
Rendering SLS 'my.sls' failed. Please see master log for details.
```

The error is protected because it's possible to contain templating data which would give that minion information it shouldn't know, like a password!

To have the master provide the detailed error that could potentially carry protected data set `pillar_safe_render_error` to `False`:

```
pillar_safe_render_error: False
```

### Pillar Walkthrough

**Note:** This walkthrough assumes that the reader has already completed the initial Salt walkthrough.

Pillars are tree-like structures of data defined on the Salt Master and passed through to minions. They allow confidential, targeted data to be securely sent only to the relevant minion.

**Note:** Grains and Pillar are sometimes confused, just remember that Grains are data about a minion which is stored or generated from the minion. This is why information like the OS and CPU type are found in Grains. Pillar is information about a minion or many minions stored or generated on the Salt Master.

Pillar data is useful for:

**Highly Sensitive Data:** Information transferred via pillar is guaranteed to only be presented to the minions that are targeted, making Pillar suitable for managing security information, such as cryptographic keys and passwords.

**Minion Configuration:** Minion modules such as the execution modules, states, and returners can often be configured via data stored in pillar.

**Variables:** Variables which need to be assigned to specific minions or groups of minions can be defined in pillar and then accessed inside sls formulas and template files.

**Arbitrary Data:** Pillar can contain any basic data structure in dictionary format, so a key/value store can be defined making it easy to iterate over a group of values in sls formulas.

Pillar is therefore one of the most important systems when using Salt. This walkthrough is designed to get a simple Pillar up and running in a few minutes and then to dive into the capabilities of Pillar and where the data is available.

### Setting Up Pillar

The pillar is already running in Salt by default. To see the minion's pillar data:

```
salt '*' pillar.items
```

**Note:** Prior to version 0.16.2, this function is named `pillar.data`. This function name is still supported for backwards compatibility.

By default, the contents of the master configuration file are not loaded into pillar for all minions. This default is stored in the `pillar_opts` setting, which defaults to `False`.

The contents of the master configuration file can be made available to minion pillar files. This makes global configuration of services and systems very easy, but note that this may not be desired or appropriate if sensitive data is stored in the master's configuration file. To enable the master configuration file to be available to a minion's pillar files, set `pillar_opts` to `True` in the minion configuration file.

Similar to the state tree, the pillar is comprised of sls files and has a top file. The default location for the pillar is in /srv/pillar.

**Note**: The pillar location can be configured via the *pillar_roots* option inside the master configuration file. It must not be in a subdirectory of the state tree or file_roots. If the pillar is under file_roots, any pillar targeting can be bypassed by minions.

To start setting up the pillar, the /srv/pillar directory needs to be present:

```
mkdir /srv/pillar
```

Now create a simple top file, following the same format as the top file used for states:

`/srv/pillar/top.sls`:

```
base:
  '*':
    - data
```

This top file associates the data.sls file to all minions. Now the `/srv/pillar/data.sls` file needs to be populated:

`/srv/pillar/data.sls`:

```
info: some data
```

To ensure that the minions have the new pillar data, issue a command to them asking that they fetch their pillars from the master:

```
salt '*' saltutil.refresh_pillar
```

Now that the minions have the new pillar, it can be retrieved:

```
salt '*' pillar.items
```

The key `info` should now appear in the returned pillar data.

### More Complex Data

Unlike states, pillar files do not need to define **formulas**. This example sets up user data with a UID:

`/srv/pillar/users/init.sls`:

```
users:
  thatch: 1000
  shouse: 1001
  utahdave: 1002
  redbeard: 1003
```

**Note**: The same directory lookups that exist in states exist in pillar, so the file `users/init.sls` can be referenced with `users` in the top file.

The top file will need to be updated to include this sls file:

`/srv/pillar/top.sls`:

```
base:
  '*':
    - data
    - users
```

Now the data will be available to the minions. To use the pillar data in a state, you can use Jinja:

`/srv/salt/users/init.sls`

```
{% for user, uid in pillar.get('users', {}).items() %}
{{user}}:
  user.present:
    - uid: {{uid}}
{% endfor %}
```

This approach allows for users to be safely defined in a pillar and then the user data is applied in an sls file.

### Parameterizing States With Pillar

Pillar data can be accessed in state files to customise behavior for each minion. All pillar (and grain) data applicable to each minion is substituted into the state files through templating before being run. Typical uses include setting directories appropriate for the minion and skipping states that don't apply.

A simple example is to set up a mapping of package names in pillar for separate Linux distributions:

`/srv/pillar/pkg/init.sls`:

```
pkgs:
  {% if grains['os_family'] == 'RedHat' %}
  apache: httpd
  vim: vim-enhanced
  {% elif grains['os_family'] == 'Debian' %}
  apache: apache2
  vim: vim
  {% elif grains['os'] == 'Arch' %}
  apache: apache
  vim: vim
  {% endif %}
```

The new `pkg` sls needs to be added to the top file:

`/srv/pillar/top.sls`:

```
base:
  '*':
    - data
    - users
    - pkg
```

Now the minions will auto map values based on respective operating systems inside of the pillar, so sls files can be safely parameterized:

`/srv/salt/apache/init.sls`:

```
apache:
  pkg.installed:
    - name: {{ pillar['pkgs']['apache'] }}
```

Or, if no pillar is available a default can be set as well:

**Note**: The function `pillar.get` used in this example was added to Salt in version 0.14.0

`/srv/salt/apache/init.sls`:

```
apache:
  pkg.installed:
    - name: {{ salt['pillar.get']('pkgs:apache', 'httpd') }}
```

In the above example, if the pillar value `pillar['pkgs']['apache']` is not set in the minion's pillar, then the default of `httpd` will be used.

**Note**: Under the hood, pillar is just a Python dict, so Python dict methods such as *get* and *items* can be used.

### Pillar Makes Simple States Grow Easily

One of the design goals of pillar is to make simple sls formulas easily grow into more flexible formulas without refactoring or complicating the states.

A simple formula:

`/srv/salt/edit/vim.sls`:

```
vim:
  pkg.installed: []

/etc/vimrc:
  file.managed:
    - source: salt://edit/vimrc
    - mode: 644
    - user: root
    - group: root
    - require:
      - pkg: vim
```

Can be easily transformed into a powerful, parameterized formula:

`/srv/salt/edit/vim.sls`:

```
vim:
  pkg.installed:
    - name: {{ pillar['pkgs']['vim'] }}

/etc/vimrc:
  file.managed:
    - source: {{ pillar['vimrc'] }}
    - mode: 644
    - user: root
    - group: root
    - require:
      - pkg: vim
```

Where the vimrc source location can now be changed via pillar:

/srv/pillar/edit/vim.sls:

```
{% if grains['id'].startswith('dev') %}
vimrc: salt://edit/dev_vimrc
{% elif grains['id'].startswith('qa') %}
vimrc: salt://edit/qa_vimrc
{% else %}
vimrc: salt://edit/vimrc
{% endif %}
```

Ensuring that the right vimrc is sent out to the correct minions.

### Setting Pillar Data on the Command Line

Pillar data can be set on the command line when running `state.apply <salt.modules.state.apply_()` like so:

```
salt '*' state.apply pillar='{"foo": "bar"}'
salt '*' state.apply my_sls_file pillar='{"hello": "world"}'
```

Nested pillar values can also be set via the command line:

```
salt '*' state.sls my_sls_file pillar='{"foo": {"bar": "baz"}}'
```

---

**Note:** If a key is passed on the command line that already exists on the minion, the key that is passed in will overwrite the entire value of that key, rather than merging only the specified value set via the command line.

---

The example below will swap the value for vim with telnet in the previously specified list, notice the nested pillar dict:

```
salt '*' state.apply edit.vim pillar='{"pkgs": {"vim": "telnet"}}'
```

This will attempt to install telnet on your minions, feel free to uninstall the package or replace telnet value with anything else.

---

**Note:** Be aware that when sending sensitive data via pillar on the command-line that the publication containing that data will be received by all minions and will not be restricted to the targeted minions. This may represent a security concern in some cases.

---

### More On Pillar

Pillar data is generated on the Salt master and securely distributed to minions. Salt is not restricted to the pillar sls files when defining the pillar but can retrieve data from external sources. This can be useful when information about an infrastructure is stored in a separate location.

Reference information on pillar and the external pillar interface can be found in the Salt documentation:

*Pillar*

#### Minion Config in Pillar

Minion configuration options can be set on pillars. Any option that you want to modify, should be in the first level of the pillars, in the same way you set the options in the config file. For example, to configure the MySQL root password to be used by MySQL Salt execution module:

```
mysql.pass: hardtoguesspassword
```

This is very convenient when you need some dynamic configuration change that you want to be applied on the fly. For example, there is a chicken and the egg problem if you do this:

```
mysql-admin-passwd:
  mysql_user.present:
    - name: root
    - password: somepasswd

mydb:
  mysql_db.present
```

The second state will fail, because you changed the root password and the minion didn't notice it. Setting mysql.pass in the pillar, will help to sort out the issue. But always change the root admin password in the first place.

This is very helpful for any module that needs credentials to apply state changes: mysql, keystone, etc.

## 3.3 Targeting Minions

Targeting minions is specifying which minions should run a command or execute a state by matching against hostnames, or system information, or defined groups, or even combinations thereof.

For example the command `salt web1 apache.signal restart` to restart the Apache httpd server specifies the machine `web1` as the target and the command will only be run on that one minion.

Similarly when using States, the following top file specifies that only the `web1` minion should execute the contents of `webserver.sls`:

```
base:
  'web1':
    - webserver
```

The simple target specifications, glob, regex, and list will cover many use cases, and for some will cover all use cases, but more powerful options exist.

### 3.3.1 Targeting with Grains

The Grains interface was built into Salt to allow minions to be targeted by system properties. So minions running on a particular operating system can be called to execute a function, or a specific kernel.

Calling via a grain is done by passing the -G option to salt, specifying a grain and a glob expression to match the value of the grain. The syntax for the target is the grain key followed by a globexpression: ``os:Arch*'".

```
salt -G 'os:Fedora' test.ping
```

Will return True from all of the minions running Fedora.

To discover what grains are available and what the values are, execute the grains.item salt function:

```
salt '*' grains.items
```

more info on using targeting with grains can be found *here*.

### 3.3.2 Compound Targeting

New in version 0.9.5.

Multiple target interfaces can be used in conjunction to determine the command targets. These targets can then be combined using and or or statements. This is well defined with an example:

```
salt -C 'G@os:Debian and webser* or E@db.*' test.ping
```

In this example any minion who's id starts with `webser` and is running Debian, or any minion who's id starts with db will be matched.

The type of matcher defaults to glob, but can be specified with the corresponding letter followed by the `@` symbol. In the above example a grain is used with `G@` as well as a regular expression with `E@`. The `webser*` target does not need to be prefaced with a target type specifier because it is a glob.

more info on using compound targeting can be found *here*.

### 3.3.3 Node Group Targeting

New in version 0.9.5.

For certain cases, it can be convenient to have a predefined group of minions on which to execute commands. This can be accomplished using what are called *nodegroups*. Nodegroups allow for predefined compound targets to be declared in the master configuration file, as a sort of shorthand for having to type out complicated compound expressions.

```
nodegroups:
  group1: 'L@foo.domain.com,bar.domain.com,baz.domain.com and bl*.domain.com'
  group2: 'G@os:Debian and foo.domain.com'
  group3: 'G@os:Debian and N@group1'
```

There are many ways to target individual minions or groups of minions in Salt:

#### Matching the `minion id`

Each minion needs a unique identifier. By default when a minion starts for the first time it chooses its FQDN (fully qualified domain name) as that identifier. The minion id can be overridden via the minion's *`id`* configuration setting.

---

**Tip**: minion id and minion keys

The minion id is used to generate the minion's public/private keys and if it ever changes the master must then accept the new key as though the minion was a new host.

---

#### Globbing

The default matching that Salt utilizes is `shell-style globbing` around the minion id. This also works for states in the top file.

**Note**: You must wrap **`salt`** calls that use globbing in single-quotes to prevent the shell from expanding the globs before Salt is invoked.

Match all minions:

```
salt '*' test.ping
```

Match all minions in the example.net domain or any of the example domains:

```
salt '*.example.net' test.ping
salt '*.example.*' test.ping
```

Match all the `webN` minions in the example.net domain (`web1.example.net`, `web2.example.net` … `webN.example.net`):

```
salt 'web?.example.net' test.ping
```

Match the `web1` through `web5` minions:

```
salt 'web[1-5]' test.ping
```

Match the `web1` and `web3` minions:

```
salt 'web[1,3]' test.ping
```

Match the `web-x`, `web-y`, and `web-z` minions:

```
salt 'web-[x-z]' test.ping
```

**Note**: For additional targeting methods please review the *compound matchers* documentation.

### Regular Expressions

Minions can be matched using Perl-compatible `regular expressions` (which is globbing on steroids and a ton of caffeine).

Match both `web1-prod` and `web1-devel` minions:

```
salt -E 'web1-(prod|devel)' test.ping
```

When using regular expressions in a State's top file, you must specify the matcher as the first option. The following example executes the contents of `webserver.sls` on the above-mentioned minions.

```
base:
  'web1-(prod|devel)':
  - match: pcre
  - webserver
```

### Lists

At the most basic level, you can specify a flat list of minion IDs:

```
salt -L 'web1,web2,web3' test.ping
```

### Targeting using Grains

Grain data can be used when targeting minions.

For example, the following matches all CentOS minions:

```
salt -G 'os:CentOS' test.ping
```

Match all minions with 64-bit CPUs, and return number of CPU cores for each matching minion:

```
salt -G 'cpuarch:x86_64' grains.item num_cpus
```

Additionally, globs can be used in grain matches, and grains that are nested in a dictionary can be matched by adding a colon for each level that is traversed. For example, the following will match hosts that have a grain called `ec2_tags`, which itself is a dict with a key named `environment`, which has a value that contains the word `production`:

```
salt -G 'ec2_tags:environment:*production*'
```

**Important:** See *Is Targeting using Grain Data Secure?* for important security information.

### Targeting using Pillar

Pillar data can be used when targeting minions. This allows for ultimate control and flexibility when targeting minions.

**Note:** To start using Pillar targeting it is required to make a Pillar data cache on Salt Master for each Minion via following commands: `salt '*' saltutil.refresh_pillar` or `salt '*' saltutil.sync_all`. Also Pillar data cache will be populated during the *highstate* run. Once Pillar data changes, you must refresh the cache by running above commands for this targeting method to work correctly.

Example:

```
salt -I 'somekey:specialvalue' test.ping
```

Like with *Grains*, it is possible to use globbing as well as match nested values in Pillar, by adding colons for each level that is being traversed. The below example would match minions with a pillar named `foo`, which is a dict containing a key `bar`, with a value beginning with `baz`:

```
salt -I 'foo:bar:baz*' test.ping
```

### Subnet/IP Address Matching

Minions can easily be matched based on IP address, or by subnet (using CIDR notation).

```
salt -S 192.168.40.20 test.ping
salt -S 2001:db8::/64 test.ping
```

Ipcidr matching can also be used in compound matches

```
salt -C 'S@10.0.0.0/24 and G@os:Debian' test.ping
```

It is also possible to use in both pillar and state-matching

```
'172.16.0.0/12':
  - match: ipcidr
  - internal
```

### Compound matchers

Compound matchers allow very granular minion targeting using any of Salt's matchers. The default matcher is a `glob` match, just as with CLI and top file matching. To match using anything other than a glob, prefix the match string with the appropriate letter from the table below, followed by an `@` sign.

| Letter | Match Type | Example | *Alt Delimiter?* |
|---|---|---|---|
| G | Grains glob | `G@os:Ubuntu` | Yes |
| E | PCRE Minion ID | `E@web\d+\.(dev\|qa\|prod)\.loc` | No |
| P | Grains PCRE | `P@os:(RedHat\|Fedora\|CentOS)` | Yes |
| L | List of minions | `L@minion1.example.com,minion3.domain.com or bl*.domain.com` | No |
| I | Pillar glob | `I@pdata:foobar` | Yes |
| J | Pillar PCRE | `J@pdata:^(foo\|bar)$` | Yes |
| S | Subnet/IP address | `S@192.168.1.0/24` or `S@192.168.1.100` | No |
| R | Range cluster | `R@%foo.bar` | No |

Matchers can be joined using boolean `and`, `or`, and `not` operators.

For example, the following string matches all Debian minions with a hostname that begins with `webserv`, as well as any minions that have a hostname which matches the `regular expression` `web-dc1-srv.*`:

```
salt -C 'webserv* and G@os:Debian or E@web-dc1-srv.*' test.ping
```

That same example expressed in a top file looks like the following:

```
base:
  'webserv* and G@os:Debian or E@web-dc1-srv.*':
    - match: compound
    - webserver
```

New in version 2015.8.0.

Excluding a minion based on its ID is also possible:

```
salt -C 'not web-dc1-srv' test.ping
```

Versions prior to 2015.8.0 a leading `not` was not supported in compound matches. Instead, something like the following was required:

```
salt -C '* and not G@kernel:Darwin' test.ping
```

Excluding a minion based on its ID was also possible:

```
salt -C '* and not web-dc1-srv' test.ping
```

### Precedence Matching

Matchers can be grouped together with parentheses to explicitly declare precedence amongst groups.

```
salt -C '( ms-1 or G@id:ms-3 ) and G@id:ms-3' test.ping
```

**Note**: Be certain to note that spaces are required between the parentheses and targets. Failing to obey this rule may result in incorrect targeting!

### Alternate Delimiters

New in version 2015.8.0.

Matchers that target based on a key value pair use a colon (`:`) as a delimiter. Matchers with a `Yes` in the `Alt Delimiters` column in the previous table support specifying an alternate delimiter character.

This is done by specifying an alternate delimiter character between the leading matcher character and the `@` pattern separator character. This avoids incorrect interpretation of the pattern in the case that `:` is part of the grain or pillar data structure traversal.

```
salt -C 'J|@foo|bar|^foo:bar$ or J!@gitrepo!https://github.com:example/project.git'
 ↪test.ping
```

### Node groups

Nodegroups are declared using a compound target specification. The compound target documentation can be found *here*.

The *nodegroups* master config file parameter is used to define nodegroups. Here's an example nodegroup configuration within `/etc/salt/master`:

```
nodegroups:
  group1: 'L@foo.domain.com,bar.domain.com,baz.domain.com or bl*.domain.com'
  group2: 'G@os:Debian and foo.domain.com'
  group3: 'G@os:Debian and N@group1'
  group4:
    - 'G@foo:bar'
    - 'or'
    - 'G@foo:baz'
```

**Note**: The `L` within group1 is matching a list of minions, while the `G` in group2 is matching specific grains. See the *compound matchers* documentation for more details.

New in version 2015.8.0.

**Note**: Nodgroups can reference other nodegroups as seen in `group3`. Ensure that you do not have circular references. Circular references will be detected and cause partial expansion with a logged error message.

New in version 2015.8.0.

Compound nodegroups can be either string values or lists of string values. When the nodegroup is A string value will be tokenized by splitting on whitespace. This may be a problem if whitespace is necessary as part of a pattern. When a nodegroup is a list of strings then tokenization will happen for each list element as a whole.

To match a nodegroup on the CLI, use the `-N` command-line option:

```
salt -N group1 test.ping
```

**Note**: The `N@` classifier cannot be used in compound matches within the CLI or top file, it is only recognized in the *nodegroups* master config file parameter.

To match a nodegroup in your top file, make sure to put `-match: nodegroup` on the line directly following the nodegroup name.

```
base:
  group1:
    - match: nodegroup
    - webserver
```

**Note**: When adding or modifying nodegroups to a master configuration file, the master must be restarted for those changes to be fully recognized.

A limited amount of functionality, such as targeting with -N from the command-line may be available without a restart.

### Using Nodegroups in SLS files

To use Nodegroups in Jinja logic for SLS files, the *pillar_opts* option in `/etc/salt/master` must be set to ``True''. This will pass the master's configuration as Pillar data to each minion.

**Note**: If the master's configuration contains any sensitive data, this will be passed to each minion. Do not enable this option if you have any configuration data that you do not want to get on your minions.

Also, if you make changes to your nodegroups, you might need to run `salt '*' saltutil.refresh_pillar` after restarting the master.

Once pillar_opts is enabled, you can find the nodegroups under the ``master'' pillar. To make sure that only the correct minions are targeted, you should use each matcher for the nodegroup definition. For example, to check if a minion is in the `webserver' nodegroup:

```
nodegroups:
  webserver: 'G@os:Debian and L@minion1,minion2'
```

```
{% if grains.id in salt['pillar.get']('master:nodegroups:webserver', [])
and grains.os in salt['pillar.get']('master:nodegroups:webserver', []) %}
...
{% endif %}
```

**Note:** If you do not include all of the matchers used to define a nodegroup, Salt might incorrectly target minions that meet some of the nodegroup requirements, but not all of them.

### Batch Size

The `-b` (or `--batch-size`) option allows commands to be executed on only a specified number of minions at a time. Both percentages and finite numbers are supported.

```
salt '*' -b 10 test.ping

salt -G 'os:RedHat' --batch-size 25% apache.signal restart
```

This will only run test.ping on 10 of the targeted minions at a time and then restart apache on 25% of the minions matching `os:RedHat` at a time and work through them all until the task is complete. This makes jobs like rolling web server restarts behind a load balancer or doing maintenance on BSD firewalls using carp much easier with salt.

The batch system maintains a window of running minions, so, if there are a total of 150 minions targeted and the batch size is 10, then the command is sent to 10 minions, when one minion returns then the command is sent to one additional minion, so that the job is constantly running on 10 minions.

New in version 2016.3.

The `--batch-wait` argument can be used to specify a number of seconds to wait after a minion returns, before sending the command to a new minion.

### SECO Range

SECO range is a cluster-based metadata store developed and maintained by Yahoo!

The Range project is hosted here:

https://github.com/ytoolshed/range

Learn more about range here:

https://github.com/ytoolshed/range/wiki/

### Prerequisites

To utilize range support in Salt, a range server is required. Setting up a range server is outside the scope of this document. Apache modules are included in the range distribution.

With a working range server, cluster files must be defined. These files are written in YAML and define hosts contained inside a cluster. Full documentation on writing YAML range files is here:

https://github.com/ytoolshed/range/wiki/%22yamlfile%22-module-file-spec

Additionally, the Python seco range libraries must be installed on the salt master. One can verify that they have been installed correctly via the following command:

```
python -c 'import seco.range'
```

If no errors are returned, range is installed successfully on the salt master.

#### Preparing Salt

Range support must be enabled on the salt master by setting the hostname and port of the range server inside the master configuration file:

```
range_server: my.range.server.com:80
```

Following this, the master must be restarted for the change to have an effect.

#### Targeting with Range

Once a cluster has been defined, it can be targeted with a salt command by using the `-R` or `--range` flags.

For example, given the following range YAML file being served from a range server:

```
$ cat /etc/range/test.yaml
CLUSTER: host1..100.test.com
APPS:
  - frontend
  - backend
  - mysql
```

One might target host1 through host100 in the test.com domain with Salt as follows:

```
salt --range %test:CLUSTER test.ping
```

The following salt command would target three hosts: `frontend`, `backend`, and `mysql`:

```
salt --range %test:APPS test.ping
```

## 3.4 The Salt Mine

The Salt Mine is used to collect arbitrary data from Minions and store it on the Master. This data is then made available to all Minions via the *salt.modules.mine* module.

Mine data is gathered on the Minion and sent back to the Master where only the most recent data is maintained (if long term data is required use returners or the external job cache).

### 3.4.1 Mine vs Grains

Mine data is designed to be much more up-to-date than grain data. Grains are refreshed on a very limited basis and are largely static data. Mines are designed to replace slow peer publishing calls when Minions need data from other Minions. Rather than having a Minion reach out to all the other Minions for a piece of data, the Salt Mine, running on the Master, can collect it from all the Minions every mine-interval, resulting in almost fresh data at any given time, with much less overhead.

### 3.4.2 Mine Functions

To enable the Salt Mine the `mine_functions` option needs to be applied to a Minion. This option can be applied via the Minion's configuration file, or the Minion's Pillar. The `mine_functions` option dictates what functions are being executed and allows for arguments to be passed in. If no arguments are passed, an empty list must be added:

```
mine_functions:
  test.ping: []
  network.ip_addrs:
    interface: eth0
    cidr: '10.0.0.0/8'
```

#### Mine Functions Aliases

Function aliases can be used to provide friendly names, usage intentions or to allow multiple calls of the same function with different arguments. There is a different syntax for passing positional and key-value arguments. Mixing positional and key-value arguments is not supported.

New in version 2014.7.0.

```
mine_functions:
  network.ip_addrs: [eth0]
  networkplus.internal_ip_addrs: []
  internal_ip_addrs:
    mine_function: network.ip_addrs
    cidr: 192.168.0.0/16
  ip_list:
    - mine_function: grains.get
    - ip_interfaces
```

### 3.4.3 Mine Interval

The Salt Mine functions are executed when the Minion starts and at a given interval by the scheduler. The default interval is every 60 minutes and can be adjusted for the Minion via the `mine_interval` option:

```
mine_interval: 60
```

### 3.4.4 Mine in Salt-SSH

As of the 2015.5.0 release of salt, salt-ssh supports `mine.get`.

Because the Minions cannot provide their own `mine_functions` configuration, we retrieve the args for specified mine functions in one of three places, searched in the following order:

1. Roster data
2. Pillar
3. Master config

The `mine_functions` are formatted exactly the same as in normal salt, just stored in a different location. Here is an example of a flat roster containing `mine_functions`:

```
test:
  host: 104.237.131.248
  user: root
  mine_functions:
    cmd.run: ['echo "hello!"']
    network.ip_addrs:
      interface: eth0
```

**Note**: Because of the differences in the architecture of salt-ssh, `mine.get` calls are somewhat inefficient. Salt must make a new salt-ssh call to each of the Minions in question to retrieve the requested data, much like a publish call. However, unlike publish, it must run the requested function as a wrapper function, so we can retrieve the function args from the pillar of the Minion in question. This results in a non-trivial delay in retrieving the requested data.

### 3.4.5 Minions Targeting with Mine

The `mine.get` function supports various methods of *Minions targeting* to fetch Mine data from particular hosts, such as glob or regular expression matching on Minion id (name), grains, pillars and *compound matches*. See the *`salt.modules.mine`* module documentation for the reference.

**Note**: Pillar data needs to be cached on Master for pillar targeting to work with Mine. Read the note in *relevant section*.

### 3.4.6 Example

One way to use data from Salt Mine is in a State. The values can be retrieved via Jinja and used in the SLS file. The following example is a partial HAProxy configuration file and pulls IP addresses from all Minions with the ``web'' grain to add them to the pool of load balanced servers.

`/srv/pillar/top.sls`:

```
base:
  'G@roles:web':
    - web
```

`/srv/pillar/web.sls`:

```
mine_functions:
  network.ip_addrs: [eth0]
```

`/etc/salt/minion.d/mine.conf`:

```
mine_interval: 5
```

`/srv/salt/haproxy.sls`:

```
haproxy_config:
  file.managed:
    - name: /etc/haproxy/config
    - source: salt://haproxy_config
    - template: jinja
```

/srv/salt/haproxy_config:

```
<...file contents snipped...>

{% for server, addrs in salt['mine.get']('roles:web', 'network.ip_addrs', expr_form=
 ↪'grain') | dictsort() %}
server {{ server }} {{ addrs[0] }}:80 check
{% endfor %}

<...file contents snipped...>
```

**Note**: The expr_form argument will be renamed to `tgt_type` in the Nitrogen release of Salt.

## 3.5 Runners

Salt runners are convenience applications executed with the salt-run command.

Salt runners work similarly to Salt execution modules however they execute on the Salt master itself instead of remote Salt minions.

A Salt runner can be a simple client call or a complex application.

**See also**:

*The full list of runners*

### 3.5.1 Writing Salt Runners

A Salt runner is written in a similar manner to a Salt execution module. Both are Python modules which contain functions and each public function is a runner which may be executed via the *salt-run* command.

For example, if a Python module named `test.py` is created in the runners directory and contains a function called `foo`, the `test` runner could be invoked with the following command:

```
# salt-run test.foo
```

Runners have several options for controlling output.

Any `print` statement in a runner is automatically also fired onto the master event bus where. For example:

```
def a_runner(outputter=None, display_progress=False):
    print('Hello world')
    ...
```

The above would result in an event fired as follows:

```
Event fired at Tue Jan 13 15:26:45 2015
*************************
Tag: salt/run/20150113152644070246/print
Data:
{'_stamp': '2015-01-13T15:26:45.078707',
 'data': 'hello',
  'outputter': 'pprint'}
```

A runner may also send a progress event, which is displayed to the user during runner execution and is also passed across the event bus if the `display_progress` argument to a runner is set to True.

A custom runner may send its own progress event by using the `__jid_event_.fire_event()` method as shown here:

```
if display_progress:
    __jid_event__.fire_event({'message': 'A progress message'}, 'progress')
```

The above would produce output on the console reading: `A progress message` as well as an event on the event similar to:

```
Event fired at Tue Jan 13 15:21:20 2015
*************************
Tag: salt/run/20150113152118341421/progress
Data:
{'_stamp': '2015-01-13T15:21:20.390053',
 'message': "A progress message"}
```

A runner could use the same approach to send an event with a customized tag onto the event bus by replacing the second argument (`progress`) with whatever tag is desired. However, this will not be shown on the command-line and will only be fired onto the event bus.

### 3.5.2 Synchronous vs. Asynchronous

A runner may be fired asynchronously which will immediately return control. In this case, no output will be display to the user if `salt-run` is being used from the command-line. If used programmatically, no results will be returned. If results are desired, they must be gathered either by firing events on the bus from the runner and then watching for them or by some other means.

---

**Note:** When running a runner in asynchronous mode, the `--progress` flag will not deliver output to the salt-run CLI. However, progress events will still be fired on the bus.

---

In synchronous mode, which is the default, control will not be returned until the runner has finished executing.

To add custom runners, put them in a directory and add it to *`runner_dirs`* in the master configuration file.

### 3.5.3 Examples

Examples of runners can be found in the Salt distribution:

https://github.com/saltstack/salt/blob/develop/salt/runners

A simple runner that returns a well-formatted list of the minions that are responding to Salt calls could look like this:

```
# Import salt modules
import salt.client

def up():
    '''
    Print a list of all of the minions that are up
    '''
    client = salt.client.LocalClient(__opts__['conf_file'])
    minions = client.cmd('*', 'test.ping', timeout=1)
```

```
    for minion in sorted(minions):
        print minion
```

## 3.6 Salt Engines

New in version 2015.8.0.

Salt Engines are long-running, external system processes that leverage Salt.

- Engines have access to Salt configuration, execution modules, and runners (`__opts__`, `__salt__`, and `__runners__`).
- Engines are executed in a separate process that is monitored by Salt. If a Salt engine stops, it is restarted automatically.
- Engines can run on the Salt master and on Salt minions.

Salt engines enhance and replace the external processes functionality.

### 3.6.1 Configuration

Salt engines are configured under an `engines` top-level section in your Salt master or Salt minion configuration. Provide a list of engines and parameters under this section.

```
engines:
  - logstash:
      host: log.my_network.com
      port: 5959
```

Salt engines must be in the Salt path, or you can add the `engines_dirs` option in your Salt master configuration with a list of directories under which Salt attempts to find Salt engines.

### 3.6.2 Writing an Engine

An example Salt engine, https://github.com/saltstack/salt/blob/develop/salt/engines/test.py, is available in the Salt source. To develop an engine, the only requirement is that your module implement the `start()` function.

## 3.7 Understanding YAML

The default renderer for SLS files is the YAML renderer. YAML is a markup language with many powerful features. However, Salt uses a small subset of YAML that maps over very commonly used data structures, like lists and dictionaries. It is the job of the YAML renderer to take the YAML data structure and compile it into a Python data structure for use by Salt.

Though YAML syntax may seem daunting and terse at first, there are only three very simple rules to remember when writing YAML for SLS files.

### 3.7.1 Rule One: Indentation

YAML uses a fixed indentation scheme to represent relationships between data layers. Salt requires that the indentation for each level consists of exactly two spaces. Do not use tabs.

### 3.7.2 Rule Two: Colons

Python dictionaries are, of course, simply key-value pairs. Users from other languages may recognize this data type as hashes or associative arrays.

Dictionary keys are represented in YAML as strings terminated by a trailing colon. Values are represented by either a string following the colon, separated by a space:

```
my_key: my_value
```

In Python, the above maps to:

```
{'my_key': 'my_value'}
```

Alternatively, a value can be associated with a key through indentation.

```
my_key:
  my_value
```

---

**Note:** The above syntax is valid YAML but is uncommon in SLS files because most often, the value for a key is not singular but instead is a *list* of values.

---

In Python, the above maps to:

```
{'my_key': 'my_value'}
```

Dictionaries can be nested:

```
first_level_dict_key:
  second_level_dict_key: value_in_second_level_dict
```

And in Python:

```
{
    'first_level_dict_key': {
        'second_level_dict_key': 'value_in_second_level_dict'
    }
}
```

### 3.7.3 Rule Three: Dashes

To represent lists of items, a single dash followed by a space is used. Multiple items are a part of the same list as a function of their having the same level of indentation.

```
- list_value_one
- list_value_two
- list_value_three
```

Lists can be the value of a key-value pair. This is quite common in Salt:

```
my_dictionary:
  - list_value_one
  - list_value_two
  - list_value_three
```

In Python, the above maps to:

```
{'my_dictionary': ['list_value_one', 'list_value_two', 'list_value_three']}
```

### 3.7.4 Learning More

One easy way to learn more about how YAML gets rendered into Python data structures is to use an online YAML parser to see the Python output.

One excellent choice for experimenting with YAML parsing is: http://yaml-online-parser.appspot.com/

### 3.7.5 Templating

Jinja statements and expressions are allowed by default in SLS files. See Understanding Jinja.

## 3.8 Understanding Jinja

Jinja is the default templating language in SLS files.

### 3.8.1 Jinja in States

Jinja is evaluated before YAML, which means it is evaluated before the States are run.

The most basic usage of Jinja in state files is using control structures to wrap conditional or redundant state elements:

```
{% if grains['os'] != 'FreeBSD' %}
tcsh:
    pkg:
        - installed
{% endif %}

motd:
  file.managed:
    {% if grains['os'] == 'FreeBSD' %}
    - name: /etc/motd
    {% elif grains['os'] == 'Debian' %}
    - name: /etc/motd.tail
    {% endif %}
    - source: salt://motd
```

In this example, the first if block will only be evaluated on minions that aren't running FreeBSD, and the second block changes the file name based on the *os* grain.

Writing **if-else** blocks can lead to very redundant state files however. In this case, using *pillars*, or using a previously defined variable might be easier:

```
{% set motd = ['/etc/motd'] %}
{% if grains['os'] == 'Debian' %}
  {% set motd = ['/etc/motd.tail', '/var/run/motd'] %}
{% endif %}

{% for motdfile in motd %}
{{ motdfile }}:
```

```
  file.managed:
    - source: salt://motd
{% endfor %}
```

Using a variable set by the template, the for loop will iterate over the list of MOTD files to update, adding a state block for each file.

The filter_by function can also be used to set variables based on grains:

```
{% set auditd = salt['grains.filter_by']({
'RedHat': { 'package': 'audit' },
'Debian': { 'package': 'auditd' },
}) %}
```

### 3.8.2 Include and Import

Includes and imports can be used to share common, reusable state configuration between state files and between files.

```
{% from 'lib.sls' import test %}
```

This would import the `test` template variable or macro, not the `test` state element, from the file `lib.sls`. In the case that the included file performs checks again grains, or something else that requires context, passing the context into the included file is required:

```
{% from 'lib.sls' import test with context %}
```

#### Including Context During Include/Import

By adding `with context` to the include/import directive, the current context can be passed to an included/imported template.

```
{% import 'openssl/vars.sls' as ssl with context %}
```

### 3.8.3 Macros

Macros are helpful for eliminating redundant code. Macros are most useful as mini-templates to repeat blocks of strings with a few parameterized variables. Be aware that stripping whitespace from the template block, as well as contained blocks, may be necessary to emulate a variable return from the macro.

```
# init.sls
{% from 'lib.sls' import pythonpkg with context %}

python-virtualenv:
  pkg.installed:
    - name: {{ pythonpkg('virtualenv') }}

python-fabric:
  pkg.installed:
    - name: {{ pythonpkg('fabric') }}
```

```
# lib.sls
{% macro pythonpkg(pkg) -%}
  {%- if grains['os'] == 'FreeBSD' -%}
    py27-{{ pkg }}
  {%- elif grains['os'] == 'Debian' -%}
    python-{{ pkg }}
  {%- endif -%}
{%- endmacro %}
```

This would define a macro that would return a string of the full package name, depending on the packaging system's naming convention. The whitespace of the macro was eliminated, so that the macro would return a string without line breaks, using whitespace control.

### 3.8.4 Template Inheritance

Template inheritance works fine from state files and files. The search path starts at the root of the state tree or pillar.

### 3.8.5 Filters

Saltstack extends builtin filters with these custom filters:

**strftime** Converts any time related object into a time based string. It requires a valid strftime directives. An exhaustive list can be found in the official Python documentation.

```
{% set curtime = None | strftime() %}
```

Fuzzy dates require the timelib Python module is installed.

```
{{ "2002/12/25"|strftime("%y") }}
{{ "1040814000"|strftime("%Y-%m-%d") }}
{{ datetime|strftime("%u") }}
{{ "tomorrow"|strftime }}
```

**sequence** Ensure that parsed data is a sequence.

**yaml_encode** Serializes a single object into a YAML scalar with any necessary handling for escaping special characters. This will work for any scalar YAML data type: ints, floats, timestamps, booleans, strings, unicode. It will *not* work for multi-objects such as sequences or maps.

```
{%- set bar = 7 %}
{%- set baz = none %}
{%- set zip = true %}
{%- set zap = 'The word of the day is "salty"' %}

{%- load_yaml as foo %}
bar: {{ bar|yaml_encode }}
baz: {{ baz|yaml_encode }}
baz: {{ zip|yaml_encode }}
baz: {{ zap|yaml_encode }}
{%- endload %}
```

In the above case `{{ bar }}` and `{{ foo.bar }}` should be identical and `{{ baz }}` and `{{ foo.baz }}` should be identical.

**yaml_dquote** Serializes a string into a properly-escaped YAML double-quoted string. This is useful when the contents of a string are unknown and may contain quotes or unicode that needs to be preserved. The resulting string will be emitted with opening and closing double quotes.

```
{%- set bar = '"The quick brown fox . . ."' %}
{%- set baz = 'The word of the day is "salty".' %}

{%- load_yaml as foo %}
bar: {{ bar|yaml_dquote }}
baz: {{ baz|yaml_dquote }}
{%- endload %}
```

In the above case `{{ bar }}` and `{{ foo.bar }}` should be identical and `{{ baz }}` and `{{ foo.baz }}` should be identical. If variable contents are not guaranteed to be a string then it is better to use `yaml_encode` which handles all YAML scalar types.

**yaml_squote** Similar to the `yaml_dquote` filter but with single quotes. Note that YAML only allows special escapes inside double quotes so `yaml_squote` is not nearly as useful (viz. you likely want to use `yaml_encode` or `yaml_dquote`).

### 3.8.6 Jinja in Files

Jinja_ can be used in the same way in managed files:

```
# redis.sls
/etc/redis/redis.conf:
    file.managed:
        - source: salt://redis.conf
        - template: jinja
        - context:
            bind: 127.0.0.1
```

```
# lib.sls
{% set port = 6379 %}
```

```
# redis.conf
{% from 'lib.sls' import port with context %}
port {{ port }}
bind {{ bind }}
```

As an example, configuration was pulled from the file context and from an external template file.

---

**Note**: Macros and variables can be shared across templates. They should not be starting with one or more underscores, and should be managed by one of the following tags: *macro*, *set*, *load_yaml*, *load_json*, *import_yaml* and *import_json*.

---

### 3.8.7 Escaping Jinja

Occasionally, it may be necessary to escape Jinja syntax. There are two ways to to do this in Jinja. One is escaping individual variables or strings and the other is to escape entire blocks.

To escape a string commonly used in Jinja syntax such as {{, you can use the following syntax:

```
{{ '{{' }}
```

For larger blocks that contain Jinja syntax that needs to be escaped, you can use raw blocks:

```
{% raw %}
    some text that contains jinja characters that need to be escaped
{% endraw %}
```

See the Escaping section of Jinja's documentation to learn more.

A real-word example of needing to use raw tags to escape a larger block of code is when using `file.managed` with the `contents_pillar` option to manage files that contain something like consul-template, which shares a syntax subset with Jinja. Raw blocks are necessary here because the Jinja in the pillar would be rendered before the file.managed is ever called, so the Jinja syntax must be escaped:

```
{% raw %}
- contents_pillar: |
    job "example-job" {
      <snipped>
      task "example" {
          driver = "docker"

          config {
              image = "docker-registry.service.consul:5000/example-job:{{key "nomad/
 ↪jobs/example-job/version"}}"
      <snipped>
{% endraw %}
```

### 3.8.8 Calling Salt Functions

The Jinja renderer provides a shorthand lookup syntax for the `salt` dictionary of execution function.

New in version 2014.7.0.

```
# The following two function calls are equivalent.
{{ salt['cmd.run']('whoami') }}
{{ salt.cmd.run('whoami') }}
```

### 3.8.9 Debugging

The `show_full_context` function can be used to output all variables present in the current Jinja context.

New in version 2014.7.0.

```
Context is: {{ show_full_context() }}
```

### 3.8.10 Custom Execution Modules

Custom execution modules can be used to supplement or replace complex Jinja. Many tasks that require complex looping and logic are trivial when using Python in a Salt execution module. Salt execution modules are easy to write and distribute to Salt minions.

Functions in custom execution modules are available in the Salt execution module dictionary just like the built-in execution modules:

```
{{ salt['my_custom_module.my_custom_function']() }}
```

- How to Convert Jinja Logic to an Execution Module
- *Writing Execution Modules*

## 3.9 Tutorials Index

- *Salt as a Cloud Controller*
- *Using Cron with Salt*
- Automatic Updates / Frozen Deployments
- *ESXi Proxy Minion*
- *Opening the Firewall up for Salt*
- *Git Fileserver Backend Walkthrough*
- Halite
- *HTTP Modules*
- *Using Salt at Scale*
- LXC Management with Salt
- *MinionFS Backend Walkthrough*
- *Remote Execution Tutorial*
- *Multi-Master-PKI Tutorial With Failover*
- *Multi Master Tutorial*
- *Pillar Walkthrough*
- Packaging External Modules for Salt
- *Salt Masterless Quickstart*
- *running salt as normal user tutorial*
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- *How Do I Use Salt States?*
- *States tutorial, part 1 - Basic Usage*
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- Using Salt with Stormpath
- Syslog-ng usage
- *The MacOS X (Maverick) Developer Step By Step Guide To Salt Installation*
- SaltStack Walk-through

- *Writing Salt Tests*

## 3.10 Troubleshooting

The intent of the troubleshooting section is to introduce solutions to a number of common issues encountered by users and the tools that are available to aid in developing States and Salt code.

### 3.10.1 Troubleshooting the Salt Master

If your Salt master is having issues such as minions not returning data, slow execution times, or a variety of other issues, the following links contain details on troubleshooting the most common issues encountered:

#### Troubleshooting the Salt Master

#### Running in the Foreground

A great deal of information is available via the debug logging system, if you are having issues with minions connecting or not starting run the master in the foreground:

```
# salt-master -l debug
```

Anyone wanting to run Salt daemons via a process supervisor such as monit, runit, or supervisord, should omit the `-d` argument to the daemons and run them in the foreground.

#### What Ports does the Master Need Open?

For the master, TCP ports 4505 and 4506 need to be open. If you've put both your Salt master and minion in debug mode and don't see an acknowledgment that your minion has connected, it could very well be a firewall interfering with the connection. See our *firewall configuration* page for help opening the firewall on various platforms.

If you've opened the correct TCP ports and still aren't seeing connections, check that no additional access control system such as SELinux or AppArmor is blocking Salt.

#### Too many open files

The salt-master needs at least 2 sockets per host that connects to it, one for the Publisher and one for response port. Thus, large installations may, upon scaling up the number of minions accessing a given master, encounter:

```
12:45:29,289 [salt.master    ][INFO    ] Starting Salt worker process 38
Too many open files
sock != -1 (tcp_listener.cpp:335)
```

The solution to this would be to check the number of files allowed to be opened by the user running salt-master (root by default):

```
[root@salt-master ~]# ulimit -n
1024
```

If this value is not equal to at least twice the number of minions, then it will need to be raised. For example, in an environment with 1800 minions, the `nofile` limit should be set to no less than 3600. This can be done by creating the file `/etc/security/limits.d/99-salt.conf`, with the following contents:

```
root        hard    nofile        4096
root        soft    nofile        4096
```

Replace `root` with the user under which the master runs, if different.

If your master does not have an `/etc/security/limits.d` directory, the lines can simply be appended to `/etc/security/limits.conf`.

As with any change to resource limits, it is best to stay logged into your current shell and open another shell to run `ulimit -n` again and verify that the changes were applied correctly. Additionally, if your master is running upstart, it may be necessary to specify the `nofile` limit in `/etc/default/salt-master` if upstart isn't respecting your resource limits:

```
limit nofile 4096 4096
```

---

**Note**: The above is simply an example of how to set these values, and you may wish to increase them even further if your Salt master is doing more than just running Salt.

---

### Salt Master Stops Responding

There are known bugs with ZeroMQ versions less than 2.1.11 which can cause the Salt master to not respond properly. If you're running a ZeroMQ version greater than or equal to 2.1.9, you can work around the bug by setting the sysctls `net.core.rmem_max` and `net.core.wmem_max` to 16777216. Next, set the third field in `net.ipv4.tcp_rmem` and `net.ipv4.tcp_wmem` to at least 16777216.

You can do it manually with something like:

```
# echo 16777216 > /proc/sys/net/core/rmem_max
# echo 16777216 > /proc/sys/net/core/wmem_max
# echo "4096 87380 16777216" > /proc/sys/net/ipv4/tcp_rmem
# echo "4096 87380 16777216" > /proc/sys/net/ipv4/tcp_wmem
```

Or with the following Salt state:

```
net.core.rmem_max:
  sysctl:
    - present
    - value: 16777216

net.core.wmem_max:
  sysctl:
    - present
    - value: 16777216

net.ipv4.tcp_rmem:
  sysctl:
    - present
    - value: 4096 87380 16777216

net.ipv4.tcp_wmem:
  sysctl:
```

```
    - present
    - value: 4096 87380 16777216
```

### Live Python Debug Output

If the master seems to be unresponsive, a SIGUSR1 can be passed to the salt-master threads to display what piece of code is executing. This debug information can be invaluable in tracking down bugs.

To pass a SIGUSR1 to the master, first make sure the minion is running in the foreground. Stop the service if it is running as a daemon, and start it in the foreground like so:

```
# salt-master -l debug
```

Then pass the signal to the master when it seems to be unresponsive:

```
# killall -SIGUSR1 salt-master
```

When filing an issue or sending questions to the mailing list for a problem with an unresponsive daemon, be sure to include this information if possible.

### Live Salt-Master Profiling

When faced with performance problems one can turn on master process profiling by sending it SIGUSR2.

```
# killall -SIGUSR2 salt-master
```

This will activate `yappi` profiler inside salt-master code, then after some time one must send SIGUSR2 again to stop profiling and save results to file. If run in foreground salt-master will report filename for the results, which are usually located under `/tmp` on Unix-based OSes and `c:\temp` on windows.

Results can then be analyzed with kcachegrind or similar tool.

### Commands Time Out or Do Not Return Output

Depending on your OS (this is most common on Ubuntu due to apt-get) you may sometimes encounter times where a `state.apply`, or other long running commands do not return output.

By default the timeout is set to 5 seconds. The timeout value can easily be increased by modifying the `timeout` line within your `/etc/salt/master` configuration file.

Having keys accepted for Salt minions that no longer exist or are not reachable also increases the possibility of timeouts, since the Salt master waits for those systems to return command results.

### Passing the -c Option to Salt Returns a Permissions Error

Using the `-c` option with the Salt command modifies the configuration directory. When the configuration file is read it will still base data off of the `root_dir` setting. This can result in unintended behavior if you are expecting files such as `/etc/salt/pki` to be pulled from the location specified with `-c`. Modify the `root_dir` setting to address this behavior.

### Salt Master Doesn't Return Anything While Running jobs

When a command being run via Salt takes a very long time to return (package installations, certain scripts, etc.) the master may drop you back to the shell. In most situations the job is still running but Salt has exceeded the set timeout before returning. Querying the job queue will provide the data of the job but is inconvenient. This can be resolved by either manually using the `-t` option to set a longer timeout when running commands (by default it is 5 seconds) or by modifying the master configuration file: `/etc/salt/master` and setting the `timeout` value to change the default timeout for all commands, and then restarting the salt-master service.

### Salt Master Auth Flooding

In large installations, care must be taken not to overwhelm the master with authentication requests. Several options can be set on the master which mitigate the chances of an authentication flood from causing an interruption in service.

---

**Note**: recon_default:

The average number of seconds to wait between reconnection attempts.

**recon_max**: The maximum number of seconds to wait between reconnection attempts.

**recon_randomize**: A flag to indicate whether the recon_default value should be randomized.

**acceptance_wait_time**: The number of seconds to wait for a reply to each authentication request.

**random_reauth_delay**: The range of seconds across which the minions should attempt to randomize authentication attempts.

**auth_timeout**: The total time to wait for the authentication process to complete, regardless of the number of attempts.

---

### Running state locally

To debug the states, you can use call locally.

```
salt-call -l trace --local state.highstate
```

The top.sls file is used to map what SLS modules get loaded onto what minions via the state system.

It is located in the file defined in the `file_roots` variable of the salt master configuration file which is defined by found in `CONFIG_DIR/master`, normally `/etc/salt/master`

The default configuration for the `file_roots` is:

```
file_roots:
  base:
    - /srv/salt
```

So the top file is defaulted to the location `/srv/salt/top.sls`

### Salt Master Umask

The salt master uses a cache to track jobs as they are published and returns come back. The recommended umask for a salt-master is *022*, which is the default for most users on a system. Incorrect umasks can result in permission-denied

errors when the master tries to access files in its cache.

### 3.10.2 Troubleshooting the Salt Minion

In the event that your Salt minion is having issues, a variety of solutions and suggestions are available. Please refer to the following links for more information:

#### Troubleshooting the Salt Minion

#### Running in the Foreground

A great deal of information is available via the debug logging system, if you are having issues with minions connecting or not starting run the minion in the foreground:

```
# salt-minion -l debug
```

Anyone wanting to run Salt daemons via a process supervisor such as monit, runit, or supervisord, should omit the `-d` argument to the daemons and run them in the foreground.

#### What Ports does the Minion Need Open?

No ports need to be opened on the minion, as it makes outbound connections to the master. If you've put both your Salt master and minion in debug mode and don't see an acknowledgment that your minion has connected, it could very well be a firewall interfering with the connection. See our *firewall configuration* page for help opening the firewall on various platforms.

If you have netcat installed, you can check port connectivity from the minion with the `nc` command:

```
$ nc -v -z salt.master.ip.addr 4505
Connection to salt.master.ip.addr 4505 port [tcp/unknown] succeeded!
$ nc -v -z salt.master.ip.addr 4506
Connection to salt.master.ip.addr 4506 port [tcp/unknown] succeeded!
```

The Nmap utility can also be used to check if these ports are open:

```
# nmap -sS -q -p 4505-4506 salt.master.ip.addr

Starting Nmap 6.40 ( http://nmap.org ) at 2013-12-29 19:44 CST
Nmap scan report for salt.master.ip.addr (10.0.0.10)
Host is up (0.0026s latency).
PORT     STATE  SERVICE
4505/tcp open   unknown
4506/tcp open   unknown
MAC Address: 00:11:22:AA:BB:CC (Intel)

Nmap done: 1 IP address (1 host up) scanned in 1.64 seconds
```

If you've opened the correct TCP ports and still aren't seeing connections, check that no additional access control system such as SELinux or AppArmor is blocking Salt.

### Using salt-call

The `salt-call` command was originally developed for aiding in the development of new Salt modules. Since then, many applications have been developed for running any Salt module locally on a minion. These range from the original intent of salt-call (development assistance), to gathering more verbose output from calls like `state.apply`.

When initially creating your state tree, it is generally recommended to invoke highstates by running `state.apply` directly from the minion with `salt-call`, rather than remotely from the master. This displays far more information about the execution than calling it remotely. For even more verbosity, increase the loglevel using the `-l` argument:

```
# salt-call -l debug state.apply
```

The main difference between using `salt` and using `salt-call` is that `salt-call` is run from the minion, and it only runs the selected function on that minion. By contrast, `salt` is run from the master, and requires you to specify the minions on which to run the command using salt's *targeting system*.

### Live Python Debug Output

If the minion seems to be unresponsive, a SIGUSR1 can be passed to the process to display what piece of code is executing. This debug information can be invaluable in tracking down bugs.

To pass a SIGUSR1 to the minion, first make sure the minion is running in the foreground. Stop the service if it is running as a daemon, and start it in the foreground like so:

```
# salt-minion -l debug
```

Then pass the signal to the minion when it seems to be unresponsive:

```
# killall -SIGUSR1 salt-minion
```

When filing an issue or sending questions to the mailing list for a problem with an unresponsive daemon, be sure to include this information if possible.

### Multiprocessing in Execution Modules

As is outlined in github issue #6300, Salt cannot use python's multiprocessing pipes and queues from execution modules. Multiprocessing from the execution modules is perfectly viable, it is just necessary to use Salt's event system to communicate back with the process.

The reason for this difficulty is that python attempts to pickle all objects in memory when communicating, and it cannot pickle function objects. Since the Salt loader system creates and manages function objects this causes the pickle operation to fail.

### Salt Minion Doesn't Return Anything While Running Jobs Locally

When a command being run via Salt takes a very long time to return (package installations, certain scripts, etc.) the minion may drop you back to the shell. In most situations the job is still running but Salt has exceeded the set timeout before returning. Querying the job queue will provide the data of the job but is inconvenient. This can be resolved by either manually using the `-t` option to set a longer timeout when running commands (by default it is 5 seconds) or by modifying the minion configuration file: `/etc/salt/minion` and setting the `timeout` value to change the default timeout for all commands, and then restarting the salt-minion service.

**Note:** Modifying the minion timeout value is not required when running commands from a Salt Master. It is only required when running commands locally on the minion.

### 3.10.3 Running in the Foreground

A great deal of information is available via the debug logging system, if you are having issues with minions connecting or not starting run the minion and/or master in the foreground:

```
salt-master -l debug
salt-minion -l debug
```

Anyone wanting to run Salt daemons via a process supervisor such as monit, runit, or supervisord, should omit the `-d` argument to the daemons and run them in the foreground.

### 3.10.4 What Ports do the Master and Minion Need Open?

No ports need to be opened up on each minion. For the master, TCP ports 4505 and 4506 need to be open. If you've put both your Salt master and minion in debug mode and don't see an acknowledgment that your minion has connected, it could very well be a firewall.

You can check port connectivity from the minion with the nc command:

```
nc -v -z salt.master.ip 4505
nc -v -z salt.master.ip 4506
```

There is also a *firewall configuration* document that might help as well.

If you've enabled the right TCP ports on your operating system or Linux distribution's firewall and still aren't seeing connections, check that no additional access control system such as SELinux or AppArmor is blocking Salt.

### 3.10.5 Using salt-call

The `salt-call` command was originally developed for aiding in the development of new Salt modules. Since then, many applications have been developed for running any Salt module locally on a minion. These range from the original intent of salt-call, development assistance, to gathering more verbose output from calls like `state.apply`.

When initially creating your state tree, it is generally recommended to invoke `state.apply` directly from the minion with `salt-call`, rather than remotely from the master. This displays far more information about the execution than calling it remotely. For even more verbosity, increase the loglevel using the `-l` argument:

```
salt-call -l debug state.apply
```

The main difference between using `salt` and using `salt-call` is that `salt-call` is run from the minion, and it only runs the selected function on that minion. By contrast, `salt` is run from the master, and requires you to specify the minions on which to run the command using salt's *targeting system*.

### 3.10.6 Too many open files

The salt-master needs at least 2 sockets per host that connects to it, one for the Publisher and one for response port. Thus, large installations may, upon scaling up the number of minions accessing a given master, encounter:

```
12:45:29,289 [salt.master    ][INFO    ] Starting Salt worker process 38
Too many open files
sock != -1 (tcp_listener.cpp:335)
```

The solution to this would be to check the number of files allowed to be opened by the user running salt-master (root by default):

```
[root@salt-master ~]# ulimit -n
1024
```

And modify that value to be at least equal to the number of minions x 2. This setting can be changed in limits.conf as the nofile value(s), and activated upon new a login of the specified user.

So, an environment with 1800 minions, would need 1800 x 2 = 3600 as a minimum.

### 3.10.7 Salt Master Stops Responding

There are known bugs with ZeroMQ versions less than 2.1.11 which can cause the Salt master to not respond properly. If you're running a ZeroMQ version greater than or equal to 2.1.9, you can work around the bug by setting the sysctls `net.core.rmem_max` and `net.core.wmem_max` to 16777216. Next, set the third field in `net.ipv4.tcp_rmem` and `net.ipv4.tcp_wmem` to at least 16777216.

You can do it manually with something like:

```
# echo 16777216 > /proc/sys/net/core/rmem_max
# echo 16777216 > /proc/sys/net/core/wmem_max
# echo "4096 87380 16777216" > /proc/sys/net/ipv4/tcp_rmem
# echo "4096 87380 16777216" > /proc/sys/net/ipv4/tcp_wmem
```

Or with the following Salt state:

```
net.core.rmem_max:
  sysctl:
    - present
    - value: 16777216

net.core.wmem_max:
  sysctl:
    - present
    - value: 16777216

net.ipv4.tcp_rmem:
  sysctl:
    - present
    - value: 4096 87380 16777216

net.ipv4.tcp_wmem:
  sysctl:
    - present
    - value: 4096 87380 16777216
```

### 3.10.8 Salt and SELinux

Currently there are no SELinux policies for Salt. For the most part Salt runs without issue when SELinux is running in Enforcing mode. This is because when the minion executes as a daemon the type context is changed to `initrc_t`.

The problem with SELinux arises when using salt-call or running the minion in the foreground, since the type context stays `unconfined_t`.

This problem is generally manifest in the rpm install scripts when using the pkg module. Until a full SELinux Policy is available for Salt the solution to this issue is to set the execution context of `salt-call` and `salt-minion` to rpm_exec_t:

```
# CentOS 5 and RHEL 5:
chcon -t system_u:system_r:rpm_exec_t:s0 /usr/bin/salt-minion
chcon -t system_u:system_r:rpm_exec_t:s0 /usr/bin/salt-call

# CentOS 6 and RHEL 6:
chcon system_u:object_r:rpm_exec_t:s0 /usr/bin/salt-minion
chcon system_u:object_r:rpm_exec_t:s0 /usr/bin/salt-call
```

This works well, because the `rpm_exec_t` context has very broad control over other types.

### 3.10.9 Red Hat Enterprise Linux 5

Salt requires Python 2.6 or 2.7. Red Hat Enterprise Linux 5 and its variants come with Python 2.4 installed by default. When installing on RHEL 5 from the EPEL repository this is handled for you. But, if you run Salt from git, be advised that its dependencies need to be installed from EPEL and that Salt needs to be run with the `python26` executable.

### 3.10.10 Common YAML Gotchas

An extensive list of YAML idiosyncrasies has been compiled:

#### YAML Idiosyncrasies

One of Salt's strengths, the use of existing serialization systems for representing SLS data, can also backfire. YAML is a general purpose system and there are a number of things that would seem to make sense in an sls file that cause YAML issues. It is wise to be aware of these issues. While reports or running into them are generally rare they can still crop up at unexpected times.

#### Spaces vs Tabs

YAML uses spaces, period. Do not use tabs in your SLS files! If strange errors are coming up in rendering SLS files, make sure to check that no tabs have crept in! In Vim, after enabling search highlighting with: `:set hlsearch`, you can check with the following key sequence in normal mode(you can hit *ESC* twice to be sure): `/`, *Ctrl-v*, *Tab*, then hit *Enter*. Also, you can convert tabs to 2 spaces by these commands in Vim: `:set tabstop=2 expandtab` and then `:retab`.

#### Indentation

The suggested syntax for YAML files is to use 2 spaces for indentation, but YAML will follow whatever indentation system that the individual file uses. Indentation of two spaces works very well for SLS files given the fact that the data is uniform and not deeply nested.

### Nested Dictionaries

When dicts are nested within other data structures (particularly lists), the indentation logic sometimes changes. Examples of where this might happen include `context` and `default` options from the *`file.managed`* state:

```
/etc/http/conf/http.conf:
  file:
    - managed
    - source: salt://apache/http.conf
    - user: root
    - group: root
    - mode: 644
    - template: jinja
    - context:
        custom_var: "override"
    - defaults:
        custom_var: "default value"
        other_var: 123
```

Notice that while the indentation is two spaces per level, for the values under the `context` and `defaults` options there is a four-space indent. If only two spaces are used to indent, then those keys will be considered part of the same dictionary that contains the `context` key, and so the data will not be loaded correctly. If using a double indent is not desirable, then a deeply-nested dict can be declared with curly braces:

```
/etc/http/conf/http.conf:
  file:
    - managed
    - source: salt://apache/http.conf
    - user: root
    - group: root
    - mode: 644
    - template: jinja
    - context: {
      custom_var: "override" }
    - defaults: {
      custom_var: "default value",
      other_var: 123 }
```

Here is a more concrete example of how YAML actually handles these indentations, using the Python interpreter on the command line:

```
>>> import yaml
>>> yaml.safe_load('''mystate:
...   file.managed:
...     - context:
...         some: var''')
{'mystate': {'file.managed': [{'context': {'some': 'var'}}]}}
>>> yaml.safe_load('''mystate:
...   file.managed:
...     - context:
...       some: var''')
{'mystate': {'file.managed': [{'some': 'var', 'context': None}]}}
```

Note that in the second example, `some` is added as another key in the same dictionary, whereas in the first example, it's the start of a new dictionary. That's the distinction. `context` is a common example because it is a keyword arg for many functions, and should contain a dictionary.

### True/False, Yes/No, On/Off

PyYAML will load these values as boolean `True` or `False`. Un-capitalized versions will also be loaded as booleans (`true`, `false`, `yes`, `no`, `on`, and `off`). This can be especially problematic when constructing Pillar data. Make sure that your Pillars which need to use the string versions of these values are enclosed in quotes. Pillars will be parsed twice by salt, so you'll need to wrap your values in multiple quotes, for example ```false'''.

### The `%' Sign

The `%` symbol has a special meaning in YAML, it needs to be passed as a string literal:

```
cheese:
  ssh_auth.present:
    - user: tbortels
    - source: salt://ssh_keys/chease.pub
    - config: '%h/.ssh/authorized_keys'
```

### Integers are Parsed as Integers

NOTE: This has been fixed in salt 0.10.0, as of this release passing an integer that is preceded by a 0 will be correctly parsed

When passing `integers` into an SLS file, they are passed as integers. This means that if a state accepts a string value and an integer is passed, that an integer will be sent. The solution here is to send the integer as a string.

This is best explained when setting the mode for a file:

```
/etc/vimrc:
  file:
    - managed
    - source: salt://edit/vimrc
    - user: root
    - group: root
    - mode: 644
```

Salt manages this well, since the mode is passed as 644, but if the mode is zero padded as 0644, then it is read by YAML as an integer and evaluated as an octal value, 0644 becomes 420. Therefore, if the file mode is preceded by a 0 then it needs to be passed as a string:

```
/etc/vimrc:
  file:
    - managed
    - source: salt://edit/vimrc
    - user: root
    - group: root
    - mode: '0644'
```

### YAML does not like ``Double Short Decs''

If I can find a way to make YAML accept ``Double Short Decs'' then I will, since I think that double short decs would be awesome. So what is a ``Double Short Dec''? It is when you declare a multiple short decs in one ID. Here is a standard short dec, it works great:

```
vim:
  pkg.installed
```

The short dec means that there are no arguments to pass, so it is not required to add any arguments, and it can save space.

YAML though, gets upset when declaring multiple short decs, for the record...

THIS DOES NOT WORK:

```
vim:
  pkg.installed
  user.present
```

Similarly declaring a short dec in the same ID dec as a standard dec does not work either...

ALSO DOES NOT WORK:

```
fred:
  user.present
  ssh_auth.present:
    - name: AAAAB3NzaC...
    - user: fred
    - enc: ssh-dss
    - require:
      - user: fred
```

The correct way is to define them like this:

```
vim:
  pkg.installed: []
  user.present: []

fred:
  user.present: []
  ssh_auth.present:
    - name: AAAAB3NzaC...
    - user: fred
    - enc: ssh-dss
    - require:
      - user: fred
```

Alternatively, they can be defined the ``old way'', or with multiple ``full decs'':

```
vim:
  pkg:
    - installed
  user:
    - present

fred:
  user:
    - present
  ssh_auth:
    - present
    - name: AAAAB3NzaC...
    - user: fred
    - enc: ssh-dss
```

```
    - require:
      - user: fred
```

### YAML support only plain ASCII

According to YAML specification, only ASCII characters can be used.

Within double-quotes, special characters may be represented with C-style escape sequences starting with a backslash (\).

Examples:

```
- micro: "\u00b5"
- copyright: "\u00A9"
- A: "\x41"
- alpha: "\u0251"
- Alef: "\u05d0"
```

List of usable Unicode characters will help you to identify correct numbers.

Python can also be used to discover the Unicode number for a character:

```
repr(u"Text with wrong characters i need to figure out")
```

This shell command can find wrong characters in your SLS files:

```
find . -name '*.sls'  -exec  grep --color='auto' -P -n '[^\x00-\x7F]' \{} \;
```

Alternatively you can toggle the *yaml_utf8* setting in your master configuration file. This is still an experimental setting but it should manage the right encoding conversion in salt after yaml states compilations.

### Underscores stripped in Integer Definitions

If a definition only includes numbers and underscores, it is parsed by YAML as an integer and all underscores are stripped. To ensure the object becomes a string, it should be surrounded by quotes. More information here.

Here's an example:

```
>>> import yaml
>>> yaml.safe_load('2013_05_10')
20130510
>>> yaml.safe_load('"2013_05_10"')
'2013_05_10'
```

### Automatic `datetime` conversion

If there is a value in a YAML file formatted `2014-01-20 14:23:23` or similar, YAML will automatically convert this to a Python `datetime` object. These objects are not msgpack serializable, and so may break core salt functionality. If values such as these are needed in a salt YAML file (specifically a configuration file), they should be formatted with surrounding strings to force YAML to serialize them as strings:

```
>>> import yaml
>>> yaml.safe_load('2014-01-20 14:23:23')
datetime.datetime(2014, 1, 20, 14, 23, 23)
>>> yaml.safe_load('"2014-01-20 14:23:23"')
'2014-01-20 14:23:23'
```

Additionally, numbers formatted like `XXXX-XX-XX` will also be converted (or YAML will attempt to convert them, and error out if it doesn't think the date is a real one). Thus, for example, if a minion were to have an ID of `4017-16-20` the minion would not start because YAML would complain that the date was out of range. The workaround is the same, surround the offending string with quotes:

```
>>> import yaml
>>> yaml.safe_load('4017-16-20')
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
  File "/usr/local/lib/python2.7/site-packages/yaml/__init__.py", line 93, in safe_load
    return load(stream, SafeLoader)
  File "/usr/local/lib/python2.7/site-packages/yaml/__init__.py", line 71, in load
    return loader.get_single_data()
  File "/usr/local/lib/python2.7/site-packages/yaml/constructor.py", line 39, in get_
↪single_data
    return self.construct_document(node)
  File "/usr/local/lib/python2.7/site-packages/yaml/constructor.py", line 43, in
↪construct_document
    data = self.construct_object(node)
  File "/usr/local/lib/python2.7/site-packages/yaml/constructor.py", line 88, in
↪construct_object
    data = constructor(self, node)
  File "/usr/local/lib/python2.7/site-packages/yaml/constructor.py", line 312, in
↪construct_yaml_timestamp
    return datetime.date(year, month, day)
ValueError: month must be in 1..12
>>> yaml.safe_load('"4017-16-20"')
'4017-16-20'
```

#### Keys Limited to 1024 Characters

Simple keys are limited to a single line and cannot be longer that 1024 characters. This is a limitation from PyYaml, as seen in a comment in PyYAML's code, and applies to anything parsed by YAML in Salt.

### 3.10.11 Live Python Debug Output

If the minion or master seems to be unresponsive, a SIGUSR1 can be passed to the processes to display where in the code they are running. If encountering a situation like this, this debug information can be invaluable. First make sure the master of minion are running in the foreground:

```
salt-master -l debug
salt-minion -l debug
```

Then pass the signal to the master or minion when it seems to be unresponsive:

```
killall -SIGUSR1 salt-master
killall -SIGUSR1 salt-minion
```

Also under BSD and Mac OS X in addition to SIGUSR1 signal, debug subroutine set up for SIGINFO which has an advantage of being sent by Ctrl+T shortcut.

When filing an issue or sending questions to the mailing list for a problem with an unresponsive daemon this information can be invaluable.

### 3.10.12 Salt 0.16.x minions cannot communicate with a 0.17.x master

As of release 0.17.1 you can no longer run different versions of Salt on your Master and Minion servers. This is due to a protocol change for security purposes. The Salt team will continue to attempt to ensure versions are as backwards compatible as possible.

### 3.10.13 Debugging the Master and Minion

A list of common *master* and *minion* troubleshooting steps provide a starting point for resolving issues you may encounter.

## 3.11 Frequently Asked Questions

**FAQ**


- *Frequently Asked Questions*
  - *Is Salt open-core?*
  - *I think I found a bug! What should I do?*
  - *What ports should I open on my firewall?*
  - *I'm seeing weird behavior (including but not limited to packages not installing their users properly)*
  - *My script runs every time I run a* state.apply*. Why?*
  - *When I run* test.ping*, why don't the Minions that aren't responding return anything? Returning* `False` *would be helpful.*
  - *How does Salt determine the Minion's id?*
  - *I'm trying to manage packages/services but I get an error saying that the state is not available. Why?*
  - *Why aren't my custom modules/states/etc. available on my Minions?*
  - *Module X isn't available, even though the shell command it uses is installed. Why?*
  - *Can I run different versions of Salt on my Master and Minion?*
  - *Does Salt support backing up managed files?*
  - *Is it possible to deploy a file to a specific minion, without other minions having access to it?*
  - *What is the best way to restart a Salt daemon using Salt?*
    - *Linux/Unix*
    - *Windows*
  - *Salting the Salt Master*

- *Is Targeting using Grain Data Secure?*
- *Why Did the Value for a Grain Change on Its Own?*


### 3.11.1 Is Salt open-core?

No. Salt is 100% committed to being open-source, including all of our APIs. It is developed under the Apache 2.0 license, allowing it to be used in both open and proprietary projects.

To expand on this a little:

There is much argument over the actual definition of ``open core''. From our standpoint, Salt is open source because

1. It is a standalone product that anyone is free to use.
2. It is developed in the open with contributions accepted from the community for the good of the project.
3. There are no features of Salt itself that are restricted to separate proprietary products distributed by SaltStack, Inc.
4. Because of our Apache 2.0 license, Salt can be used as the foundation for a project or even a proprietary tool.
5. Our APIs are open and documented (any lack of documentation is an oversight as opposed to an intentional decision by SaltStack the company) and available for use by anyone.

SaltStack the company does make proprietary products which use Salt and its libraries, like company is free to do, but we do so via the APIs, NOT by forking Salt and creating a different, closed-source version of it for paying customers.

### 3.11.2 I think I found a bug! What should I do?

The salt-users mailing list as well as the salt IRC channel can both be helpful resources to confirm if others are seeing the issue and to assist with immediate debugging.

To report a bug to the Salt project, please follow the instructions in *reporting a bug*.

### 3.11.3 What ports should I open on my firewall?

Minions need to be able to connect to the Master on TCP ports 4505 and 4506. Minions do not need any inbound ports open. More detailed information on firewall settings can be found *here*.

### 3.11.4 I'm seeing weird behavior (including but not limited to packages not installing their users properly)

This is often caused by SELinux. Try disabling SELinux or putting it in permissive mode and see if the weird behavior goes away.

### 3.11.5 My script runs every time I run a *state.apply*. Why?

You are probably using `cmd.run` rather than `cmd.wait`. A `cmd.wait` state will only run when there has been a change in a state that it is watching.

A `cmd.run` state will run the corresponding command *every time* (unless it is prevented from running by the `unless` or `onlyif` arguments).

More details can be found in the documentation for the `cmd` states.

### 3.11.6 When I run *test.ping*, why don't the Minions that aren't responding return anything? Returning `False` would be helpful.

When you run *test.ping* the Master tells Minions to run commands/functions, and listens for the return data, printing it to the screen when it is received. If it doesn't receive anything back, it doesn't have anything to display for that Minion.

There are a couple options for getting information on Minions that are not responding. One is to use the verbose (`-v`) option when you run salt commands, as it will display ``Minion did not return'' for any Minions which time out.

```
salt -v '*' pkg.install zsh
```

Another option is to use the *manage.down* runner:

```
salt-run manage.down
```

Also, if the Master is under heavy load, it is possible that the CLI will exit without displaying return data for all targeted Minions. However, this doesn't mean that the Minions did not return; this only means that the Salt CLI timed out waiting for a response. Minions will still send their return data back to the Master once the job completes. If any expected Minions are missing from the CLI output, the *jobs.list_jobs* runner can be used to show the job IDs of the jobs that have been run, and the *jobs.lookup_jid* runner can be used to get the return data for that job.

```
salt-run jobs.list_jobs
salt-run jobs.lookup_jid 20130916125524463507
```

If you find that you are often missing Minion return data on the CLI, only to find it with the jobs runners, then this may be a sign that the *worker_threads* value may need to be increased in the master config file. Additionally, running your Salt CLI commands with the `-t` option will make Salt wait longer for the return data before the CLI command exits. For instance, the below command will wait up to 60 seconds for the Minions to return:

```
salt -t 60 '*' test.ping
```

### 3.11.7 How does Salt determine the Minion's id?

If the Minion id is not configured explicitly (using the *id* parameter), Salt will determine the id based on the hostname. Exactly how this is determined varies a little between operating systems and is described in detail here.

### 3.11.8 I'm trying to manage packages/services but I get an error saying that the state is not available. Why?

Salt detects the Minion's operating system and assigns the correct package or service management module based on what is detected. However, for certain custom spins and OS derivatives this detection fails. In cases like this, an issue should be opened on our tracker, with the following information:

1. The output of the following command:

   ```
   salt <minion_id> grains.items | grep os
   ```

2. The contents of `/etc/lsb-release`, if present on the Minion.

### 3.11.9 Why aren't my custom modules/states/etc. available on my Minions?

Custom modules are synced to Minions when *saltutil.sync_modules*, or *saltutil.sync_all* is run. Custom modules are also synced by `state.apply` when run without any arguments.

Similarly, custom states are synced to Minions when `state.apply`, *saltutil.sync_states*, or *saltutil.sync_all* is run.

Custom states are also synced by `state.apply` when run without any arguments.

Other custom types (renderers, outputters, etc.) have similar behavior, see the documentation for the *saltutil* module for more information.

*This reactor example* can be used to automatically sync custom types when the minion connects to the master, to help with this chicken-and-egg issue.

### 3.11.10 Module X isn't available, even though the shell command it uses is installed. Why?

This is most likely a PATH issue. Did you custom-compile the software which the module requires? RHEL/CentOS/etc. in particular override the root user's path in `/etc/init.d/functions`, setting it to `/sbin:/usr/sbin:/bin:/usr/bin`, making software installed into `/usr/local/bin` unavailable to Salt when the Minion is started using the initscript. In version 2014.1.0, Salt will have a better solution for these sort of PATH-related issues, but recompiling the software to install it into a location within the PATH should resolve the issue in the meantime. Alternatively, you can create a symbolic link within the PATH using a *file.symlink* state.

```
/usr/bin/foo:
  file.symlink:
    - target: /usr/local/bin/foo
```

### 3.11.11 Can I run different versions of Salt on my Master and Minion?

This depends on the versions. In general, it is recommended that Master and Minion versions match.

When upgrading Salt, the master(s) should always be upgraded first. Backwards compatibility for minions running newer versions of salt than their masters is not guaranteed.

Whenever possible, backwards compatibility between new masters and old minions will be preserved. Generally, the only exception to this policy is in case of a security vulnerability.

Recent examples of backwards compatibility breakage include the 0.17.1 release (where all backwards compatibility was broken due to a security fix), and the 2014.1.0 release (which retained compatibility between 2014.1.0 masters and 0.17 minions, but broke compatibility for 2014.1.0 minions and older masters).

### 3.11.12 Does Salt support backing up managed files?

Yes. Salt provides an easy to use addition to your file.managed states that allow you to back up files via *backup_mode*, backup_mode can be configured on a per state basis, or in the minion config (note that if set in the minion config this would simply be the default method to use, you still need to specify that the file should be backed up!).

### 3.11.13 Is it possible to deploy a file to a specific minion, without other minions having access to it?

The Salt fileserver does not yet support access control, but it is still possible to do this. As of Salt 2015.5.0, the *file_tree* external pillar is available, and allows the contents of a file to be loaded as Pillar data. This external pillar is capable of assigning Pillar values both to individual minions, and to *nodegroups*. See the *documentation* for details on how to set this up.

Once the external pillar has been set up, the data can be pushed to a minion via a *file.managed* state, using the `contents_pillar` argument:

```
/etc/my_super_secret_file:
  file.managed:
    - user: secret
    - group: secret
    - mode: 600
    - contents_pillar: secret_files:my_super_secret_file
```

In this example, the source file would be located in a directory called `secret_files` underneath the file_tree path for the minion. The syntax for specifying the pillar variable is the same one used for *pillar.get*, with a colon representing a nested dictionary.

**Warning**: Deploying binary contents using the *file.managed* state is only supported in Salt 2015.8.4 and newer.

### 3.11.14 What is the best way to restart a Salt daemon using Salt?

Updating the salt-minion package requires a restart of the salt-minion service. But restarting the service while in the middle of a state run interrupts the process of the minion running states and sending results back to the master. It's a tricky problem to solve, and we're working on it, but in the meantime one way of handling this (on Linux and UNIX-based operating systems) is to use **at** (a job scheduler which predates cron) to schedule a restart of the service. **at** is not installed by default on most distros, and requires a service to be running (usually called **atd**) in order to schedule jobs. Here's an example of how to upgrade the salt-minion package at the end of a Salt run, and schedule a service restart for one minute after the package update completes.

#### Linux/Unix

```
salt-minion:
  pkg.installed:
    - name: salt-minion
    - version: 2014.1.7-3.el6
    - order: last
  service.running:
    - name: salt-minion
    - require:
      - pkg: salt-minion
  cmd.run:
    - name: echo service salt-minion restart | at now + 1 minute
    - onchanges:
      - pkg: salt-minion
```

To ensure that **at** is installed and **atd** is running, the following states can be used (be sure to double-check the package name and service name for the distro the minion is running, in case they differ from the example below.

```
at:
  pkg.installed:
    - name: at
  service.running:
    - name: atd
    - enable: True
```

An alternative to using the **atd** daemon is to fork and disown the process.

```
restart_minion:
  cmd.run:
    - name: |
        exec 0>&- # close stdin
        exec 1>&- # close stdout
        exec 2>&- # close stderr
        nohup /bin/sh -c 'sleep 10 && salt-call --local service.restart salt-minion' &
    - python_shell: True
    - order: last
```

#### Windows

For Windows machines, restarting the minion can be accomplished using the following state:

```
schedule-start:
  cmd.run:
    - name: 'start powershell "Restart-Service -Name salt-minion"'
    - order: last
```

or running immediately from the command line:

```
salt -G kernel:Windows cmd.run 'start powershell "Restart-Service -Name salt-minion"'
```

### 3.11.15 Salting the Salt Master

In order to configure a master server via states, the Salt master can also be ``salted'' in order to enforce state on the Salt master as well as the Salt minions. Salting the Salt master requires a Salt minion to be installed on the same machine as the Salt master. Once the Salt minion is installed, the minion configuration file must be pointed to the local Salt master:

```
master: 127.0.0.1
```

Once the Salt master has been ``salted'' with a Salt minion, it can be targeted just like any other minion. If the minion on the salted master is running, the minion can be targeted via any usual `salt` command. Additionally, the `salt-call` command can execute operations to enforce state on the salted master without requiring the minion to be running.

More information about salting the Salt master can be found in the salt-formula for salt itself:

https://github.com/saltstack-formulas/salt-formula

### 3.11.16 Is Targeting using Grain Data Secure?

Because grains can be set by users that have access to the minion configuration files on the local system, grains are considered less secure than other identifiers in Salt. Use caution when targeting sensitive operations or setting pillar

values based on grain data.

When possible, you should target sensitive operations and data using the Minion ID. If the Minion ID of a system changes, the Salt Minion's public key must be re-accepted by an administrator on the Salt Master, making it less vulnerable to impersonation attacks.

### 3.11.17 Why Did the Value for a Grain Change on Its Own?

This is usually the result of an upstream change in an OS distribution that replaces or removes something that Salt was using to detect the grain. Fortunately, when this occurs, you can use Salt to fix it with a command similar to the following:

```
salt -G 'grain:ChangedValue' grains.setvals "{'grain': 'OldValue'}"
```

(Replacing *grain*, *ChangedValue*, and *OldValue* with the grain and values that you want to change / set.)

You should also file an issue describing the change so it can be fixed in Salt.

## 3.12 Salt Best Practices

Salt's extreme flexibility leads to many questions concerning the structure of configuration files.

This document exists to clarify these points through examples and code.

### 3.12.1 General rules

1. Modularity and clarity should be emphasized whenever possible.
2. Create clear relations between pillars and states.
3. Use variables when it makes sense but don't overuse them.
4. Store sensitive data in pillar.
5. Don't use grains for matching in your pillar top file for any sensitive pillars.

### 3.12.2 Structuring States and Formulas

When structuring Salt States and Formulas it is important to begin with the directory structure. A proper directory structure clearly defines the functionality of each state to the user via visual inspection of the state's name.

Reviewing the MySQL Salt Formula it is clear to see the benefits to the end-user when reviewing a sample of the available states:

```
/srv/salt/mysql/files/
/srv/salt/mysql/client.sls
/srv/salt/mysql/map.jinja
/srv/salt/mysql/python.sls
/srv/salt/mysql/server.sls
```

This directory structure would lead to these states being referenced in a top file in the following way:

```
base:
  'web*':
    - mysql.client
    - mysql.python
  'db*':
    - mysql.server
```

This clear definition ensures that the user is properly informed of what each state will do.

Another example comes from the vim-formula:

```
/srv/salt/vim/files/
/srv/salt/vim/absent.sls
/srv/salt/vim/init.sls
/srv/salt/vim/map.jinja
/srv/salt/vim/nerdtree.sls
/srv/salt/vim/pyflakes.sls
/srv/salt/vim/salt.sls
```

Once again viewing how this would look in a top file:

/srv/salt/top.sls:

```
base:
  'web*':
    - vim
    - vim.nerdtree
    - vim.pyflakes
    - vim.salt
  'db*':
    - vim.absent
```

The usage of a clear top-level directory as well as properly named states reduces the overall complexity and leads a user to both understand what will be included at a glance and where it is located.

In addition *Formulas* should be used as often as possible.

---

**Note:** Formulas repositories on the saltstack-formulas GitHub organization should not be pointed to directly from systems that automatically fetch new updates such as GitFS or similar tooling. Instead formulas repositories should be forked on GitHub or cloned locally, where unintended, automatic changes will not take place.

---

### 3.12.3 Structuring Pillar Files

*Pillars* are used to store secure and insecure data pertaining to minions. When designing the structure of the `/srv/pillar` directory, the pillars contained within should once again be focused on clear and concise data which users can easily review, modify, and understand.

The `/srv/pillar/` directory is primarily controlled by `top.sls`. It should be noted that the pillar `top.sls` is not used as a location to declare variables and their values. The `top.sls` is used as a way to include other pillar files and organize the way they are matched based on environments or grains.

An example `top.sls` may be as simple as the following:

/srv/pillar/top.sls:

```
base:
  '*':
    - packages
```

Any number of matchers can be added to the base environment. For example, here is an expanded version of the Pillar top file stated above:

/srv/pillar/top.sls:

```
base:
  '*':
    - packages
  'web*':
    - apache
    - vim
```

Or an even more complicated example, using a variety of matchers in numerous environments:

/srv/pillar/top.sls:

```
base:
  '*':
    - apache
dev:
  'os:Debian':
    - match: grain
    - vim
test:
  '* and not G@os: Debian':
    - match: compound
    - emacs
```

It is clear to see through these examples how the top file provides users with power but when used incorrectly it can lead to confusing configurations. This is why it is important to understand that the top file for pillar is not used for variable definitions.

Each SLS file within the `/srv/pillar/` directory should correspond to the states which it matches.

This would mean that the `apache` pillar file should contain data relevant to Apache. Structuring files in this way once again ensures modularity, and creates a consistent understanding throughout our Salt environment. Users can expect that pillar variables found in an Apache state will live inside of an Apache pillar:

`/srv/pillar/apache.sls`:

```
apache:
  lookup:
    name: httpd
    config:
      tmpl: /etc/httpd/httpd.conf
```

While this pillar file is simple, it shows how a pillar file explicitly relates to the state it is associated with.

### 3.12.4 Variable Flexibility

Salt allows users to define variables in SLS files. When creating a state variables should provide users with as much flexibility as possible. This means that variables should be clearly defined and easy to manipulate, and that sane defaults should exist in the event a variable is not properly defined. Looking at several examples shows how these different items can lead to extensive flexibility.

Although it is possible to set variables locally, this is generally not preferred:

`/srv/salt/apache/conf.sls`:

```
{% set name = 'httpd' %}
{% set tmpl = 'salt://apache/files/httpd.conf' %}

include:
  - apache

apache_conf:
  file.managed:
    - name: {{ name }}
    - source: {{ tmpl }}
    - template: jinja
    - user: root
    - watch_in:
      - service: apache
```

When generating this information it can be easily transitioned to the pillar where data can be overwritten, modified, and applied to multiple states, or locations within a single state:

`/srv/pillar/apache.sls`:

```
apache:
  lookup:
    name: httpd
    config:
      tmpl: salt://apache/files/httpd.conf
```

`/srv/salt/apache/conf.sls`:

```
{% from "apache/map.jinja" import apache with context %}

include:
  - apache

apache_conf:
  file.managed:
    - name: {{ salt['pillar.get']('apache:lookup:name') }}
    - source: {{ salt['pillar.get']('apache:lookup:config:tmpl') }}
    - template: jinja
    - user: root
    - watch_in:
      - service: apache
```

This flexibility provides users with a centralized location to modify variables, which is extremely important as an environment grows.

### 3.12.5 Modularity Within States

Ensuring that states are modular is one of the key concepts to understand within Salt. When creating a state a user must consider how many times the state could be re-used, and what it relies on to operate. Below are several examples which will iteratively explain how a user can go from a state which is not very modular to one that is:

`/srv/salt/apache/init.sls`:

```
httpd:
  pkg.installed: []
  service.running:
    - enable: True

/etc/httpd/httpd.conf:
  file.managed:
    - source: salt://apache/files/httpd.conf
    - template: jinja
    - watch_in:
      - service: httpd
```

The example above is probably the worst-case scenario when writing a state. There is a clear lack of focus by naming both the pkg/service, and managed file directly as the state ID. This would lead to changing multiple requires within this state, as well as others that may depend upon the state.

Imagine if a require was used for the `httpd` package in another state, and then suddenly it's a custom package. Now changes need to be made in multiple locations which increases the complexity and leads to a more error prone configuration.

There is also the issue of having the configuration file located in the init, as a user would be unable to simply install the service and use the default conf file.

Our second revision begins to address the referencing by using `-name`, as opposed to direct ID references:

`/srv/salt/apache/init.sls`:

```
apache:
  pkg.installed:
    - name: httpd
  service.running:
    - name: httpd
    - enable: True

apache_conf:
  file.managed:
    - name: /etc/httpd/httpd.conf
    - source: salt://apache/files/httpd.conf
    - template: jinja
    - watch_in:
      - service: apache
```

The above init file is better than our original, yet it has several issues which lead to a lack of modularity. The first of these problems is the usage of static values for items such as the name of the service, the name of the managed file, and the source of the managed file. When these items are hard coded they become difficult to modify and the opportunity to make mistakes arises. It also leads to multiple edits that need to occur when changing these items (imagine if there were dozens of these occurrences throughout the state!). There is also still the concern of the configuration file data living in the same state as the service and package.

In the next example steps will be taken to begin addressing these issues. Starting with the addition of a map.jinja file (as noted in the *Formula documentation*), and modification of static values:

`/srv/salt/apache/map.jinja`:

```
{% set apache = salt['grains.filter_by']({
    'Debian': {
        'server': 'apache2',
        'service': 'apache2',
        'conf': '/etc/apache2/apache.conf',
```

```
    },
    'RedHat': {
        'server': 'httpd',
        'service': 'httpd',
        'conf': '/etc/httpd/httpd.conf',
    },
}, merge=salt['pillar.get']('apache:lookup')) %}
```

/srv/pillar/apache.sls:

```
apache:
  lookup:
    config:
      tmpl: salt://apache/files/httpd.conf
```

/srv/salt/apache/init.sls:

```
{% from "apache/map.jinja" import apache with context %}

apache:
  pkg.installed:
    - name: {{ apache.server }}
  service.running:
    - name: {{ apache.service }}
    - enable: True

apache_conf:
  file.managed:
    - name: {{ apache.conf }}
    - source: {{ salt['pillar.get']('apache:lookup:config:tmpl') }}
    - template: jinja
    - user: root
    - watch_in:
      - service: apache
```

The changes to this state now allow us to easily identify the location of the variables, as well as ensuring they are flexible and easy to modify. While this takes another step in the right direction, it is not yet complete. Suppose the user did not want to use the provided conf file, or even their own configuration file, but the default apache conf. With the current state setup this is not possible. To attain this level of modularity this state will need to be broken into two states.

/srv/salt/apache/map.jinja:

```
{% set apache = salt['grains.filter_by']({
    'Debian': {
        'server': 'apache2',
        'service': 'apache2',
        'conf': '/etc/apache2/apache.conf',
    },
    'RedHat': {
        'server': 'httpd',
        'service': 'httpd',
        'conf': '/etc/httpd/httpd.conf',
    },
}, merge=salt['pillar.get']('apache:lookup')) %}
```

/srv/pillar/apache.sls:

```
apache:
  lookup:
    config:
      tmpl: salt://apache/files/httpd.conf
```

/srv/salt/apache/init.sls:

```
{% from "apache/map.jinja" import apache with context %}

apache:
  pkg.installed:
    - name: {{ apache.server }}
  service.running:
    - name: {{ apache.service }}
    - enable: True
```

/srv/salt/apache/conf.sls:

```
{% from "apache/map.jinja" import apache with context %}

include:
  - apache

apache_conf:
  file.managed:
    - name: {{ apache.conf }}
    - source: {{ salt['pillar.get']('apache:lookup:config:tmpl') }}
    - template: jinja
    - user: root
    - watch_in:
      - service: apache
```

This new structure now allows users to choose whether they only wish to install the default Apache, or if they wish, overwrite the default package, service, configuration file location, or the configuration file itself. In addition to this the data has been broken between multiple files allowing for users to identify where they need to change the associated data.

### 3.12.6 Storing Secure Data

Secure data refers to any information that you would not wish to share with anyone accessing a server. This could include data such as passwords, keys, or other information.

As all data within a state is accessible by EVERY server that is connected it is important to store secure data within pillar. This will ensure that only those servers which require this secure data have access to it. In this example a use can go from an insecure configuration to one which is only accessible by the appropriate hosts:

/srv/salt/mysql/testerdb.sls:

```
testdb:
  mysql_database.present:
    - name: testerdb
```

/srv/salt/mysql/user.sls:

```
include:
  - mysql.testerdb
```

```
testdb_user:
  mysql_user.present:
    - name: frank
    - password: "test3rdb"
    - host: localhost
    - require:
      - sls: mysql.testerdb
```

Many users would review this state and see that the password is there in plain text, which is quite problematic. It results in several issues which may not be immediately visible.

The first of these issues is clear to most users -- the password being visible in this state. This means that any minion will have a copy of this, and therefore the password which is a major security concern as minions may not be locked down as tightly as the master server.

The other issue that can be encountered is access by users on the master. If everyone has access to the states (or their repository), then they are able to review this password. Keeping your password data accessible by only a few users is critical for both security and peace of mind.

There is also the issue of portability. When a state is configured this way it results in multiple changes needing to be made. This was discussed in the sections above but it is a critical idea to drive home. If states are not portable it may result in more work later!

Fixing this issue is relatively simple, the content just needs to be moved to the associated pillar:

`/srv/pillar/mysql.sls`:

```
mysql:
  lookup:
    name: testerdb
    password: test3rdb
    user: frank
    host: localhost
```

`/srv/salt/mysql/testerdb.sls`:

```
testdb:
  mysql_database.present:
    - name: {{ salt['pillar.get']('mysql:lookup:name') }}
```

`/srv/salt/mysql/user.sls`:

```
include:
  - mysql.testerdb

testdb_user:
  mysql_user.present:
    - name: {{ salt['pillar.get']('mysql:lookup:user') }}
    - password: {{ salt['pillar.get']('mysql:lookup:password') }}
    - host: {{ salt['pillar.get']('mysql:lookup:host') }}
    - require:
      - sls: mysql.testerdb
```

Now that the database details have been moved to the associated pillar file, only machines which are targeted via pillar will have access to these details. Access to users who should not be able to review these details can also be prevented while ensuring that they are still able to write states which take advantage of this information.

CHAPTER 4

# Remote Execution

Running pre-defined or arbitrary commands on remote hosts, also known as remote execution, is the core function of Salt. The following links explore modules and returners, which are two key elements of remote execution.

**Salt Execution Modules**

Salt execution modules are called by the remote execution system to perform a wide variety of tasks. These modules provide functionality such as installing packages, restarting a service, running a remote command, transferring files, and so on.

***Full list of execution modules*** Contains: a list of core modules that ship with Salt.

***Writing execution modules*** Contains: a guide on how to write Salt modules.

## 4.1 Remote execution tutorial

**Before continuing** make sure you have a working Salt installation by following the *Installation* and the *configuration* instructions.

**Stuck?**

There are many ways to get help from the Salt community including our mailing list and our IRC channel #salt.

### 4.1.1 Order your minions around

Now that you have a master and at least one minion communicating with each other you can perform commands on the minion via the **salt** command. Salt calls are comprised of three main components:

```
salt '<target>' <function> [arguments]
```

**See also:**

*salt manpage*

#### target

The target component allows you to filter which minions should run the following function. The default filter is a glob on the minion id. For example:

```
salt '*' test.ping
salt '*.example.org' test.ping
```

Targets can be based on minion system information using the Grains system:

```
salt -G 'os:Ubuntu' test.ping
```

**See also:**

*Grains system*

Targets can be filtered by regular expression:

```
salt -E 'virtmach[0-9]' test.ping
```

Targets can be explicitly specified in a list:

```
salt -L 'foo,bar,baz,quo' test.ping
```

Or Multiple target types can be combined in one command:

```
salt -C 'G@os:Ubuntu and webser* or E@database.*' test.ping
```

### function

A function is some functionality provided by a module. Salt ships with a large collection of available functions. List all available functions on your minions:

```
salt '*' sys.doc
```

Here are some examples:

Show all currently available minions:

```
salt '*' test.ping
```

Run an arbitrary shell command:

```
salt '*' cmd.run 'uname -a'
```

**See also:**

*the full list of modules*

### arguments

Space-delimited arguments to the function:

```
salt '*' cmd.exec_code python 'import sys; print sys.version'
```

Optional, keyword arguments are also supported:

```
salt '*' pip.install salt timeout=5 upgrade=True
```

They are always in the form of `kwarg=argument`.

## 4.2 Running Commands on Salt Minions

Salt can be controlled by a command line client by the root user on the Salt master. The Salt command line client uses the Salt client API to communicate with the Salt master server. The Salt client is straightforward and simple to use.

Using the Salt client commands can be easily sent to the minions.

Each of these commands accepts an explicit *--config* option to point to either the master or minion configuration file. If this option is not provided and the default configuration file does not exist then Salt falls back to use the environment variables `SALT_MASTER_CONFIG` and `SALT_MINION_CONFIG`.

**See also**:

*Configuration*

### 4.2.1 Using the Salt Command

The Salt command needs a few components to send information to the Salt minions. The target minions need to be defined, the function to call and any arguments the function requires.

#### Defining the Target Minions

The first argument passed to salt, defines the target minions, the target minions are accessed via their hostname. The default target type is a bash glob:

```
salt '*foo.com' sys.doc
```

Salt can also define the target minions with regular expressions:

```
salt -E '.*' cmd.run 'ls -l | grep foo'
```

Or to explicitly list hosts, salt can take a list:

```
salt -L foo.bar.baz,quo.qux cmd.run 'ps aux | grep foo'
```

#### More Powerful Targets

See *Targeting*.

#### Calling the Function

The function to call on the specified target is placed after the target specification.

New in version 0.9.8.

Functions may also accept arguments, space-delimited:

```
salt '*' cmd.exec_code python 'import sys; print sys.version'
```

Optional, keyword arguments are also supported:

```
salt '*' pip.install salt timeout=5 upgrade=True
```

They are always in the form of `kwarg=argument`.

Arguments are formatted as YAML:

```
salt '*' cmd.run 'echo "Hello: $FIRST_NAME"' env='{FIRST_NAME: "Joe"}'
```

Note: dictionaries must have curly braces around them (like the `env` keyword argument above). This was changed in 0.15.1: in the above example, the first argument used to be parsed as the dictionary `{'echo "Hello': '$FIRST_NAME"'}`. This was generally not the expected behavior.

If you want to test what parameters are actually passed to a module, use the `test.arg_repr` command:

```
salt '*' test.arg_repr 'echo "Hello: $FIRST_NAME"' env='{FIRST_NAME: "Joe"}'
```

#### Finding available minion functions

The Salt functions are self documenting, all of the function documentation can be retried from the minions via the `sys.doc()` function:

```
salt '*' sys.doc
```

#### Compound Command Execution

If a series of commands needs to be sent to a single target specification then the commands can be sent in a single publish. This can make gathering groups of information faster, and lowers the stress on the network for repeated commands.

Compound command execution works by sending a list of functions and arguments instead of sending a single function and argument. The functions are executed on the minion in the order they are defined on the command line, and then the data from all of the commands are returned in a dictionary. This means that the set of commands are called in a predictable way, and the returned data can be easily interpreted.

Executing compound commands if done by passing a comma delimited list of functions, followed by a comma delimited list of arguments:

```
salt '*' cmd.run,test.ping,test.echo 'cat /proc/cpuinfo',,foo
```

The trick to look out for here, is that if a function is being passed no arguments, then there needs to be a placeholder for the absent arguments. This is why in the above example, there are two commas right next to each other. `test.ping` takes no arguments, so we need to add another comma, otherwise Salt would attempt to pass ``foo'' to `test.ping`.

If you need to pass arguments that include commas, then make sure you add spaces around the commas that separate arguments. For example:

```
salt '*' cmd.run,test.ping,test.echo 'echo "1,2,3"' , , foo
```

You may change the arguments separator using the `--args-separator` option:

```
salt --args-separator=:: '*' some.fun,test.echo params with , comma :: foo
```

### 4.2.2 CLI Completion

Shell completion scripts for the Salt CLI are available in the `pkg` Salt source directory.

## 4.3 Writing Execution Modules

Salt execution modules are the functions called by the **salt** command.

### 4.3.1 Modules Are Easy to Write!

Writing Salt execution modules is straightforward.

A Salt execution module is a Python or Cython module placed in a directory called `_modules/` within the *file_roots* as specified by the master config file. By default this is `/srv/salt/_modules` on Linux systems.

Modules placed in `_modules/` will be synced to the minions when any of the following Salt functions are called:

- `state.apply`
- *saltutil.sync_modules*
- *saltutil.sync_all*

Note that a module's default name is its filename (i.e. `foo.py` becomes module `foo`), but that its name can be overridden by using a *__virtual__ function*.

If a Salt module has errors and cannot be imported, the Salt minion will continue to load without issue and the module with errors will simply be omitted.

If adding a Cython module the file must be named `<modulename>.pyx` so that the loader knows that the module needs to be imported as a Cython module. The compilation of the Cython module is automatic and happens when the minion starts, so only the `*.pyx` file is required.

### 4.3.2 Zip Archives as Modules

Python 2.3 and higher allows developers to directly import zip archives containing Python code. By setting *enable_zip_modules* to `True` in the minion config, the Salt loader will be able to import `.zip` files in this fashion. This allows Salt module developers to package dependencies with their modules for ease of deployment, isolation, etc.

For a user, Zip Archive modules behave just like other modules. When executing a function from a module provided as the file `my_module.zip`, a user would call a function within that module as `my_module.<function>`.

#### Creating a Zip Archive Module

A Zip Archive module is structured similarly to a simple Python package. The `.zip` file contains a single directory with the same name as the module. The module code traditionally in `<module_name>.py` goes in `<module_name>/__init__.py`. The dependency packages are subdirectories of `<module_name>/`.

Here is an example directory structure for the `lumberjack` module, which has two library dependencies (`sleep` and `work`) to be included.

```
modules $ ls -R lumberjack
__init__.py     sleep           work

lumberjack/sleep:
__init__.py

lumberjack/work:
__init__.py
```

The contents of `lumberjack/__init__.py` show how to import and use these included libraries.

```
# Libraries included in lumberjack.zip
from lumberjack import sleep, work


def is_ok(person):
    ''' Checks whether a person is really a lumberjack '''
    return sleep.all_night(person) and work.all_day(person)
```

Then, create the zip:

```
modules $ zip -r lumberjack lumberjack
  adding: lumberjack/ (stored 0%)
  adding: lumberjack/__init__.py (deflated 39%)
  adding: lumberjack/sleep/ (stored 0%)
  adding: lumberjack/sleep/__init__.py (deflated 7%)
  adding: lumberjack/work/ (stored 0%)
  adding: lumberjack/work/__init__.py (deflated 7%)
modules $ unzip -l lumberjack.zip
Archive:  lumberjack.zip
  Length     Date   Time    Name
 --------    ----   ----    ----
        0  08-21-15 20:08   lumberjack/
      348  08-21-15 20:08   lumberjack/__init__.py
        0  08-21-15 19:53   lumberjack/sleep/
       83  08-21-15 19:53   lumberjack/sleep/__init__.py
        0  08-21-15 19:53   lumberjack/work/
       81  08-21-15 19:21   lumberjack/work/__init__.py
 --------                   -------
      512                   6 files
```

Once placed in *file_roots*, Salt users can distribute and use `lumberjack.zip` like any other module.

```
$ sudo salt minion1 saltutil.sync_modules
minion1:
  - modules.lumberjack
$ sudo salt minion1 lumberjack.is_ok 'Michael Palin'
minion1:
  True
```

### 4.3.3 Cross Calling Execution Modules

All of the Salt execution modules are available to each other and modules can call functions available in other execution modules.

The variable `__salt__` is packed into the modules after they are loaded into the Salt minion.

The `__salt__` variable is a Python dictionary containing all of the Salt functions. Dictionary keys are strings representing the names of the modules and the values are the functions themselves.

Salt modules can be cross-called by accessing the value in the `__salt__` dict:

```
def foo(bar):
    return __salt__['cmd.run'](bar)
```

This code will call the *run* function in the *cmd* module and pass the argument `bar` to it.

### 4.3.4 Preloaded Execution Module Data

When interacting with execution modules often it is nice to be able to read information dynamically about the minion or to load in configuration parameters for a module.

Salt allows for different types of data to be loaded into the modules by the minion.

#### Grains Data

The values detected by the Salt Grains on the minion are available in a dict named `__grains__` and can be accessed from within callable objects in the Python modules.

To see the contents of the grains dictionary for a given system in your deployment run the `grains.items()` function:

```
salt 'hostname' grains.items --output=pprint
```

Any value in a grains dictionary can be accessed as any other Python dictionary. For example, the grain representing the minion ID is stored in the `id` key and from an execution module, the value would be stored in `__grains__['id']`.

#### Module Configuration

Since parameters for configuring a module may be desired, Salt allows for configuration information from the minion configuration file to be passed to execution modules.

Since the minion configuration file is a YAML document, arbitrary configuration data can be passed in the minion config that is read by the modules. It is therefore **strongly** recommended that the values passed in the configuration file match the module name. A value intended for the `test` execution module should be named `test.<value>`.

The test execution module contains usage of the module configuration and the default configuration file for the minion contains the information and format used to pass data to the modules. *salt.modules.test*, `conf/minion`.

### 4.3.5 Printout Configuration

Since execution module functions can return different data, and the way the data is printed can greatly change the presentation, Salt has a printout configuration.

When writing a module the `__outputter__` dictionary can be declared in the module. The `__outputter__` dictionary contains a mapping of function name to Salt Outputter.

```
__outputter__ = {
    'run': 'txt'
}
```

This will ensure that the text outputter is used.

### 4.3.6 Virtual Modules

Virtual modules let you override the name of a module in order to use the same name to refer to one of several similar modules. The specific module that is loaded for a virtual name is selected based on the current platform or environment.

For example, packages are managed across platforms using the `pkg` module. `pkg` is a virtual module name that is an alias for the specific package manager module that is loaded on a specific system (for example, *yumpkg* on RHEL/CentOS systems , and *aptpkg* on Ubuntu).

Virtual module names are set using the `__virtual__` function and the *virtual name*.

### 4.3.7 `__virtual__` Function

The `__virtual__` function returns either a string, `True`, `False`, or `False` with an *error string*. If a string is returned then the module is loaded using the name of the string as the virtual name. If `True` is returned the module is loaded using the current module name. If `False` is returned the module is not loaded. `False` lets the module perform system checks and prevent loading if dependencies are not met.

Since `__virtual__` is called before the module is loaded, `__salt__` will be unavailable as it will not have been packed into the module at this point in time.

---

**Note**: Modules which return a string from `__virtual__` that is already used by a module that ships with Salt will _override_ the stock module.

---

#### Returning Error Information from `__virtual__`

Optionally, Salt plugin modules, such as execution, state, returner, beacon, etc. modules may additionally return a string containing the reason that a module could not be loaded. For example, an execution module called `cheese` and a corresponding state module also called `cheese`, both depending on a utility called `enzymes` should have `__virtual__` functions that handle the case when the dependency is unavailable.

```
'''
Cheese execution (or returner/beacon/etc.) module
'''
try:
    import enzymes
    HAS_ENZYMES = True
except ImportError:
    HAS_ENZYMES = False


def __virtual__():
    '''
    only load cheese if enzymes are available
    '''
    if HAS_ENZYMES:
        return 'cheese'
    else:
        return False, 'The cheese execution module cannot be loaded: enzymes
↪unavailable.'
```

```
'''
Cheese state module
'''

def __virtual__():
    '''
    only load cheese if enzymes are available
    '''
```

```
    # predicate loading of the cheese state on the corresponding execution module
    if 'cheese.slice' in __salt__:
        return 'cheese'
    else:
        return False, 'The cheese state module cannot be loaded: enzymes unavailable.'
```

#### Examples

The package manager modules are among the best examples of using the `__virtual__` function. A table of all the virtual `pkg` modules can be found *here*.

#### Overriding Virtual Module Providers

Salt often uses OS grains (`os`, `osrelease`, `os_family`, etc.) to determine which module should be loaded as the virtual module for `pkg`, `service`, etc. Sometimes this OS detection is incomplete, with new distros popping up, existing distros changing init systems, etc. The virtual modules likely to be affected by this are in the list below (click each item for more information):

- *pkg*
- *service*
- user
- *shadow*
- group

If Salt is using the wrong module for one of these, first of all, please report it on the issue tracker, so that this issue can be resolved for a future release. To make it easier to troubleshoot, please also provide the *`grains.items`* output, taking care to redact any sensitive information.

Then, while waiting for the SaltStack development team to fix the issue, Salt can be made to use the correct module using the *`providers`* option in the minion config file:

```
providers:
  service: systemd
  pkg: aptpkg
```

The above example will force the minion to use the *`systemd`* module to provide service management, and the *`aptpkg`* module to provide package management.

### 4.3.8 `__virtualname__`

`__virtualname__` is a variable that is used by the documentation build system to know the virtual name of a module without calling the `__virtual__` function. Modules that return a string from the `__virtual__` function must also set the `__virtualname__` variable.

To avoid setting the virtual name string twice, you can implement `__virtual__` to return the value set for `__virtualname__` using a pattern similar to the following:

```
# Define the module's virtual name
__virtualname__ = 'pkg'


def __virtual__():
```

```
    '''
    Confine this module to Mac OS with Homebrew.
    '''

    if salt.utils.which('brew') and __grains__['os'] == 'MacOS':
        return __virtualname__
    return False
```

### 4.3.9 Documentation

Salt execution modules are documented. The `sys.doc()` function will return the documentation for all available modules:

```
salt '*' sys.doc
```

The `sys.doc` function simply prints out the docstrings found in the modules; when writing Salt execution modules, please follow the formatting conventions for docstrings as they appear in the other modules.

#### Adding Documentation to Salt Modules

It is strongly suggested that all Salt modules have documentation added.

To add documentation add a Python docstring to the function.

```
def spam(eggs):
    '''
    A function to make some spam with eggs!

    CLI Example::

        salt '*' test.spam eggs
    '''
    return eggs
```

Now when the sys.doc call is executed the docstring will be cleanly returned to the calling terminal.

Documentation added to execution modules in docstrings will automatically be added to the online web-based documentation.

#### Add Execution Module Metadata

When writing a Python docstring for an execution module, add information about the module using the following field lists:

```
:maintainer:    Thomas Hatch <thatch@saltstack.com, Seth House <shouse@saltstack.com>
:maturity:      new
:depends:       python-mysqldb
:platform:      all
```

The maintainer field is a comma-delimited list of developers who help maintain this module.

The maturity field indicates the level of quality and testing for this module. Standard labels will be determined.

The depends field is a comma-delimited list of modules that this module depends on.

The platform field is a comma-delimited list of platforms that this module is known to run on.

### 4.3.10 Log Output

You can call the logger from custom modules to write messages to the minion logs. The following code snippet demonstrates writing log messages:

```
import logging

log = logging.getLogger(__name__)

log.info('Here is Some Information')
log.warning('You Should Not Do That')
log.error('It Is Busted')
```

### 4.3.11 Aliasing Functions

Sometimes one wishes to use a function name that would shadow a python built-in. A common example would be `set()`. To support this, append an underscore to the function definition, `def set_():`, and use the `__func_alias__` feature to provide an alias to the function.

`__func_alias__` is a dictionary where each key is the name of a function in the module, and each value is a string representing the alias for that function. When calling an aliased function from a different execution module, state module, or from the cli, the alias name should be used.

```
__func_alias__ = {
    'set_': 'set',
    'list_': 'list',
}
```

### 4.3.12 Private Functions

In Salt, Python callable objects contained within an execution module are made available to the Salt minion for use. The only exception to this rule is a callable object with a name starting with an underscore `_`.

#### Objects Loaded Into the Salt Minion

```
def foo(bar):
    return bar

class baz:
    def __init__(self, quo):
        pass
```

#### Objects NOT Loaded into the Salt Minion

```
def _foobar(baz): # Preceded with an _
    return baz

cheese = {} # Not a callable Python object
```

### 4.3.13 Useful Decorators for Modules

#### Depends Decorator

When writing execution modules there are many times where some of the module will work on all hosts but some functions have an external dependency, such as a service that needs to be installed or a binary that needs to be present on the system.

Instead of trying to wrap much of the code in large try/except blocks, a decorator can be used.

If the dependencies passed to the decorator don't exist, then the salt minion will remove those functions from the module on that host.

If a ``fallback_function'' is defined, it will replace the function instead of removing it

```
import logging

from salt.utils.decorators import depends

log = logging.getLogger(__name__)

try:
    import dependency_that_sometimes_exists
except ImportError as e:
    log.trace('Failed to import dependency_that_sometimes_exists: {0}'.format(e))

@depends('dependency_that_sometimes_exists')
def foo():
    '''
    Function with a dependency on the "dependency_that_sometimes_exists" module,
    if the "dependency_that_sometimes_exists" is missing this function will not exist
    '''
    return True

def _fallback():
    '''
    Fallback function for the depends decorator to replace a function with
    '''
    return '"dependency_that_sometimes_exists" needs to be installed for this function
 ↪to exist'

@depends('dependency_that_sometimes_exists', fallback_function=_fallback)
def foo():
    '''
    Function with a dependency on the "dependency_that_sometimes_exists" module.
    If the "dependency_that_sometimes_exists" is missing this function will be
    replaced with "_fallback"
    '''
    return True
```

In addition to global dependencies the depends decorator also supports raw booleans.

```
from salt.utils.decorators import depends

HAS_DEP = False
try:
    import dependency_that_sometimes_exists
    HAS_DEP = True
except ImportError:
```

```
    pass

@depends(HAS_DEP)
def foo():
    return True
```

CHAPTER 5

# Configuration Management

Salt contains a robust and flexible configuration management framework, which is built on the remote execution core. This framework executes on the minions, allowing effortless, simultaneous configuration of tens of thousands of hosts, by rendering language specific state files. The following links provide resources to learn more about state and renderers.

**States** Express the state of a host using small, easy to read, easy to understand configuration files. *No programming required.*

***Full list of states*** Contains: list of install packages, create users, transfer files, start services, and so on.

***Pillar System*** Contains: description of Salt's Pillar system.

***Highstate data structure*** Contains: a dry vocabulary and technical representation of the configuration format that states represent.

***Writing states*** Contains: a guide on how to write Salt state modules, easily extending Salt to directly manage more software.

---

**Note:** Salt execution modules are different from state modules and cannot be called directly within state files. You must use the `module` state module to call execution modules within state runs.

---

**Renderers** Renderers use state configuration files written in a variety of languages, templating engines, or files. Salt's configuration management system is, under the hood, language agnostic.

***Full list of renderers*** Contains: a list of renderers. YAML is one choice, but many systems are available, from alternative templating engines to the PyDSL language for rendering sls formulas.

***Renderers*** Contains: more information about renderers. Salt states are only concerned with the ultimate highstate data structure, not how the data structure was created.

## 5.1 How Do I Use Salt States?

Simplicity, Simplicity, Simplicity

Many of the most powerful and useful engineering solutions are founded on simple principles. Salt States strive to do just that: K.I.S.S. (Keep It Stupidly Simple)

The core of the Salt State system is the SLS, or **S**a**L**t **S**tate file. The SLS is a representation of the state in which a system should be in, and is set up to contain this data in a simple format. This is often called configuration management.

**Note:** This is just the beginning of using states, make sure to read up on pillar *Pillar* next.

### 5.1.1 It is All Just Data

Before delving into the particulars, it will help to understand that the SLS file is just a data structure under the hood. While understanding that the SLS is just a data structure isn't critical for understanding and making use of Salt States, it should help bolster knowledge of where the real power is.

SLS files are therefore, in reality, just dictionaries, lists, strings, and numbers. By using this approach Salt can be much more flexible. As one writes more state files, it becomes clearer exactly what is being written. The result is a system that is easy to understand, yet grows with the needs of the admin or developer.

### 5.1.2 The Top File

The example SLS files in the below sections can be assigned to hosts using a file called **top.sls**. This file is described in-depth *here*.

### 5.1.3 Default Data - YAML

By default Salt represents the SLS data in what is one of the simplest serialization formats available - YAML.

A typical SLS file will often look like this in YAML:

**Note:** These demos use some generic service and package names, different distributions often use different names for packages and services. For instance *apache* should be replaced with *httpd* on a Red Hat system. Salt uses the name of the init script, systemd name, upstart name etc. based on what the underlying service management for the platform. To get a list of the available service names on a platform execute the service.get_all salt function.

Information on how to make states work with multiple distributions is later in the tutorial.

```
apache:
  pkg.installed: []
  service.running:
    - require:
      - pkg: apache
```

This SLS data will ensure that the package named apache is installed, and that the apache service is running. The components can be explained in a simple way.

The first line is the ID for a set of data, and it is called the ID Declaration. This ID sets the name of the thing that needs to be manipulated.

The second and third lines contain the state module function to be run, in the format `<state_module>.<function>`. The `pkg.installed` state module function ensures that a software package is installed via the system's native package manager. The `service.running` state module function ensures that a given system daemon is running.

Finally, on line five, is the word `require`. This is called a Requisite Statement, and it makes sure that the Apache service is only started after a successful installation of the apache package.

### 5.1.4 Adding Configs and Users

When setting up a service like an Apache web server, many more components may need to be added. The Apache configuration file will most likely be managed, and a user and group may need to be set up.

```
apache:
  pkg.installed: []
  service.running:
    - watch:
      - pkg: apache
      - file: /etc/httpd/conf/httpd.conf
      - user: apache
  user.present:
    - uid: 87
    - gid: 87
    - home: /var/www/html
    - shell: /bin/nologin
    - require:
      - group: apache
  group.present:
    - gid: 87
    - require:
      - pkg: apache

/etc/httpd/conf/httpd.conf:
  file.managed:
    - source: salt://apache/httpd.conf
    - user: root
    - group: root
    - mode: 644
```

This SLS data greatly extends the first example, and includes a config file, a user, a group and new requisite statement: `watch`.

Adding more states is easy, since the new user and group states are under the Apache ID, the user and group will be the Apache user and group. The `require` statements will make sure that the user will only be made after the group, and that the group will be made only after the Apache package is installed.

Next, the `require` statement under service was changed to watch, and is now watching 3 states instead of just one. The watch statement does the same thing as require, making sure that the other states run before running the state with a watch, but it adds an extra component. The `watch` statement will run the state's watcher function for any changes to the watched states. So if the package was updated, the config file changed, or the user uid modified, then the service state's watcher will be run. The service state's watcher just restarts the service, so in this case, a change in the config file will also trigger a restart of the respective service.

### 5.1.5 Moving Beyond a Single SLS

When setting up Salt States in a scalable manner, more than one SLS will need to be used. The above examples were in a single SLS file, but two or more SLS files can be combined to build out a State Tree. The above example also references a file with a strange source - `salt://apache/httpd.conf`. That file will need to be available as well.

The SLS files are laid out in a directory structure on the Salt master; an SLS is just a file and files to download are just files.

The Apache example would be laid out in the root of the Salt file server like this:

```
apache/init.sls
apache/httpd.conf
```

So the httpd.conf is just a file in the apache directory, and is referenced directly.

---

**Do not use dots in SLS file names or their directories**

The initial implementation of *top.sls* and *Include declaration* followed the python import model where a slash is represented as a period. This means that a SLS file with a period in the name ( besides the suffix period) can not be referenced. For example, webserver_1.0.sls is not referenceable because webserver_1.0 would refer to the directory/file webserver_1/0.sls

The same applies for any subdirectories, this is especially `tricky' when git repos are created. Another command that typically can't render it's output is `state.show_sls` of a file in a path that contains a dot.

---

But when using more than one single SLS file, more components can be added to the toolkit. Consider this SSH example:

ssh/init.sls:

```
openssh-client:
  pkg.installed

/etc/ssh/ssh_config:
  file.managed:
    - user: root
    - group: root
    - mode: 644
    - source: salt://ssh/ssh_config
    - require:
      - pkg: openssh-client
```

ssh/server.sls:

```
include:
  - ssh

openssh-server:
  pkg.installed

sshd:
  service.running:
    - require:
      - pkg: openssh-client
      - pkg: openssh-server
      - file: /etc/ssh/banner
      - file: /etc/ssh/sshd_config

/etc/ssh/sshd_config:
  file.managed:
    - user: root
    - group: root
    - mode: 644
    - source: salt://ssh/sshd_config
    - require:
      - pkg: openssh-server
```

```
/etc/ssh/banner:
  file:
    - managed
    - user: root
    - group: root
    - mode: 644
    - source: salt://ssh/banner
    - require:
      - pkg: openssh-server
```

**Note**: Notice that we use two similar ways of denoting that a file is managed by Salt. In the */etc/ssh/sshd_config* state section above, we use the *file.managed* state declaration whereas with the */etc/ssh/banner* state section, we use the *file* state declaration and add a *managed* attribute to that state declaration. Both ways produce an identical result; the first way -- using *file.managed* -- is merely a shortcut.

Now our State Tree looks like this:

```
apache/init.sls
apache/httpd.conf
ssh/init.sls
ssh/server.sls
ssh/banner
ssh/ssh_config
ssh/sshd_config
```

This example now introduces the `include` statement. The include statement includes another SLS file so that components found in it can be required, watched or as will soon be demonstrated - extended.

The include statement allows for states to be cross linked. When an SLS has an include statement it is literally extended to include the contents of the included SLS files.

Note that some of the SLS files are called init.sls, while others are not. More info on what this means can be found in the *States Tutorial*.

### 5.1.6 Extending Included SLS Data

Sometimes SLS data needs to be extended. Perhaps the apache service needs to watch additional resources, or under certain circumstances a different file needs to be placed.

In these examples, the first will add a custom banner to ssh and the second will add more watchers to apache to include mod_python.

`ssh/custom-server.sls:`

```
include:
  - ssh.server

extend:
  /etc/ssh/banner:
    file:
      - source: salt://ssh/custom-banner
```

`python/mod_python.sls:`

```
include:
  - apache

extend:
  apache:
    service:
      - watch:
        - pkg: mod_python

mod_python:
  pkg.installed
```

The `custom-server.sls` file uses the extend statement to overwrite where the banner is being downloaded from, and therefore changing what file is being used to configure the banner.

In the new mod_python SLS the mod_python package is added, but more importantly the apache service was extended to also watch the mod_python package.

---

**Using extend with require or watch**

The `extend` statement works differently for `require` or `watch`. It appends to, rather than replacing the requisite component.

---

### 5.1.7 Understanding the Render System

Since SLS data is simply that (data), it does not need to be represented with YAML. Salt defaults to YAML because it is very straightforward and easy to learn and use. But the SLS files can be rendered from almost any imaginable medium, so long as a renderer module is provided.

The default rendering system is the `yaml_jinja` renderer. The `yaml_jinja` renderer will first pass the template through the Jinja2 templating system, and then through the YAML parser. The benefit here is that full programming constructs are available when creating SLS files.

Other renderers available are `yaml_mako` and `yaml_wempy` which each use the Mako or Wempy templating system respectively rather than the jinja templating system, and more notably, the pure Python or `py`, `pydsl` & `pyobjects` renderers. The `py` renderer allows for SLS files to be written in pure Python, allowing for the utmost level of flexibility and power when preparing SLS data; while the *`pydsl`* renderer provides a flexible, domain-specific language for authoring SLS data in Python; and the *`pyobjects`* renderer gives you a ``Pythonic'' interface to building state data.

---

**Note**: The templating engines described above aren't just available in SLS files. They can also be used in *`file.managed`* states, making file management much more dynamic and flexible. Some examples for using templates in managed files can be found in the documentation for the file state, as well as the *MooseFS example* below.

---

#### Getting to Know the Default - yaml_jinja

The default renderer - `yaml_jinja`, allows for use of the jinja templating system. A guide to the Jinja templating system can be found here: http://jinja.pocoo.org/docs

When working with renderers a few very useful bits of data are passed in. In the case of templating engine based renderers, three critical components are available, `salt`, `grains`, and `pillar`. The `salt` object allows for any

Salt function to be called from within the template, and `grains` allows for the Grains to be accessed from within the template. A few examples:

`apache/init.sls:`

```
apache:
  pkg.installed:
    {% if grains['os'] == 'RedHat'%}
    - name: httpd
    {% endif %}
  service.running:
    {% if grains['os'] == 'RedHat'%}
    - name: httpd
    {% endif %}
    - watch:
      - pkg: apache
      - file: /etc/httpd/conf/httpd.conf
      - user: apache
  user.present:
    - uid: 87
    - gid: 87
    - home: /var/www/html
    - shell: /bin/nologin
    - require:
      - group: apache
  group.present:
    - gid: 87
    - require:
      - pkg: apache

/etc/httpd/conf/httpd.conf:
  file.managed:
    - source: salt://apache/httpd.conf
    - user: root
    - group: root
    - mode: 644
```

This example is simple. If the `os` grain states that the operating system is Red Hat, then the name of the Apache package and service needs to be httpd. A more aggressive way to use Jinja can be found here, in a module to set up a MooseFS distributed filesystem chunkserver:

`moosefs/chunk.sls:`

```
include:
  - moosefs

{% for mnt in salt['cmd.run']('ls /dev/data/moose*').split() %}
/mnt/moose{{ mnt[-1] }}:
  mount.mounted:
    - device: {{ mnt }}
    - fstype: xfs
    - mkmnt: True
  file.directory:
    - user: mfs
    - group: mfs
    - require:
      - user: mfs
      - group: mfs
{% endfor %}
```

```
/etc/mfshdd.cfg:
  file.managed:
    - source: salt://moosefs/mfshdd.cfg
    - user: root
    - group: root
    - mode: 644
    - template: jinja
    - require:
      - pkg: mfs-chunkserver

/etc/mfschunkserver.cfg:
  file.managed:
    - source: salt://moosefs/mfschunkserver.cfg
    - user: root
    - group: root
    - mode: 644
    - template: jinja
    - require:
      - pkg: mfs-chunkserver

mfs-chunkserver:
  pkg.installed: []
mfschunkserver:
  service.running:
    - require:
{% for mnt in salt['cmd.run']('ls /dev/data/moose*') %}
      - mount: /mnt/moose{{ mnt[-1] }}
      - file: /mnt/moose{{ mnt[-1] }}
{% endfor %}
      - file: /etc/mfschunkserver.cfg
      - file: /etc/mfshdd.cfg
      - file: /var/lib/mfs
```

This example shows much more of the available power of Jinja. Multiple for loops are used to dynamically detect available hard drives and set them up to be mounted, and the `salt` object is used multiple times to call shell commands to gather data.

### Introducing the Python, PyDSL, and the Pyobjects Renderers

Sometimes the chosen default renderer might not have enough logical power to accomplish the needed task. When this happens, the Python renderer can be used. Normally a YAML renderer should be used for the majority of SLS files, but an SLS file set to use another renderer can be easily added to the tree.

This example shows a very basic Python SLS file:

`python/django.sls:`

```
#!py

def run():
    '''
    Install the django package
    '''
    return {'include': ['python'],
            'django': {'pkg': ['installed']}}
```

This is a very simple example; the first line has an SLS shebang that tells Salt to not use the default renderer, but to use the `py` renderer. Then the run function is defined, the return value from the run function must be a Salt friendly data structure, or better known as a Salt *HighState data structure*.

Alternatively, using the *`pydsl`* renderer, the above example can be written more succinctly as:

```
#!pydsl

include('python', delayed=True)
state('django').pkg.installed()
```

The *`pyobjects`* renderer provides an ``Pythonic'' object based approach for building the state data. The above example could be written as:

```
#!pyobjects

include('python')
Pkg.installed("django")
```

These Python examples would look like this if they were written in YAML:

```
include:
  - python

django:
  pkg.installed
```

This example clearly illustrates that; one, using the YAML renderer by default is a wise decision and two, unbridled power can be obtained where needed by using a pure Python SLS.

#### Running and Debugging Salt States

Once the rules in an SLS are ready, they should be tested to ensure they work properly. To invoke these rules, simply execute `salt '*' state.apply` on the command line. If you get back only hostnames with a `:` after, but no return, chances are there is a problem with one or more of the sls files. On the minion, use the `salt-call` command to examine the output for errors:

```
salt-call state.apply -l debug
```

This should help troubleshoot the issue. The minion can also be started in the foreground in debug mode by running `salt-minion -l debug`.

### 5.1.8 Next Reading

With an understanding of states, the next recommendation is to become familiar with Salt's pillar interface:

*Pillar Walkthrough*

## 5.2 States tutorial, part 1 - Basic Usage

The purpose of this tutorial is to demonstrate how quickly you can configure a system to be managed by Salt States. For detailed information about the state system please refer to the full *states reference*.

This tutorial will walk you through using Salt to configure a minion to run the Apache HTTP server and to ensure the server is running.

**Before continuing** make sure you have a working Salt installation by following the *Installation* and the *configuration* instructions.

**Stuck?**

There are many ways to get help from the Salt community including our mailing list and our IRC channel #salt.

### 5.2.1 Setting up the Salt State Tree

States are stored in text files on the master and transferred to the minions on demand via the master's File Server. The collection of state files make up the `State Tree`.

To start using a central state system in Salt, the Salt File Server must first be set up. Edit the master config file (*`file_roots`*) and uncomment the following lines:

```
file_roots:
  base:
    - /srv/salt
```

**Note**: If you are deploying on FreeBSD via ports, the `file_roots` path defaults to `/usr/local/etc/salt/states`.

Restart the Salt master in order to pick up this change:

```
pkill salt-master
salt-master -d
```

### 5.2.2 Preparing the Top File

On the master, in the directory uncommented in the previous step, (`/srv/salt` by default), create a new file called *`top.sls`* and add the following:

```
base:
  '*':
    - webserver
```

The *top file* is separated into environments (discussed later). The default environment is `base`. Under the `base` environment a collection of minion matches is defined; for now simply specify all hosts (`*`).

**Targeting minions**

The expressions can use any of the targeting mechanisms used by Salt — minions can be matched by glob, PCRE regular expression, or by *grains*. For example:

```
base:
  'G@os:Fedora':
    - match: grain
    - webserver
```

### 5.2.3 Create an `sls` file

In the same directory as the *top file*, create a file named `webserver.sls`, containing the following:

```
apache:                 # ID declaration
  pkg:                  # state declaration
    - installed         # function declaration
```

The first line, called the *ID declaration*, is an arbitrary identifier. In this case it defines the name of the package to be installed.

---

**Note:** The package name for the Apache httpd web server may differ depending on OS or distro — for example, on Fedora it is `httpd` but on Debian/Ubuntu it is `apache2`.

---

The second line, called the *State declaration*, defines which of the Salt States we are using. In this example, we are using the *`pkg state`* to ensure that a given package is installed.

The third line, called the *Function declaration*, defines which function in the *`pkg state`* module to call.

---

**Renderers**

States `sls` files can be written in many formats. Salt requires only a simple data structure and is not concerned with how that data structure is built. Templating languages and DSLs are a dime-a-dozen and everyone has a favorite.

Building the expected data structure is the job of Salt *Renderers* and they are dead-simple to write.

In this tutorial we will be using YAML in Jinja2 templates, which is the default format. The default can be changed by editing *`renderer`* in the master configuration file.

---

### 5.2.4 Install the package

Next, let's run the state we created. Open a terminal on the master and run:

```
salt '*' state.apply
```

Our master is instructing all targeted minions to run *`state.apply`*. When this function is executed without any SLS targets, a minion will download the *top file* and attempt to match the expressions within it. When the minion does match an expression the modules listed for it will be downloaded, compiled, and executed.

---

**Note:** This action is referred to as a ``highstate'', and can be run using the *`state.highstate`* function. However, to make the usage easier to understand (``highstate'' is not necessarily an intuitive name), a `state.apply` function was added in version 2015.5.0, which when invoked without any SLS names will trigger a highstate. *`state.highstate`* still exists and can be used, but the documentation (as can be seen above) has been updated to reference `state.apply`, so keep the following in mind as you read the documentation:

- `state.apply` invoked without any SLS names will run *`state.highstate`*
- `state.apply` invoked with SLS names will run *`state.sls`*

---

Once completed, the minion will report back with a summary of all actions taken and all changes made.

**Warning**: If you have created *custom grain modules*, they will not be available in the top file until after the first *highstate*. To make custom grains available on a minion's first *highstate*, it is recommended to use *this example* to ensure that the custom grains are synced when the minion starts.

---

**SLS File Namespace**

Note that in the *example* above, the SLS file `webserver.sls` was referred to simply as `webserver`. The namespace for SLS files when referenced in `top.sls` or an *Include declaration* follows a few simple rules:

1. The `.sls` is discarded (i.e. `webserver.sls` becomes `webserver`).
2. **Subdirectories can be used for better organization**.
   (a) Each subdirectory is represented with a dot (following the Python import model) in Salt states and on the command line . `webserver/dev.sls` on the filesystem is referred to as `webserver.dev` in Salt
   (b) Because slashes are represented as dots, SLS files can not contain dots in the name (other than the dot for the SLS suffix). The SLS file `webserver_1.0.sls` can not be matched, and `webserver_1.0` would match the directory/file `webserver_1/0.sls`
3. A file called `init.sls` in a subdirectory is referred to by the path of the directory. So, `webserver/init.sls` is referred to as `webserver`.
4. If both `webserver.sls` and `webserver/init.sls` happen to exist, `webserver/init.sls` will be ignored and `webserver.sls` will be the file referred to as `webserver`.

---

**Troubleshooting Salt**

If the expected output isn't seen, the following tips can help to narrow down the problem.

**Turn up logging** Salt can be quite chatty when you change the logging setting to `debug`:

```
salt-minion -l debug
```

**Run the minion in the foreground** By not starting the minion in daemon mode (*-d*) one can view any output from the minion as it works:

```
salt-minion
```

Increase the default timeout value when running **`salt`**. For example, to change the default timeout to 60 seconds:

```
salt -t 60
```

For best results, combine all three:

```
salt-minion -l debug        # On the minion
salt '*' state.apply -t 60  # On the master
```

---

### 5.2.5 Next steps

This tutorial focused on getting a simple Salt States configuration working. *Part 2* will build on this example to cover more advanced `sls` syntax and will explore more of the states that ship with Salt.

## 5.3 States tutorial, part 2 - More Complex States, Requisites

**Note**: This tutorial builds on topics covered in *part 1*. It is recommended that you begin there.

In the *last part* of the Salt States tutorial we covered the basics of installing a package. We will now modify our `webserver.sls` file to have requirements, and use even more Salt States.

### 5.3.1 Call multiple States

You can specify multiple *State declaration* under an *ID declaration*. For example, a quick modification to our `webserver.sls` to also start Apache if it is not running:

```
apache:
  pkg.installed: []
  service.running:
    - require:
      - pkg: apache
```

Try stopping Apache before running `state.apply` once again and observe the output.

**Note**: For those running RedhatOS derivatives (Centos, AWS), you will want to specify the service name to be httpd. More on state service here, *`service state`*. With the example above, just add ``- name: httpd" above the require line and with the same spacing.

### 5.3.2 Require other states

We now have a working installation of Apache so let's add an HTML file to customize our website. It isn't exactly useful to have a website without a webserver so we don't want Salt to install our HTML file until Apache is installed and running. Include the following at the bottom of your `webserver/init.sls` file:

```
1  apache:
2    pkg.installed: []
3    service.running:
4      - require:
5        - pkg: apache
6
7  /var/www/index.html:                       # ID declaration
8    file:                                    # state declaration
9      - managed                              # function
10     - source: salt://webserver/index.html  # function arg
11     - require:                             # requisite declaration
12       - pkg: apache                        # requisite reference
```

**line 7** is the *ID declaration*. In this example it is the location we want to install our custom HTML file. (**Note**: the default location that Apache serves may differ from the above on your OS or distro. `/srv/www` could also be a likely place to look.)

**Line 8** the *State declaration*. This example uses the Salt *`file state`*.

**Line 9** is the *Function declaration*. The *`managed function`* will download a file from the master and install it in the location specified.

**Line 10** is a *Function arg declaration* which, in this example, passes the `source` argument to the *managed function*.

**Line 11** is a *Requisite declaration*.

**Line 12** is a *Requisite reference* which refers to a state and an ID. In this example, it is referring to the `ID declaration` from our example in *part 1*. This declaration tells Salt not to install the HTML file until Apache is installed.

Next, create the `index.html` file and save it in the `webserver` directory:

```
<!DOCTYPE html>
<html>
    <head><title>Salt rocks</title></head>
    <body>
        <h1>This file brought to you by Salt</h1>
    </body>
</html>
```

Last, call `state.apply` again and the minion will fetch and execute the *highstate* as well as our HTML file from the master using Salt's File Server:

```
salt '*' state.apply
```

Verify that Apache is now serving your custom HTML.

---

**`require` vs. `watch`**

There are two *Requisite declaration*, "require", and "watch". Not every state supports "watch". The *service state* does support "watch" and will restart a service based on the watch condition.

For example, if you use Salt to install an Apache virtual host configuration file and want to restart Apache whenever that file is changed you could modify our Apache example from earlier as follows:

```
/etc/httpd/extra/httpd-vhosts.conf:
  file.managed:
    - source: salt://webserver/httpd-vhosts.conf

apache:
  pkg.installed: []
  service.running:
    - watch:
      - file: /etc/httpd/extra/httpd-vhosts.conf
    - require:
      - pkg: apache
```

If the pkg and service names differ on your OS or distro of choice you can specify each one separately using a *Name declaration* which explained in *Part 3*.

---

### 5.3.3 Next steps

In *part 3* we will discuss how to use includes, extends, and templating to make a more complete State Tree configuration.

## 5.4 States tutorial, part 3 - Templating, Includes, Extends

**Note:** This tutorial builds on topics covered in *part 1* and *part 2*. It is recommended that you begin there.

This part of the tutorial will cover more advanced templating and configuration techniques for `sls` files.

### 5.4.1 Templating SLS modules

SLS modules may require programming logic or inline execution. This is accomplished with module templating. The default module templating system used is Jinja2 and may be configured by changing the *`renderer`* value in the master config.

All states are passed through a templating system when they are initially read. To make use of the templating system, simply add some templating markup. An example of an sls module with templating markup may look like this:

```
{% for usr in ['moe','larry','curly'] %}
{{ usr }}:
  user.present
{% endfor %}
```

This templated sls file once generated will look like this:

```
moe:
  user.present
larry:
  user.present
curly:
  user.present
```

Here's a more complex example:

```
# Comments in yaml start with a hash symbol.
# Since jinja rendering occurs before yaml parsing, if you want to include jinja
# in the comments you may need to escape them using 'jinja' comments to prevent
# jinja from trying to render something which is not well-defined jinja.
# e.g.
# {# iterate over the Three Stooges using a {% for %}..{% endfor %} loop
# with the iterator variable {{ usr }} becoming the state ID. #}
{% for usr in 'moe','larry','curly' %}
{{ usr }}:
  group:
    - present
  user:
    - present
    - gid_from_name: True
    - require:
      - group: {{ usr }}
{% endfor %}
```

### 5.4.2 Using Grains in SLS modules

Often times a state will need to behave differently on different systems. *Salt grains* objects are made available in the template context. The *grains* can be used from within sls modules:

```
apache:
  pkg.installed:
    {% if grains['os'] == 'RedHat' %}
    - name: httpd
    {% elif grains['os'] == 'Ubuntu' %}
    - name: apache2
    {% endif %}
```

### 5.4.3 Using Environment Variables in SLS modules

You can use `salt['environ.get']('VARNAME')` to use an environment variable in a Salt state.

```
MYENVVAR="world" salt-call state.template test.sls
```

```
Create a file with contents from an environment variable:
  file.managed:
    - name: /tmp/hello
    - contents: {{ salt['environ.get']('MYENVVAR') }}
```

Error checking:

```
{% set myenvvar = salt['environ.get']('MYENVVAR') %}
{% if myenvvar %}

Create a file with contents from an environment variable:
  file.managed:
    - name: /tmp/hello
    - contents: {{ salt['environ.get']('MYENVVAR') }}

{% else %}

Fail - no environment passed in:
  test.fail_without_changes

{% endif %}
```

### 5.4.4 Calling Salt modules from templates

All of the Salt modules loaded by the minion are available within the templating system. This allows data to be gathered in real time on the target system. It also allows for shell commands to be run easily from within the sls modules.

The Salt module functions are also made available in the template context as `salt:`

The following example illustrates calling the `group_to_gid` function in the `file` execution module with a single positional argument called `some_group_that_exists`.

```
moe:
  user.present:
    - gid: {{ salt['file.group_to_gid']('some_group_that_exists') }}
```

One way to think about this might be that the `gid` key is being assigned a value equivelent to the following python pseudo-code:

```
import salt.modules.file
file.group_to_gid('some_group_that_exists')
```

Note that for the above example to work, `some_group_that_exists` must exist before the state file is processed by the templating engine.

Below is an example that uses the `network.hw_addr` function to retrieve the MAC address for eth0:

```
salt['network.hw_addr']('eth0')
```

To examine the possible arguments to each execution module function, one can examine the *module reference documentation </ref/modules/all>*:

### 5.4.5 Advanced SLS module syntax

Lastly, we will cover some incredibly useful techniques for more complex State trees.

#### Include declaration

A previous example showed how to spread a Salt tree across several files. Similarly, *Requisites and Other Global State Arguments* span multiple files by using an *Include declaration*. For example:

`python/python-libs.sls:`

```
python-dateutil:
  pkg.installed
```

`python/django.sls:`

```
include:
  - python.python-libs

django:
  pkg.installed:
    - require:
      - pkg: python-dateutil
```

#### Extend declaration

You can modify previous declarations by using an *Extend declaration*. For example the following modifies the Apache tree to also restart Apache when the vhosts file is changed:

`apache/apache.sls:`

```
apache:
  pkg.installed
```

`apache/mywebsite.sls:`

```
include:
  - apache.apache

extend:
  apache:
    service:
```

```
      - running
      - watch:
        - file: /etc/httpd/extra/httpd-vhosts.conf

/etc/httpd/extra/httpd-vhosts.conf:
  file.managed:
    - source: salt://apache/httpd-vhosts.conf
```

**Using extend with require or watch**

The `extend` statement works differently for `require` or `watch`. It appends to, rather than replacing the requisite component.

#### Name declaration

You can override the *ID declaration* by using a *Name declaration*. For example, the previous example is a bit more maintainable if rewritten as follows:

`apache/mywebsite.sls:`

```
include:
  - apache.apache

extend:
  apache:
    service:
      - running
      - watch:
        - file: mywebsite

mywebsite:
  file.managed:
    - name: /etc/httpd/extra/httpd-vhosts.conf
    - source: salt://apache/httpd-vhosts.conf
```

#### Names declaration

Even more powerful is using a *Names declaration* to override the *ID declaration* for multiple states at once. This often can remove the need for looping in a template. For example, the first example in this tutorial can be rewritten without the loop:

```
stooges:
  user.present:
    - names:
      - moe
      - larry
      - curly
```

### 5.4.6 Next steps

In *part 4* we will discuss how to use salt's `file_roots` to set up a workflow in which states can be ``promoted'' from dev, to QA, to production.

## 5.5 States tutorial, part 4

**Note:** This tutorial builds on topics covered in *part 1*, *part 2*, and *part 3*. It is recommended that you begin there.

This part of the tutorial will show how to use salt's *file_roots* to set up a workflow in which states can be ``promoted'' from dev, to QA, to production.

### 5.5.1 Salt fileserver path inheritance

Salt's fileserver allows for more than one root directory per environment, like in the below example, which uses both a local directory and a secondary location shared to the salt master via NFS:

```
# In the master config file (/etc/salt/master)
file_roots:
  base:
    - /srv/salt
    - /mnt/salt-nfs/base
```

Salt's fileserver collapses the list of root directories into a single virtual environment containing all files from each root. If the same file exists at the same relative path in more than one root, then the top-most match ``wins''. For example, if `/srv/salt/foo.txt` and `/mnt/salt-nfs/base/foo.txt` both exist, then `salt://foo.txt` will point to `/srv/salt/foo.txt`.

**Note:** When using multiple fileserver backends, the order in which they are listed in the *fileserver_backend* parameter also matters. If both `roots` and `git` backends contain a file with the same relative path, and `roots` appears before `git` in the *fileserver_backend* list, then the file in `roots` will ``win'', and the file in gitfs will be ignored.

A more thorough explanation of how Salt's modular fileserver works can be found *here*. We recommend reading this.

### 5.5.2 Environment configuration

Configure a multiple-environment setup like so:

```
file_roots:
  base:
    - /srv/salt/prod
  qa:
    - /srv/salt/qa
    - /srv/salt/prod
  dev:
    - /srv/salt/dev
    - /srv/salt/qa
    - /srv/salt/prod
```

Given the path inheritance described above, files within `/srv/salt/prod` would be available in all environments. Files within `/srv/salt/qa` would be available in both `qa`, and `dev`. Finally, the files within `/srv/salt/dev` would only be available within the `dev` environment.

Based on the order in which the roots are defined, new files/states can be placed within `/srv/salt/dev`, and pushed out to the dev hosts for testing.

Those files/states can then be moved to the same relative path within `/srv/salt/qa`, and they are now available only in the `dev` and `qa` environments, allowing them to be pushed to QA hosts and tested.

Finally, if moved to the same relative path within `/srv/salt/prod`, the files are now available in all three environments.

### 5.5.3 Requesting files from specific fileserver environments

See *here* for documentation on how to request files from specific environments.

### 5.5.4 Practical Example

As an example, consider a simple website, installed to `/var/www/foobarcom`. Below is a top.sls that can be used to deploy the website:

`/srv/salt/prod/top.sls:`

```
base:
  'web*prod*':
    - webserver.foobarcom
qa:
  'web*qa*':
    - webserver.foobarcom
dev:
  'web*dev*':
    - webserver.foobarcom
```

Using pillar, roles can be assigned to the hosts:

`/srv/pillar/top.sls:`

```
base:
  'web*prod*':
    - webserver.prod
  'web*qa*':
    - webserver.qa
  'web*dev*':
    - webserver.dev
```

`/srv/pillar/webserver/prod.sls:`

```
webserver_role: prod
```

`/srv/pillar/webserver/qa.sls:`

```
webserver_role: qa
```

`/srv/pillar/webserver/dev.sls:`

```
webserver_role: dev
```

And finally, the SLS to deploy the website:

`/srv/salt/prod/webserver/foobarcom.sls:`

```
{% if pillar.get('webserver_role', '') %}
/var/www/foobarcom:
  file.recurse:
    - source: salt://webserver/src/foobarcom
    - env: {{ pillar['webserver_role'] }}
    - user: www
    - group: www
    - dir_mode: 755
    - file_mode: 644
{% endif %}
```

Given the above SLS, the source for the website should initially be placed in `/srv/salt/dev/webserver/src/foobarcom`.

First, let's deploy to dev. Given the configuration in the top file, this can be done using `state.apply`:

```
salt --pillar 'webserver_role:dev' state.apply
```

However, in the event that it is not desirable to apply all states configured in the top file (which could be likely in more complex setups), it is possible to apply just the states for the `foobarcom` website, by invoking `state.apply` with the desired SLS target as an argument:

```
salt --pillar 'webserver_role:dev' state.apply webserver.foobarcom
```

Once the site has been tested in dev, then the files can be moved from `/srv/salt/dev/webserver/src/foobarcom` to `/srv/salt/qa/webserver/src/foobarcom`, and deployed using the following:

```
salt --pillar 'webserver_role:qa' state.apply webserver.foobarcom
```

Finally, once the site has been tested in qa, then the files can be moved from `/srv/salt/qa/webserver/src/foobarcom` to `/srv/salt/prod/webserver/src/foobarcom`, and deployed using the following:

```
salt --pillar 'webserver_role:prod' state.apply webserver.foobarcom
```

Thanks to Salt's fileserver inheritance, even though the files have been moved to within `/srv/salt/prod`, they are still available from the same `salt://` URI in both the qa and dev environments.

### 5.5.5 Continue Learning

The best way to continue learning about Salt States is to read through the *reference documentation* and to look through examples of existing state trees. Many pre-configured state trees can be found on GitHub in the saltstack-formulas collection of repositories.

If you have any questions, suggestions, or just want to chat with other people who are using Salt, we have a very active community and we'd love to hear from you.

In addition, by continuing to the *Orchestrate Runner* docs, you can learn about the powerful orchestration of which Salt is capable.

## 5.6 State System Reference

Salt offers an interface to manage the configuration or ``state'' of the Salt minions. This interface is a fully capable mechanism used to enforce the state of systems from a central manager.

### 5.6.1 Mod Aggregate State Runtime Modifications

New in version 2014.7.0.

The mod_aggregate system was added in the 2014.7.0 release of Salt and allows for runtime modification of the executing state data. Simply put, it allows for the data used by Salt's state system to be changed on the fly at runtime, kind of like a configuration management JIT compiler or a runtime import system. All in all, it makes Salt much more dynamic.

#### How it Works

The best example is the `pkg` state. One of the major requests in Salt has long been adding the ability to install all packages defined at the same time. The mod_aggregate system makes this a reality. While executing Salt's state system, when a `pkg` state is reached the `mod_aggregate` function in the state module is called. For `pkg` this function scans all of the other states that are slated to run, and picks up the references to `name` and `pkgs`, then adds them to `pkgs` in the first state. The result is a single call to yum, apt-get, pacman, etc as part of the first package install.

#### How to Use it

**Note:** Since this option changes the basic behavior of the state runtime, after it is enabled states should be executed using *test=True* to ensure that the desired behavior is preserved.

#### In config files

The first way to enable aggregation is with a configuration option in either the master or minion configuration files. Salt will invoke `mod_aggregate` the first time it encounters a state module that has aggregate support.

If this option is set in the master config it will apply to all state runs on all minions, if set in the minion config it will only apply to said minion.

Enable for all states:

```
state_aggregate: True
```

Enable for only specific state modules:

```
state_aggregate:
  - pkg
```

#### In states

The second way to enable aggregation is with the state-level `aggregate` keyword. In this configuration, Salt will invoke the `mod_aggregate` function the first time it encounters this keyword. Any additional occurrences of the keyword will be ignored as the aggregation has already taken place.

The following example will trigger `mod_aggregate` when the `lamp_stack` state is processed resulting in a single call to the underlying package manager.

```
lamp_stack:
  pkg.installed:
    - pkgs:
      - php
      - mysql-client
    - aggregate: True

memcached:
  pkg.installed:
    - name: memcached
```

### Adding mod_aggregate to a State Module

Adding a mod_aggregate routine to an existing state module only requires adding an additional function to the state module called mod_aggregate.

The mod_aggregate function just needs to accept three parameters and return the low data to use. Since mod_aggregate is working on the state runtime level it does need to manipulate *low data*.

The three parameters are *low*, *chunks*, and *running*. The *low* option is the low data for the state execution which is about to be called. The *chunks* is the list of all of the low data dictionaries which are being executed by the runtime and the *running* dictionary is the return data from all of the state executions which have already be executed.

This example, simplified from the pkg state, shows how to create mod_aggregate functions:

```
def mod_aggregate(low, chunks, running):
    '''
    The mod_aggregate function which looks up all packages in the available
    low chunks and merges them into a single pkgs ref in the present low data
    '''
    pkgs = []
    # What functions should we aggregate?
    agg_enabled = [
            'installed',
            'latest',
            'removed',
            'purged',
            ]
    # The `low` data is just a dict with the state, function (fun) and
    # arguments passed in from the sls
    if low.get('fun') not in agg_enabled:
        return low
    # Now look into what other things are set to execute
    for chunk in chunks:
        # The state runtime uses "tags" to track completed jobs, it may
        # look familiar with the _|-
        tag = salt.utils.gen_state_tag(chunk)
        if tag in running:
            # Already ran the pkg state, skip aggregation
            continue
        if chunk.get('state') == 'pkg':
            if '__agg__' in chunk:
                continue
            # Check for the same function
            if chunk.get('fun') != low.get('fun'):
                continue
            # Pull out the pkg names!
```

```
            if 'pkgs' in chunk:
                pkgs.extend(chunk['pkgs'])
                chunk['__agg__'] = True
            elif 'name' in chunk:
                pkgs.append(chunk['name'])
                chunk['__agg__'] = True
    if pkgs:
        if 'pkgs' in low:
            low['pkgs'].extend(pkgs)
        else:
            low['pkgs'] = pkgs
    # The low has been modified and needs to be returned to the state
    # runtime for execution
    return low
```

### 5.6.2 Altering States

**Note:** This documentation has been moved *here*.

### 5.6.3 File State Backups

In 0.10.2 a new feature was added for backing up files that are replaced by the file.managed and file.recurse states. The new feature is called the backup mode. Setting the backup mode is easy, but it can be set in a number of places.

The backup_mode can be set in the minion config file:

```
backup_mode: minion
```

Or it can be set for each file:

```
/etc/ssh/sshd_config:
  file.managed:
    - source: salt://ssh/sshd_config
    - backup: minion
```

#### Backed-up Files

The files will be saved in the minion cachedir under the directory named `file_backup`. The files will be in the location relative to where they were under the root filesystem and be appended with a timestamp. This should make them easy to browse.

#### Interacting with Backups

Starting with version 0.17.0, it will be possible to list, restore, and delete previously-created backups.

#### Listing

The backups for a given file can be listed using *`file.list_backups`*:

```
# salt foo.bar.com file.list_backups /tmp/foo.txt
foo.bar.com:
    ----------
    0:
        ----------
        Backup Time:
            Sat Jul 27 2013 17:48:41.738027
        Location:
            /var/cache/salt/minion/file_backup/tmp/foo.txt_Sat_Jul_27_17:48:41_738027_
↪2013
        Size:
            13
    1:
        ----------
        Backup Time:
            Sat Jul 27 2013 17:48:28.369804
        Location:
            /var/cache/salt/minion/file_backup/tmp/foo.txt_Sat_Jul_27_17:48:28_369804_
↪2013
        Size:
            35
```

### Restoring

Restoring is easy using *file.restore_backup*, just pass the path and the numeric id found with *file.list_backups*:

```
# salt foo.bar.com file.restore_backup /tmp/foo.txt 1
foo.bar.com:
    ----------
    comment:
        Successfully restored /var/cache/salt/minion/file_backup/tmp/foo.txt_Sat_Jul_
↪27_17:48:28_369804_2013 to /tmp/foo.txt
    result:
        True
```

The existing file will be backed up, just in case, as can be seen if *file.list_backups* is run again:

```
# salt foo.bar.com file.list_backups /tmp/foo.txt
foo.bar.com:
    ----------
    0:
        ----------
        Backup Time:
            Sat Jul 27 2013 18:00:19.822550
        Location:
            /var/cache/salt/minion/file_backup/tmp/foo.txt_Sat_Jul_27_18:00:19_822550_
↪2013
        Size:
            53
    1:
        ----------
        Backup Time:
            Sat Jul 27 2013 17:48:41.738027
        Location:
            /var/cache/salt/minion/file_backup/tmp/foo.txt_Sat_Jul_27_17:48:41_738027_
↪2013
```

```
        Size:
            13
    2:
        ----------
        Backup Time:
            Sat Jul 27 2013 17:48:28.369804
        Location:
            /var/cache/salt/minion/file_backup/tmp/foo.txt_Sat_Jul_27_17:48:28_369804_
↪2013
        Size:
            35
```

**Note**: Since no state is being run, restoring a file will not trigger any watches for the file. So, if you are restoring a config file for a service, it will likely still be necessary to run a `service.restart`.

#### Deleting

Deleting backups can be done using *`file.delete_backup`*:

```
# salt foo.bar.com file.delete_backup /tmp/foo.txt 0
foo.bar.com:
    ----------
    comment:
        Successfully removed /var/cache/salt/minion/file_backup/tmp/foo.txt_Sat_Jul_27_
↪18:00:19_822550_2013
    result:
        True
```

### 5.6.4 Understanding State Compiler Ordering

**Note**: This tutorial is an intermediate level tutorial. Some basic understanding of the state system and writing Salt Formulas is assumed.

Salt's state system is built to deliver all of the power of configuration management systems without sacrificing simplicity. This tutorial is made to help users understand in detail just how the order is defined for state executions in Salt.

This tutorial is written to represent the behavior of Salt as of version 0.17.0.

#### Compiler Basics

To understand ordering in depth some very basic knowledge about the state compiler is very helpful. No need to worry though, this is very high level!

#### High Data and Low Data

When defining Salt Formulas in YAML the data that is being represented is referred to by the compiler as High Data. When the data is initially loaded into the compiler it is a single large python dictionary, this dictionary can be viewed

raw by running:

```
salt '*' state.show_highstate
```

This ``High Data'' structure is then compiled down to ``Low Data''. The Low Data is what is matched up to create individual executions in Salt's configuration management system. The low data is an ordered list of single state calls to execute. Once the low data is compiled the evaluation order can be seen.

The low data can be viewed by running:

```
salt '*' state.show_lowstate
```

---

**Note**: The state execution module contains MANY functions for evaluating the state system and is well worth a read! These routines can be very useful when debugging states or to help deepen one's understanding of Salt's state system.

---

As an example, a state written thusly:

```
apache:
  pkg.installed:
    - name: httpd
  service.running:
    - name: httpd
    - watch:
      - file: apache_conf
      - pkg: apache

apache_conf:
  file.managed:
    - name: /etc/httpd/conf.d/httpd.conf
    - source: salt://apache/httpd.conf
```

Will have High Data which looks like this represented in json:

```
{
    "apache": {
        "pkg": [
            {
                "name": "httpd"
            },
            "installed",
            {
                "order": 10000
            }
        ],
        "service": [
            {
                "name": "httpd"
            },
            {
                "watch": [
                    {
                        "file": "apache_conf"
                    },
                    {
                        "pkg": "apache"
                    }
```

```
                ]
            },
            "running",
            {
                "order": 10001
            }
        ],
        "__sls__": "blah",
        "__env__": "base"
    },
    "apache_conf": {
        "file": [
            {
                "name": "/etc/httpd/conf.d/httpd.conf"
            },
            {
                "source": "salt://apache/httpd.conf"
            },
            "managed",
            {
                "order": 10002
            }
        ],
        "__sls__": "blah",
        "__env__": "base"
    }
}
```

The subsequent Low Data will look like this:

```
[
    {
        "name": "httpd",
        "state": "pkg",
        "__id__": "apache",
        "fun": "installed",
        "__env__": "base",
        "__sls__": "blah",
        "order": 10000
    },
    {
        "name": "httpd",
        "watch": [
            {
                "file": "apache_conf"
            },
            {
                "pkg": "apache"
            }
        ],
        "state": "service",
        "__id__": "apache",
        "fun": "running",
        "__env__": "base",
        "__sls__": "blah",
        "order": 10001
    },
    {
```

```
        "name": "/etc/httpd/conf.d/httpd.conf",
        "source": "salt://apache/httpd.conf",
        "state": "file",
        "__id__": "apache_conf",
        "fun": "managed",
        "__env__": "base",
        "__sls__": "blah",
        "order": 10002
    }
]
```

This tutorial discusses the Low Data evaluation and the state runtime.

### Ordering Layers

Salt defines 2 order interfaces which are evaluated in the state runtime and defines these orders in a number of passes.

### Definition Order

---

**Note**: The Definition Order system can be disabled by turning the option `state_auto_order` to `False` in the master configuration file.

---

The top level of ordering is the *Definition Order*. The *Definition Order* is the order in which states are defined in salt formulas. This is very straightforward on basic states which do not contain `include` statements or a `top` file, as the states are just ordered from the top of the file, but the include system starts to bring in some simple rules for how the *Definition Order* is defined.

Looking back at the ``Low Data'' and ``High Data'' shown above, the order key has been transparently added to the data to enable the *Definition Order*.

### The Include Statement

Basically, if there is an include statement in a formula, then the formulas which are included will be run BEFORE the contents of the formula which is including them. Also, the include statement is a list, so they will be loaded in the order in which they are included.

In the following case:

`foo.sls`

```
include:
  - bar
  - baz
```

`bar.sls`

```
include:
  - quo
```

`baz.sls`

```
include:
  - qux
```

In the above case if `state.apply foo` were called then the formulas will be loaded in the following order:

1. quo
2. bar
3. qux
4. baz
5. foo

### The *order* Flag

The *Definition Order* happens transparently in the background, but the ordering can be explicitly overridden using the `order` flag in states:

```
apache:
  pkg.installed:
    - name: httpd
    - order: 1
```

This order flag will over ride the definition order, this makes it very simple to create states that are always executed first, last or in specific stages, a great example is defining a number of package repositories that need to be set up before anything else, or final checks that need to be run at the end of a state run by using `order: last` or `order: -1`.

When the order flag is explicitly set the *Definition Order* system will omit setting an order for that state and directly use the order flag defined.

### Lexicographical Fall-back

Salt states were written to ALWAYS execute in the same order. Before the introduction of *Definition Order* in version 0.17.0 everything was ordered lexicographically according to the name of the state, then function then id.

This is the way Salt has always ensured that states always run in the same order regardless of where they are deployed, the addition of the *Definition Order* method mealy makes this finite ordering easier to follow.

The lexicographical ordering is still applied but it only has any effect when two order statements collide. This means that if multiple states are assigned the same order number that they will fall back to lexicographical ordering to ensure that every execution still happens in a finite order.

---

**Note**: If running with `state_auto_order: False` the `order` key is not set automatically, since the Lexicographical order can be derived from other keys.

---

### Requisite Ordering

Salt states are fully declarative, in that they are written to declare the state in which a system should be. This means that components can require that other components have been set up successfully. Unlike the other ordering systems, the *Requisite* system in Salt is evaluated at runtime.

The requisite system is also built to ensure that the ordering of execution never changes, but is always the same for a given set of states. This is accomplished by using a runtime that processes states in a completely predictable order instead of using an event loop based system like other declarative configuration management systems.

### Runtime Requisite Evaluation

The requisite system is evaluated as the components are found, and the requisites are always evaluated in the same order. This explanation will be followed by an example, as the raw explanation may be a little dizzying at first as it creates a linear dependency evaluation sequence.

The ``Low Data'' is an ordered list or dictionaries, the state runtime evaluates each dictionary in the order in which they are arranged in the list. When evaluating a single dictionary it is checked for requisites, requisites are evaluated in order, `require` then `watch` then `prereq`.

---

**Note:** If using requisite in statements like require_in and watch_in these will be compiled down to require and watch statements before runtime evaluation.

---

Each requisite contains an ordered list of requisites, these requisites are looked up in the list of dictionaries and then executed. Once all requisites have been evaluated and executed then the requiring state can safely be run (or not run if requisites have not been met).

This means that the requisites are always evaluated in the same order, again ensuring one of the core design principals of Salt's State system to ensure that execution is always finite is intact.

### Simple Runtime Evaluation Example

Given the above ``Low Data'' the states will be evaluated in the following order:

1. The pkg.installed is executed ensuring that the apache package is installed, it contains no requisites and is therefore the first defined state to execute.
2. The service.running state is evaluated but NOT executed, a watch requisite is found, therefore they are read in order, the runtime first checks for the file, sees that it has not been executed and calls for the file state to be evaluated.
3. The file state is evaluated AND executed, since it, like the pkg state does not contain any requisites.
4. The evaluation of the service state continues, it next checks the pkg requisite and sees that it is met, with all requisites met the service state is now executed.

### Best Practice

The best practice in Salt is to choose a method and stick with it, official states are written using requisites for all associations since requisites create clean, traceable dependency trails and make for the most portable formulas. To accomplish something similar to how classical imperative systems function all requisites can be omitted and the `failhard` option then set to `True` in the master configuration, this will stop all state runs at the first instance of a failure.

In the end, using requisites creates very tight and fine grained states, not using requisites makes full sequence runs and while slightly easier to write, and gives much less control over the executions.

### 5.6.5 Extending External SLS Data

Sometimes a state defined in one SLS file will need to be modified from a separate SLS file. A good example of this is when an argument needs to be overwritten or when a service needs to watch an additional state.

#### The Extend Declaration

The standard way to extend is via the extend declaration. The extend declaration is a top level declaration like `include` and encapsulates ID declaration data included from other SLS files. A standard extend looks like this:

```
include:
  - http
  - ssh

extend:
  apache:
    file:
      - name: /etc/httpd/conf/httpd.conf
      - source: salt://http/httpd2.conf
  ssh-server:
    service:
      - watch:
        - file: /etc/ssh/banner

/etc/ssh/banner:
  file.managed:
    - source: salt://ssh/banner
```

A few critical things happened here, first off the SLS files that are going to be extended are included, then the extend dec is defined. Under the extend dec 2 IDs are extended, the apache ID's file state is overwritten with a new name and source. Than the ssh server is extended to watch the banner file in addition to anything it is already watching.

#### Extend is a Top Level Declaration

This means that `extend` can only be called once in an sls, if if is used twice then only one of the extend blocks will be read. So this is WRONG:

```
include:
  - http
  - ssh

extend:
  apache:
    file:
      - name: /etc/httpd/conf/httpd.conf
      - source: salt://http/httpd2.conf
# Second extend will overwrite the first!! Only make one
extend:
  ssh-server:
    service:
      - watch:
        - file: /etc/ssh/banner
```

#### The Requisite ``in'' Statement

Since one of the most common things to do when extending another SLS is to add states for a service to watch, or anything for a watcher to watch, the requisite in statement was added to 0.9.8 to make extending the watch and require lists easier. The ssh-server extend statement above could be more cleanly defined like so:

```
include:
  - ssh

/etc/ssh/banner:
  file.managed:
    - source: salt://ssh/banner
    - watch_in:
      - service: ssh-server
```

#### Rules to Extend By

There are a few rules to remember when extending states:

1. Always include the SLS being extended with an include declaration
2. Requisites (watch and require) are appended to, everything else is overwritten
3. extend is a top level declaration, like an ID declaration, cannot be declared twice in a single SLS
4. Many IDs can be extended under the extend declaration

### 5.6.6 Failhard Global Option

Normally, when a state fails Salt continues to execute the remainder of the defined states and will only refuse to execute states that require the failed state.

But the situation may exist, where you would want all state execution to stop if a single state execution fails. The capability to do this is called `failing hard`.

#### State Level Failhard

A single state can have a failhard set, this means that if this individual state fails that all state execution will immediately stop. This is a great thing to do if there is a state that sets up a critical config file and setting a require for each state that reads the config would be cumbersome. A good example of this would be setting up a package manager early on:

```
/etc/yum.repos.d/company.repo:
  file.managed:
    - source: salt://company/yumrepo.conf
    - user: root
    - group: root
    - mode: 644
    - order: 1
    - failhard: True
```

In this situation, the yum repo is going to be configured before other states, and if it fails to lay down the config file, than no other states will be executed.

#### Global Failhard

It may be desired to have failhard be applied to every state that is executed, if this is the case, then failhard can be set in the master configuration file. Setting failhard in the master configuration file will result in failing hard when any minion gathering states from the master have a state fail.

This is NOT the default behavior, normally Salt will only fail states that require a failed state.

Using the global failhard is generally not recommended, since it can result in states not being executed or even checked. It can also be confusing to see states failhard if an admin is not actively aware that the failhard has been set.

To use the global failhard set failhard: True in the master configuration file.

### 5.6.7 Global State Arguments

**Note:** This documentation has been moved *here*.

### 5.6.8 Highstate data structure definitions

#### The Salt State Tree

A state tree is a collection of SLS files and directories that live under the directory specified in *file_roots*.

**Note:** Directory names or filenames in the state tree cannot contain a period, with the exception of the period in the .sls file suffix.

#### Top file

The main state file that instructs minions what environment and modules to use during state execution.

Configurable via *state_top*.

**See also:**

*A detailed description of the top file*

#### Include declaration

Defines a list of *Module reference* strings to include in this SLS.

Occurs only in the top level of the SLS data structure.

Example:

```
include:
  - edit.vim
  - http.server
```

### Module reference

The name of a SLS module defined by a separate SLS file and residing on the Salt Master. A module named `edit.vim` is a reference to the SLS file `salt://edit/vim.sls`.

### ID declaration

Defines an individual *highstate* component. Always references a value of a dictionary containing keys referencing *State declaration* and *Requisite declaration*. Can be overridden by a *Name declaration* or a *Names declaration*.

Occurs on the top level or under the *Extend declaration*.

Must be unique across entire state tree. If the same ID declaration is used twice, only the first one matched will be used. All subsequent ID declarations with the same name will be ignored.

---

**Note**: Naming gotchas

In Salt versions earlier than 0.9.7, ID declarations containing dots would result in unpredictable output.

---

### Extend declaration

Extends a *Name declaration* from an included `SLS module`. The keys of the extend declaration always refer to an existing *ID declaration* which have been defined in included `SLS modules`.

Occurs only in the top level and defines a dictionary.

States cannot be extended more than once in a single state run.

Extend declarations are useful for adding-to or overriding parts of a *State declaration* that is defined in another `SLS` file. In the following contrived example, the shown `mywebsite.sls` file is `include` -ing and `extend` -ing the `apache.sls` module in order to add a `watch` declaration that will restart Apache whenever the Apache configuration file, `mywebsite` changes.

```
include:
  - apache

extend:
  apache:
    service:
      - watch:
        - file: mywebsite

mywebsite:
  file.managed:
    - name: /var/www/mysite
```

**See also**:

watch_in and require_in

Sometimes it is more convenient to use the *watch_in* or *require_in* syntax instead of extending another `SLS` file.

*State Requisites*

### State declaration

A list which contains one string defining the *Function declaration* and any number of *Function arg declaration* dictionaries.

Can, optionally, contain a number of additional components like the name override components — *name* and *names*. Can also contain *requisite declarations*.

Occurs under an *ID declaration*.

### Requisite declaration

A list containing *requisite references*.

Used to build the action dependency tree. While Salt states are made to execute in a deterministic order, this order is managed by requiring and watching other Salt states.

Occurs as a list component under a *State declaration* or as a key under an *ID declaration*.

### Requisite reference

A single key dictionary. The key is the name of the referenced *State declaration* and the value is the ID of the referenced *ID declaration*.

Occurs as a single index in a *Requisite declaration* list.

### Function declaration

The name of the function to call within the state. A state declaration can contain only a single function declaration.

For example, the following state declaration calls the `installed` function in the `pkg` state module:

```
httpd:
  pkg.installed: []
```

The function can be declared inline with the state as a shortcut. The actual data structure is compiled to this form:

```
httpd:
  pkg:
    - installed
```

Where the function is a string in the body of the state declaration. Technically when the function is declared in dot notation the compiler converts it to be a string in the state declaration list. Note that the use of the first example more than once in an ID declaration is invalid yaml.

INVALID:

```
httpd:
  pkg.installed
  service.running
```

When passing a function without arguments and another state declaration within a single ID declaration, then the long or ``standard'' format needs to be used since otherwise it does not represent a valid data structure.

VALID:

```
httpd:
  pkg.installed: []
  service.running: []
```

Occurs as the only index in the *State declaration* list.

### Function arg declaration

A single key dictionary referencing a Python type which is to be passed to the named *Function declaration* as a parameter. The type must be the data type expected by the function.

Occurs under a *Function declaration*.

For example in the following state declaration `user`, `group`, and `mode` are passed as arguments to the *managed* function in the `file` state module:

```
/etc/http/conf/http.conf:
  file.managed:
    - user: root
    - group: root
    - mode: 644
```

### Name declaration

Overrides the `name` argument of a *State declaration*. If `name` is not specified the *ID declaration* satisfies the `name` argument.

The name is always a single key dictionary referencing a string.

Overriding `name` is useful for a variety of scenarios.

For example, avoiding clashing ID declarations. The following two state declarations cannot both have `/etc/motd` as the ID declaration:

```
motd_perms:
  file.managed:
    - name: /etc/motd
    - mode: 644

motd_quote:
  file.append:
    - name: /etc/motd
    - text: "Of all smells, bread; of all tastes, salt."
```

Another common reason to override `name` is if the ID declaration is long and needs to be referenced in multiple places. In the example below it is much easier to specify `mywebsite` than to specify `/etc/apache2/sites-available/mywebsite.com` multiple times:

```
mywebsite:
  file.managed:
    - name: /etc/apache2/sites-available/mywebsite.com
    - source: salt://mywebsite.com

a2ensite mywebsite.com:
  cmd.wait:
    - unless: test -L /etc/apache2/sites-enabled/mywebsite.com
```

```
    - watch:
      - file: mywebsite

apache2:
  service.running:
    - watch:
      - file: mywebsite
```

### Names declaration

Expands the contents of the containing *State declaration* into multiple state declarations, each with its own name.

For example, given the following state declaration:

```
python-pkgs:
  pkg.installed:
    - names:
      - python-django
      - python-crypto
      - python-yaml
```

Once converted into the lowstate data structure the above state declaration will be expanded into the following three state declarations:

```
python-django:
  pkg.installed

python-crypto:
  pkg.installed

python-yaml:
  pkg.installed
```

Other values can be overridden during the expansion by providing an additional dictionary level.

New in version 2014.7.0.

```
ius:
  pkgrepo.managed:
    - humanname: IUS Community Packages for Enterprise Linux 6 - $basearch
    - gpgcheck: 1
    - baseurl: http://mirror.rackspace.com/ius/stable/CentOS/6/$basearch
    - gpgkey: http://dl.iuscommunity.org/pub/ius/IUS-COMMUNITY-GPG-KEY
    - names:
        - ius
        - ius-devel:
            - baseurl: http://mirror.rackspace.com/ius/development/CentOS/6/$basearch
```

### Large example

Here is the layout in yaml using the names of the highdata structure components.

```
<Include Declaration>:
  - <Module Reference>
  - <Module Reference>
```

```
<Extend Declaration>:
  <ID Declaration>:
    [<overrides>]


# standard declaration

<ID Declaration>:
  <State Module>:
    - <Function>
    - <Function Arg>
    - <Function Arg>
    - <Function Arg>
    - <Name>: <name>
    - <Requisite Declaration>:
      - <Requisite Reference>
      - <Requisite Reference>


# inline function and names

<ID Declaration>:
  <State Module>.<Function>:
    - <Function Arg>
    - <Function Arg>
    - <Function Arg>
    - <Names>:
      - <name>
      - <name>
      - <name>
    - <Requisite Declaration>:
      - <Requisite Reference>
      - <Requisite Reference>


# multiple states for single id

<ID Declaration>:
  <State Module>:
    - <Function>
    - <Function Arg>
    - <Name>: <name>
    - <Requisite Declaration>:
      - <Requisite Reference>
  <State Module>:
    - <Function>
    - <Function Arg>
    - <Names>:
      - <name>
      - <name>
    - <Requisite Declaration>:
      - <Requisite Reference>
```

### 5.6.9 Include and Exclude

Salt SLS files can include other SLS files and exclude SLS files that have been otherwise included. This allows for an SLS file to easily extend or manipulate other SLS files.

#### Include

When other SLS files are included, everything defined in the included SLS file will be added to the state run. When including define a list of SLS formulas to include:

```
include:
  - http
  - libvirt
```

The include statement will include SLS formulas from the same environment that the including SLS formula is in. But the environment can be explicitly defined in the configuration to override the running environment, therefore if an SLS formula needs to be included from an external environment named ``dev'' the following syntax is used:

```
include:
  - dev: http
```

**NOTE**: `include` does not simply inject the states where you place it in the SLS file. If you need to guarantee order of execution, consider using requisites.

---

**Do not use dots in SLS file names or their directories**

The initial implementation of *`top.sls`* and *Include declaration* followed the python import model where a slash is represented as a period. This means that a SLS file with a period in the name ( besides the suffix period) can not be referenced. For example, webserver_1.0.sls is not referenceable because webserver_1.0 would refer to the directory/file webserver_1/0.sls

The same applies for any subdirectories, this is especially `tricky' when git repos are created. Another command that typically can't render it's output is `` `state.show_sls` `` of a file in a path that contains a dot.

---

#### Relative Include

In Salt 0.16.0, the capability to include SLS formulas which are relative to the running SLS formula was added. Simply precede the formula name with a `.`:

```
include:
  - .virt
  - .virt.hyper
```

In Salt 2015.8, the ability to include SLS formulas which are relative to the parents of the running SLS formula was added. In order to achieve this, precede the formula name with more than one `.` (dot). Much like Python's relative import abilities, two or more leading dots represent a relative include of the parent or parents of the current package, with each `.` representing one level after the first.

The following SLS configuration, if placed within `example.dev.virtual`, would result in `example.http` and `base` being included respectively:

```
include:
  - ..http
  - ...base
```

#### Exclude

The exclude statement, added in Salt 0.10.3, allows an SLS to hard exclude another SLS file or a specific id. The component is excluded after the high data has been compiled, so nothing should be able to override an exclude.

Since the exclude can remove an id or an sls the type of component to exclude needs to be defined. An exclude statement that verifies that the running *highstate* does not contain the `http` sls and the `/etc/vimrc` id would look like this:

```
exclude:
  - sls: http
  - id: /etc/vimrc
```

---

**Note**: The current state processing flow checks for duplicate IDs before processing excludes. An error occurs if duplicate IDs are present even if one of the IDs is targeted by an `exclude`.

---

### 5.6.10 State System Layers

The Salt state system is comprised of multiple layers. While using Salt does not require an understanding of the state layers, a deeper understanding of how Salt compiles and manages states can be very beneficial.

#### Function Call

The lowest layer of functionality in the state system is the direct state function call. State executions are executions of single state functions at the core. These individual functions are defined in state modules and can be called directly via the `state.single` command.

```
salt '*' state.single pkg.installed name='vim'
```

#### Low Chunk

The low chunk is the bottom of the Salt state compiler. This is a data representation of a single function call. The low chunk is sent to the state caller and used to execute a single state function.

A single low chunk can be executed manually via the `state.low` command.

```
salt '*' state.low '{name: vim, state: pkg, fun: installed}'
```

The passed data reflects what the state execution system gets after compiling the data down from sls formulas.

#### Low State

The *Low State* layer is the list of low chunks ``evaluated'' in order. To see what the low state looks like for a *highstate*, run:

```
salt '*' state.show_lowstate
```

This will display the raw lowstate in the order which each low chunk will be evaluated. The order of evaluation is not necessarily the order of execution, since requisites are evaluated at runtime. Requisite execution and evaluation is finite; this means that the order of execution can be ascertained with 100% certainty based on the order of the low state.

#### High Data

High data is the data structure represented in YAML via SLS files. The High data structure is created by merging the data components rendered inside sls files (or other render systems). The High data can be easily viewed by executing the `state.show_highstate` or `state.show_sls` functions. Since this data is a somewhat complex data structure, it may be easier to read using the json, yaml, or pprint outputters:

```
salt '*' state.show_highstate --out yaml
salt '*' state.show_sls edit.vim --out pprint
```

#### SLS

Above ``High Data'', the logical layers are no longer technically required to be executed, or to be executed in a hierarchy. This means that how the High data is generated is optional and very flexible. The SLS layer allows for many mechanisms to be used to render sls data from files or to use the fileserver backend to generate sls and file data from external systems.

The SLS layer can be called directly to execute individual sls formulas.

---

**Note:** SLS Formulas have historically been called ``SLS files''. This is because a single SLS was only constituted in a single file. Now the term ``SLS Formula'' better expresses how a compartmentalized SLS can be expressed in a much more dynamic way by combining pillar and other sources, and the SLS can be dynamically generated.

---

To call a single SLS formula named `edit.vim`, execute `state.apply` and pass `edit.vim` as an argument:

```
salt '*' state.apply edit.vim
```

#### HighState

Calling SLS directly logically assigns what states should be executed from the context of the calling minion. The Highstate layer is used to allow for full contextual assignment of what is executed where to be tied to groups of, or individual, minions entirely from the master. This means that the environment of a minion, and all associated execution data pertinent to said minion, can be assigned from the master without needing to execute or configure anything on the target minion. This also means that the minion can independently retrieve information about its complete configuration from the master.

To execute the *highstate* use `state.apply`:

```
salt '*' state.apply
```

#### Orchestrate

The orchestrate layer expresses the highest functional layer of Salt's automated logic systems. The Overstate allows for stateful and functional orchestration of routines from the master. The orchestrate defines in data execution stages which minions should execute states, or functions, and in what order using requisite logic.

### 5.6.11 The Orchestrate Runner

---

**Note:** This documentation has been moved *here*.

---

### 5.6.12 Ordering States

The way in which configuration management systems are executed is a hotly debated topic in the configuration management world. Two major philosophies exist on the subject, to either execute in an imperative fashion where things are executed in the order in which they are defined, or in a declarative fashion where dependencies need to be mapped between objects.

Imperative ordering is finite and generally considered easier to write, but declarative ordering is much more powerful and flexible but generally considered more difficult to create.

Salt has been created to get the best of both worlds. States are evaluated in a finite order, which guarantees that states are always executed in the same order, and the states runtime is declarative, making Salt fully aware of dependencies via the *requisite* system.

#### State Auto Ordering

Salt always executes states in a finite manner, meaning that they will always execute in the same order regardless of the system that is executing them. But in Salt 0.17.0, the `state_auto_order` option was added. This option makes states get evaluated in the order in which they are defined in sls files, including the top.sls file.

The evaluation order makes it easy to know what order the states will be executed in, but it is important to note that the requisite system will override the ordering defined in the files, and the `order` option described below will also override the order in which states are defined in sls files.

If the classic ordering is preferred (lexicographic), then set `state_auto_order` to `False` in the master configuration file. Otherwise, `state_auto_order` defaults to `True`.

#### Requisite Statements

---

**Note**: The behavior of requisites changed in version 0.9.7 of Salt. This documentation applies to requisites in version 0.9.7 and later.

---

Often when setting up states any single action will require or depend on another action. Salt allows for the building of relationships between states with requisite statements. A requisite statement ensures that the named state is evaluated before the state requiring it. There are three types of requisite statements in Salt, **require**, **watch**, and **prereq**.

These requisite statements are applied to a specific state declaration:

```
httpd:
  pkg.installed: []
  file.managed:
    - name: /etc/httpd/conf/httpd.conf
    - source: salt://httpd/httpd.conf
    - require:
      - pkg: httpd
```

In this example, the **require** requisite is used to declare that the file /etc/httpd/conf/httpd.conf should only be set up if the pkg state executes successfully.

The requisite system works by finding the states that are required and executing them before the state that requires them. Then the required states can be evaluated to see if they have executed correctly.

Require statements can refer to any state defined in Salt. The basic examples are *pkg*, *service*, and *file*, but any used state can be referenced.

In addition to state declarations such as pkg, file, etc., **sls** type requisites are also recognized, and essentially allow `chaining' of states. This provides a mechanism to ensure the proper sequence for complex state formulas, especially when the discrete states are split or groups into separate sls files:

```
include:
  - network

httpd:
  pkg.installed: []
  service.running:
    - require:
      - pkg: httpd
      - sls: network
```

In this example, the httpd service running state will not be applied (i.e., the httpd service will not be started) unless both the httpd package is installed AND the network state is satisfied.

---

**Note**: Requisite matching

Requisites match on both the ID Declaration and the `name` parameter. Therefore, if using the `pkgs` or `sources` argument to install a list of packages in a pkg state, it's important to note that it is impossible to match an individual package in the list, since all packages are installed as a single state.

---

### Multiple Requisites

The requisite statement is passed as a list, allowing for the easy addition of more requisites. Both requisite types can also be separately declared:

```
httpd:
  pkg.installed: []
  service.running:
    - enable: True
    - watch:
      - file: /etc/httpd/conf/httpd.conf
    - require:
      - pkg: httpd
      - user: httpd
      - group: httpd
  file.managed:
    - name: /etc/httpd/conf/httpd.conf
    - source: salt://httpd/httpd.conf
    - require:
      - pkg: httpd
  user.present: []
  group.present: []
```

In this example, the httpd service is only going to be started if the package, user, group, and file are executed successfully.

### Requisite Documentation

For detailed information on each of the individual requisites, *please look here.*

#### The Order Option

Before using the *order* option, remember that the majority of state ordering should be done with a *Requisite declaration*, and that a requisite declaration will override an *order* option, so a state with order option should not require or required by other states.

The order option is used by adding an order number to a state declaration with the option *order*:

```
vim:
  pkg.installed:
    - order: 1
```

By adding the order option to *1* this ensures that the vim package will be installed in tandem with any other state declaration set to the order *1*.

Any state declared without an order option will be executed after all states with order options are executed.

But this construct can only handle ordering states from the beginning. Certain circumstances will present a situation where it is desirable to send a state to the end of the line. To do this, set the order to `last`:

```
vim:
  pkg.installed:
    - order: last
```

### 5.6.13 State Providers

New in version 0.9.8.

Salt predetermines what modules should be mapped to what uses based on the properties of a system. These determinations are generally made for modules that provide things like package and service management.

Sometimes in states, it may be necessary to use an alternative module to provide the needed functionality. For instance, an very old Arch Linux system may not be running systemd, so instead of using the systemd service module, you can revert to the default service module:

```
httpd:
  service.running:
    - enable: True
    - provider: service
```

In this instance, the basic `service` module (which manages **`sysvinit`**-based services) will replace the `systemd` module which is used by default on Arch Linux.

This change only affects this one state though. If it is necessary to make this override for most or every service, it is better to just override the provider in the minion config file, as described *here*.

Also, keep in mind that this only works for states with an identically-named virtual module (`pkg`, `service`, etc.).

#### Arbitrary Module Redirects

The provider statement can also be used for more powerful means, instead of overwriting or extending the module used for the named service an arbitrary module can be used to provide certain functionality.

```
emacs:
  pkg.installed:
    - provider:
      - cmd: customcmd
```

In this example, the state is being instructed to use a custom module to invoke commands.

Arbitrary module redirects can be used to dramatically change the behavior of a given state.

### 5.6.14 Requisites and Other Global State Arguments

#### Requisites

The Salt requisite system is used to create relationships between states. The core idea being that, when one state is dependent somehow on another, that inter-dependency can be easily defined. These dependencies are expressed by declaring the relationships using state names and ID's or names. The generalized form of a requisite target is `<state name> : <ID or name>`. The specific form is defined as a *Requisite Reference*

Requisites come in two types: Direct requisites (such as `require`), and requisite_ins (such as `require_in`). The relationships are directional: a direct requisite requires something from another state. However, a requisite_in inserts a requisite into the targeted state pointing to the targeting state. The following example demonstrates a direct requisite:

```
vim:
  pkg.installed: []

/etc/vimrc:
  file.managed:
    - source: salt://edit/vimrc
    - require:
      - pkg: vim
```

In the example above, the file `/etc/vimrc` depends on the vim package.

Requisite_in statements are the opposite. Instead of saying ``I depend on something'', requisite_ins say ``Someone depends on me'':

```
vim:
  pkg.installed:
    - require_in:
      - file: /etc/vimrc

/etc/vimrc:
  file.managed:
    - source: salt://edit/vimrc
```

So here, with a requisite_in, the same thing is accomplished as in the first example, but the other way around. The vim package is saying ``/etc/vimrc depends on me''. This will result in a `require` being inserted into the `/etc/vimrc` state which targets the `vim` state.

In the end, a single dependency map is created and everything is executed in a finite and predictable order.

#### Requisite matching

Requisites need two pieces of information for matching: The state module name – e.g. `pkg` –, and the identifier – e.g. vim –, which can be either the ID (the first line in the stanza) or the `-name` parameter.

```
- require:
  - pkg: vim
```

### Omitting state module in requisites

New in version 2016.3.0.

In version 2016.3.0, the state module name was made optional. If the state module is omitted, all states matching the ID will be required, regardless of which module they are using.

```
- require:
  - vim
```

### State target matching

In order to understand how state targets are matched, it is helpful to know how the state compiler is working. Consider the following example:

```
Deploy server package:
  file.managed:
    - name: /usr/local/share/myapp.tar.xz
    - source: salt://myapp.tar.xz

Extract server package:
  archive.extracted:
    - name: /usr/local/share/myapp
    - source: /usr/local/share/myapp.tar.xz
    - archive_format: tar
    - onchanges:
      - file: Deploy server package
```

The first formula is converted to a dictionary which looks as follows (represented as YAML, some properties omitted for simplicity) as *High Data*:

```
Deploy server package:
  file:
    - managed
    - name: /usr/local/share/myapp.tar.xz
    - source: salt://myapp.tar.xz
```

The `file.managed` format used in the formula is essentially syntactic sugar: at the end, the target is `file`, which is used in the `Extract server package` state above.

### Identifier matching

Requisites match on both the ID Declaration and the `name` parameter. This means that, in the ``Deploy server package'' example above, a `require` requisite would match with with `Deploy server package` *or* `/usr/local/share/myapp.tar.xz`, so either of the following versions for ``Extract server package'' works:

```
# (Archive arguments omitted for simplicity)

# Match by ID declaration
Extract server package:
  archive.extracted:
    - onchanges:
      - file: Deploy server package

# Match by name parameter
```

```
Extract server package:
  archive.extracted:
    - onchanges:
      - file: /usr/local/share/myapp.tar.xz
```

### Direct Requisite and Requisite_in types

There are several direct requisite statements that can be used in Salt:

- `require`
- `watch`
- `prereq`
- `use`
- `onchanges`
- `onfail`

Each direct requisite also has a corresponding requisite_in:

- `require_in`
- `watch_in`
- `prereq_in`
- `use_in`
- `onchanges_in`
- `onfail_in`

All of the requisites define specific relationships and always work with the dependency logic defined above.

### require

The use of `require` demands that the dependent state executes before the depending state. The state containing the `require` requisite is defined as the depending state. The state specified in the `require` statement is defined as the dependent state. If the dependent state's execution succeeds, the depending state will then execute. If the dependent state's execution fails, the depending state will not execute. In the first example above, the file `/etc/vimrc` will only execute after the vim package is installed successfully.

### Require an Entire SLS File

As of Salt 0.16.0, it is possible to require an entire sls file. Do this first by including the sls file and then setting a state to `require` the included sls file:

```
include:
  - foo

bar:
  pkg.installed:
    - require:
      - sls: foo
```

This will add all of the state declarations found in the given sls file. This means that every state in sls *foo* will be required. This makes it very easy to batch large groups of states easily in any requisite statement.

### watch

`watch` statements are used to add additional behavior when there are changes in other states.

---

**Note:** If a state should only execute when another state has changes, and otherwise do nothing, the new `onchanges` requisite should be used instead of `watch`. `watch` is designed to add *additional* behavior when there are changes, but otherwise the state executes normally.

---

The state containing the `watch` requisite is defined as the watching state. The state specified in the `watch` statement is defined as the watched state. When the watched state executes, it will return a dictionary containing a key named ``changes''. Here are two examples of state return dictionaries, shown in json for clarity:

```
{
    "local": {
        "file_|-/tmp/foo_|-/tmp/foo_|-directory": {
            "comment": "Directory /tmp/foo updated",
            "__run_num__": 0,
            "changes": {
                "user": "bar"
            },
            "name": "/tmp/foo",
            "result": true
        }
    }
}

{
    "local": {
        "pkgrepo_|-salt-minion_|-salt-minion_|-managed": {
            "comment": "Package repo 'salt-minion' already configured",
            "__run_num__": 0,
            "changes": {},
            "name": "salt-minion",
            "result": true
        }
    }
}
```

If the ``result'' of the watched state is `True`, the watching state *will execute normally*, and if it is `False`, the watching state will never run. This part of `watch` mirrors the functionality of the `require` requisite.

If the ``result'' of the watched state is `True` *and* the ``changes'' key contains a populated dictionary (changes occurred in the watched state), then the `watch` requisite can add additional behavior. This additional behavior is defined by the `mod_watch` function within the watching state module. If the `mod_watch` function exists in the watching state module, it will be called *in addition to* the normal watching state. The return data from the `mod_watch` function is what will be returned to the master in this case; the return data from the main watching function is discarded.

If the ``changes'' key contains an empty dictionary, the `watch` requisite acts exactly like the `require` requisite (the watching state will execute if ``result'' is `True`, and fail if ``result'' is `False` in the watched state).

---

**Note:** Not all state modules contain `mod_watch`. If `mod_watch` is absent from the watching state module, the

`watch` requisite behaves exactly like a `require` requisite.

A good example of using `watch` is with a *`service.running`* state. When a service watches a state, then the service is reloaded/restarted when the watched state changes, in addition to Salt ensuring that the service is running.

```
ntpd:
  service.running:
    - watch:
      - file: /etc/ntp.conf
  file.managed:
    - name: /etc/ntp.conf
    - source: salt://ntp/files/ntp.conf
```

### prereq

New in version 0.16.0.

`prereq` allows for actions to be taken based on the expected results of a state that has not yet been executed. The state containing the `prereq` requisite is defined as the pre-requiring state. The state specified in the `prereq` statement is defined as the pre-required state.

When a `prereq` requisite is evaluated, the pre-required state reports if it expects to have any changes. It does this by running the pre-required single state as a test-run by enabling `test=True`. This test-run will return a dictionary containing a key named ``changes''. (See the `watch` section above for examples of ``changes'' dictionaries.)

If the ``changes'' key contains a populated dictionary, it means that the pre-required state expects changes to occur when the state is actually executed, as opposed to the test-run. The pre-requiring state will now actually run. If the pre-requiring state executes successfully, the pre-required state will then execute. If the pre-requiring state fails, the pre-required state will not execute.

If the ``changes'' key contains an empty dictionary, this means that changes are not expected by the pre-required state. Neither the pre-required state nor the pre-requiring state will run.

The best way to define how `prereq` operates is displayed in the following practical example: When a service should be shut down because underlying code is going to change, the service should be off-line while the update occurs. In this example, `graceful-down` is the pre-requiring state and `site-code` is the pre-required state.

```
graceful-down:
  cmd.run:
    - name: service apache graceful
    - prereq:
      - file: site-code

site-code:
  file.recurse:
    - name: /opt/site_code
    - source: salt://site/code
```

In this case the apache server will only be shutdown if the site-code state expects to deploy fresh code via the file.recurse call. The site-code deployment will only be executed if the graceful-down run completes successfully.

### onfail

New in version 2014.7.0.

The `onfail` requisite allows for reactions to happen strictly as a response to the failure of another state. This can be used in a number of ways, such as executing a second attempt to set up a service or begin to execute a separate thread of states because of a failure.

The `onfail` requisite is applied in the same way as `require` as `watch`:

```
primary_mount:
  mount.mounted:
    - name: /mnt/share
    - device: 10.0.0.45:/share
    - fstype: nfs

backup_mount:
  mount.mounted:
    - name: /mnt/share
    - device: 192.168.40.34:/share
    - fstype: nfs
    - onfail:
      - mount: primary_mount
```

### onchanges

New in version 2014.7.0.

The `onchanges` requisite makes a state only apply if the required states generate changes, and if the watched state's ``result'' is `True`. This can be a useful way to execute a post hook after changing aspects of a system.

If a state has multiple `onchanges` requisites then the state will trigger if any of the watched states changes.

---

**Note**: One easy-to-make mistake is to use `onchanges_in` when `onchanges` is supposed to be used. For example, the below configuration is not correct:

```
myservice:
  pkg.installed:
    - name: myservice
  file.managed:
    - name: /etc/myservice/myservice.conf
    - source: salt://myservice/files/myservice.conf
    - mode: 600
  cmd.run:
    - name: /usr/libexec/myservice/post-changes-hook.sh
    - onchanges_in:
      - file: /etc/myservice/myservice.conf
```

This will set up a requisite relationship in which the `cmd.run` state always executes, and the `file.managed` state only executes if the `cmd.run` state has changes (which it always will, since the `cmd.run` state includes the command results as changes).

It may semantically seem like the the `cmd.run` state should only run when there are changes in the file state, but remember that requisite relationships involve one state watching another state, and a *requisite_in* does the opposite: it forces the specified state to watch the state with the `requisite_in`.

The correct usage would be:

```
myservice:
  pkg.installed:
    - name: myservice
```

```
  file.managed:
    - name: /etc/myservice/myservice.conf
    - source: salt://myservice/files/myservice.conf
    - mode: 600
  cmd.run:
    - name: /usr/libexec/myservice/post-changes-hook.sh
    - onchanges:
      - file: /etc/myservice/myservice.conf
```

#### use

The `use` requisite is used to inherit the arguments passed in another id declaration. This is useful when many files need to have the same defaults.

```
/etc/foo.conf:
  file.managed:
    - source: salt://foo.conf
    - template: jinja
    - mkdirs: True
    - user: apache
    - group: apache
    - mode: 755

/etc/bar.conf
  file.managed:
    - source: salt://bar.conf
    - use:
      - file: /etc/foo.conf
```

The `use` statement was developed primarily for the networking states but can be used on any states in Salt. This makes sense for the networking state because it can define a long list of options that need to be applied to multiple network interfaces.

The `use` statement does not inherit the requisites arguments of the targeted state. This means also a chain of `use` requisites would not inherit inherited options.

#### The _in versions of requisites

All of the requisites also have corresponding requisite_in versions, which do the reverse of their normal counterparts. The examples below all use `require_in` as the example, but note that all of the `_in` requisites work the same way: They result in a normal requisite in the targeted state, which targets the state which has defines the requisite_in. Thus, a `require_in` causes the target state to `require` the targeting state. Similarly, a `watch_in` causes the target state to `watch` the targeting state. This pattern continues for the rest of the requisites.

If a state declaration needs to be required by another state declaration then `require_in` can accommodate it. Therefore, these two sls files would be the same in the end:

Using `require`

```
httpd:
  pkg.installed: []
  service.running:
    - require:
      - pkg: httpd
```

Using `require_in`

```
httpd:
  pkg.installed:
    - require_in:
      - service: httpd
  service.running: []
```

The `require_in` statement is particularly useful when assigning a require in a separate sls file. For instance it may be common for httpd to require components used to set up PHP or mod_python, but the HTTP state does not need to be aware of the additional components that require it when it is set up:

http.sls

```
httpd:
  pkg.installed: []
  service.running:
    - require:
      - pkg: httpd
```

php.sls

```
include:
  - http

php:
  pkg.installed:
    - require_in:
      - service: httpd
```

mod_python.sls

```
include:
  - http

mod_python:
  pkg.installed:
    - require_in:
      - service: httpd
```

Now the httpd server will only start if php or mod_python are first verified to be installed. Thus allowing for a requisite to be defined ``after the fact''.

### Fire Event Notifications

New in version 2015.8.0.

The *fire_event* option in a state will cause the minion to send an event to the Salt Master upon completion of that individual state.

The following example will cause the minion to send an event to the Salt Master with a tag of *salt/state_result/20150505121517276431/dasalt/nano* and the result of the state will be the data field of the event. Notice that the *name* of the state gets added to the tag.

```
nano_stuff:
  pkg.installed:
    - name: nano
    - fire_event: True
```

In the following example instead of setting *fire_event* to *True*, *fire_event* is set to an arbitrary string, which will cause the event to be sent with this tag: *salt/state_result/20150505121725642845/dasalt/custom/tag/nano/finished*

```
nano_stuff:
  pkg.installed:
    - name: nano
    - fire_event: custom/tag/nano/finished
```

### Altering States

The state altering system is used to make sure that states are evaluated exactly as the user expects. It can be used to double check that a state preformed exactly how it was expected to, or to make 100% sure that a state only runs under certain conditions. The use of unless or onlyif options help make states even more stateful. The `check_cmd` option helps ensure that the result of a state is evaluated correctly.

### Reload

`reload_modules` is a boolean option that forces salt to reload its modules after a state finishes. `reload_pillar` and `reload_grains` can also be set. See *Reloading Modules*.

### Unless

New in version 2014.7.0.

The `unless` requisite specifies that a state should only run when any of the specified commands return `False`. The `unless` requisite operates as NAND and is useful in giving more granular control over when a state should execute.

**NOTE**: Under the hood `unless` calls `cmd.retcode` with `python_shell=True`. This means the commands referenced by `unless` will be parsed by a shell, so beware of side-effects as this shell will be run with the same privileges as the salt-minion. Also be aware that the boolean value is determined by the shell's concept of `True` and `False`, rather than Python's concept of `True` and `False`.

```
vim:
  pkg.installed:
    - unless:
      - rpm -q vim-enhanced
      - ls /usr/bin/vim
```

In the example above, the state will only run if either the vim-enhanced package is not installed (returns `False`) or if /usr/bin/vim does not exist (returns `False`). The state will run if both commands return `False`.

However, the state will not run if both commands return `True`.

Unless checks are resolved for each name to which they are associated.

For example:

```
deploy_app:
  cmd.run:
    - names:
      - first_deploy_cmd
      - second_deploy_cmd
    - unless: ls /usr/bin/vim
```

In the above case, `some_check` will be run prior to _each_ name -- once for `first_deploy_cmd` and a second time for `second_deploy_cmd`.

### Onlyif

New in version 2014.7.0.

The `onlyif` requisite specifies that if each command listed in `onlyif` returns `True`, then the state is run. If any of the specified commands return `False`, the state will not run.

**NOTE**: Under the hood `onlyif` calls `cmd.retcode` with `python_shell=True`. This means the commands referenced by `onlyif` will be parsed by a shell, so beware of side-effects as this shell will be run with the same privileges as the salt-minion. Also be aware that the boolean value is determined by the shell's concept of `True` and `False`, rather than Python's concept of `True` and `False`.

```
stop-volume:
  module.run:
    - name: glusterfs.stop_volume
    - m_name: work
    - onlyif:
      - gluster volume status work
    - order: 1

remove-volume:
  module.run:
    - name: glusterfs.delete
    - m_name: work
    - onlyif:
      - gluster volume info work
    - watch:
      - cmd: stop-volume
```

The above example ensures that the stop_volume and delete modules only run if the gluster commands return a 0 ret value.

### Listen/Listen_in

New in version 2014.7.0.

listen and its counterpart listen_in trigger mod_wait functions for states, when those states succeed and result in changes, similar to how watch its counterpart watch_in. Unlike watch and watch_in, listen, and listen_in will not modify the order of states and can be used to ensure your states are executed in the order they are defined. All listen/listen_in actions will occur at the end of a state run, after all states have completed.

```
restart-apache2:
  service.running:
    - name: apache2
    - listen:
      - file: /etc/apache2/apache2.conf

configure-apache2:
  file.managed:
    - name: /etc/apache2/apache2.conf
    - source: salt://apache2/apache2.conf
```

This example will cause apache2 to be restarted when the apache2.conf file is changed, but the apache2 restart will happen at the end of the state run.

```
restart-apache2:
  service.running:
    - name: apache2

configure-apache2:
  file.managed:
    - name: /etc/apache2/apache2.conf
    - source: salt://apache2/apache2.conf
    - listen_in:
      - service: apache2
```

This example does the same as the above example, but puts the state argument on the file resource, rather than the service resource.

#### check_cmd

New in version 2014.7.0.

Check Command is used for determining that a state did or did not run as expected.

**NOTE**: Under the hood `check_cmd` calls `cmd.retcode` with `python_shell=True`. This means the commands referenced by unless will be parsed by a shell, so beware of side-effects as this shell will be run with the same privileges as the salt-minion.

```
comment-repo:
  file.replace:
    - name: /etc/yum.repos.d/fedora.repo
    - pattern: ^enabled=0
    - repl: enabled=1
    - check_cmd:
      - ! grep 'enabled=0' /etc/yum.repos.d/fedora.repo
```

This will attempt to do a replace on all `enabled=0` in the .repo file, and replace them with `enabled=1`. The `check_cmd` is just a bash command. It will do a grep for `enabled=0` in the file, and if it finds any, it will return a 0, which will be inverted by the leading `!`, causing `check_cmd` to set the state as failed. If it returns a 1, meaning it didn't find any `enabled=0`, it will be inverted by the leading `!`, returning a 0, and declaring the function succeeded.

**NOTE**: This requisite `check_cmd` functions differently than the `check_cmd` of the `file.managed` state.

#### Overriding Checks

There are two commands used for the above checks.

`mod_run_check` is used to check for `onlyif` and `unless`. If the goal is to override the global check for these to variables, include a `mod_run_check` in the salt/states/ file.

`mod_run_check_cmd` is used to check for the check_cmd options. To override this one, include a `mod_run_check_cmd` in the states file for the state.

### 5.6.15 Startup States

Sometimes it may be desired that the salt minion execute a state run when it is started. This alleviates the need for the master to initiate a state run on a new minion and can make provisioning much easier.

As of Salt 0.10.3 the minion config reads options that allow for states to be executed at startup. The options are *startup_states*, *sls_list*, and *top_file*.

The *startup_states* option can be passed one of a number of arguments to define how to execute states. The available options are:

***highstate*** Execute `state.apply`

**sls** Read in the `sls_list` option and execute the named sls files

**top** Read in the `top_file` option and execute states based on that top file on the Salt Master

#### Examples:

Execute `state.apply` to run the *highstate* when starting the minion:

```
startup_states: highstate
```

Execute the sls files *edit.vim* and *hyper*:

```
startup_states: sls

sls_list:
  - edit.vim
  - hyper
```

### 5.6.16 State Testing

Executing a Salt state run can potentially change many aspects of a system and it may be desirable to first see what a state run is going to change before applying the run.

Salt has a test interface to report on exactly what will be changed, this interface can be invoked on any of the major state run functions:

```
salt '*' state.apply test=True
salt '*' state.apply mysls test=True
salt '*' state.single test=True
```

The test run is mandated by adding the `test=True` option to the states. The return information will show states that will be applied in yellow and the result is reported as `None`.

#### Default Test

If the value `test` is set to `True` in the minion configuration file then states will default to being executed in test mode. If this value is set then states can still be run by calling test=False:

```
salt '*' state.apply test=False
salt '*' state.apply mysls test=False
salt '*' state.single test=False
```

### 5.6.17 The Top File

#### Introduction

Most infrastructures are made up of groups of machines, each machine in the group performing a role similar to others. Those groups of machines work in concert with each other to create an application stack.

To effectively manage those groups of machines, an administrator needs to be able to create roles for those groups. For example, a group of machines that serve front-end web traffic might have roles which indicate that those machines should all have the Apache webserver package installed and that the Apache service should always be running.

In Salt, the file which contains a mapping between groups of machines on a network and the configuration roles that should be applied to them is called a `top file`.

Top files are named `top.sls` by default and they are so-named because they always exist in the ``top'' of a directory hierarchy that contains state files. That directory hierarchy is called a `state tree`.

#### A Basic Example

Top files have three components:

- **Environment**: A state tree directory containing a set of state files to configure systems.
- **Target**: A grouping of machines which will have a set of states applied to them.
- **State files**: A list of state files to apply to a target. Each state file describes one or more states to be configured and enforced on the targeted machines.

The relationship between these three components is nested as follows:

- Environments contain targets
- Targets contain states

Putting these concepts together, we can describe a scenario in which all minions with an ID that begins with `web` have an `apache` state applied to them:

```
base:           # Apply SLS files from the directory root for the 'base' environment
  'web*':       # All minions with a minion_id that begins with 'web'
    - apache    # Apply the state file named 'apache.sls'
```

#### Environments

Environments are directory hierarchies which contain a top files and a set of state files.

Environments can be used in many ways, however there is no requirement that they be used at all. In fact, the most common way to deploy Salt is with a single environment, called `base`. It is recommended that users only create multiple environments if they have a use case which specifically calls for multiple versions of state trees.

#### Getting Started with Top Files

Each environment is defined inside a salt master configuration variable called, *`file_roots`* .

In the most common single-environment setup, only the `base` environment is defined in *`file_roots`* along with only one directory path for the state tree.

```
file_roots:
  base:
    - /srv/salt
```

In the above example, the top file will only have a single environment to pull from.

Next is a simple single-environment top file placed in `/srv/salt/top.sls`, illustrating that for the environment called `base`, all minions will have the state files named `core.sls` and `edit.sls` applied to them.

```
base:
  '*':
    - core
    - edit
```

Assuming the `file_roots` configuration from above, Salt will look in the `/srv/salt` directory for `core.sls` and `edit.sls`.

### Multiple Environments

In some cases, teams may wish to create versioned state trees which can be used to test Salt configurations in isolated sets of systems such as a staging environment before deploying states into production.

For this case, multiple environments can be used to accomplish this task.

To create multiple environments, the *file_roots* option can be expanded:

```
file_roots:
  dev:
    - /srv/salt/dev
  qa:
    - /srv/salt/qa
  prod:
    - /srv/salt/prod
```

In the above, we declare three environments: `dev`, `qa` and `prod`. Each environment has a single directory assigned to it.

Our top file references the environments:

```
dev:
  'webserver*':
    - webserver
  'db*':
    - db
qa:
  'webserver*':
    - webserver
  'db*':
    - db
prod:
  'webserver*':
    - webserver
  'db*':
    - db
```

As seen above, the top file now declares the three environments and for each, target expressions are defined to map minions to state files. For example, all minions which have an ID beginning with the string `webserver` will have the webserver state from the requested environment assigned to it.

In this manner, a proposed change to a state could first be made in a state file in `/srv/salt/dev` and then be applied to development webservers before moving the state into QA by copying the state file into `/srv/salt/qa`.

### Choosing an Environment to Target

The top file is used to assign a minion to an environment unless overridden using the methods described below. The environment in the top file must match valid fileserver environment (a.k.a. `saltenv`) in order for any states to be applied to that minion. When using the default fileserver backend, environments are defined in *`file_roots`*.

The states that will be applied to a minion in a given environment can be viewed using the *`state.show_top`* function.

Minions may be pinned to a particular environment by setting the *`environment`* value in the minion configuration file. In doing so, a minion will only request files from the environment to which it is assigned.

The environment may also be dynamically selected at runtime by passing it to the `salt`, `salt-call` or `salt-ssh` command. This is most commonly done with functions in the `state` module by using the `saltenv` argument. For example, to run a `highstate` on all minions, using only the top file and SLS files in the `prod` environment, run: `salt '*' state.highstate saltenv=prod`.

---

**Note**: Not all functions accept `saltenv` as an argument, see the documentation for an individual function documentation to verify.

---

### Shorthand

If you assign only one SLS to a system, as in this example, a shorthand is also available:

```
base:
  '*': global
dev:
  'webserver*': webserver
  'db*':        db
qa:
  'webserver*': webserver
  'db*':        db
prod:
  'webserver*': webserver
  'db*':        db
```

### Advanced Minion Targeting

In the examples above, notice that all of the target expressions are globs. The default match type in top files (since version 2014.7.0) is actually the *compound matcher*, not the glob matcher as in the CLI.

A single glob, when passed through the compound matcher, acts the same way as matching by glob, so in most cases the two are indistinguishable. However, there is an edge case in which a minion ID contains whitespace. While it is not recommended to include spaces in a minion ID, Salt will not stop you from doing so. However, since compound expressions are parsed word-by-word, if a minion ID contains spaces it will fail to match. In this edge case, it will be necessary to explicitly use the `glob` matcher:

```
base:
  'minion 1':
```

```
    - match: glob
    - foo
```

The available match types which can be set for a target expression in the top file are:

| Match Type | Description |
|---|---|
| glob | Full minion ID or glob expression to match multiple minions (e.g. `minion123` or `minion*`) |
| pcre | Perl-compatible regular expression (PCRE) matching a minion ID (e.g. `web[0-3].domain.com`) |
| grain | Match a grain, optionally using globbing (e.g. `kernel:Linux` or `kernel:*BSD`) |
| grain_pcre | Match a grain using PCRE (e.g. `kernel:(Free\|Open)BSD`) |
| list | Comma-separated list of minions (e.g. `minion1,minion2,minion3`) |
| pillar | *Pillar* match, optionally using globbing (e.g. `role:webserver` or `role:web*`) |
| pillar_pcre | *Pillar* match using PCRE (e.g. `role:web(server\|proxy)` |
| pillar_exact | *Pillar* match with no globbing or PCRE (e.g. `role:webserver`) |
| ipcidr | Subnet or IP address (e.g. `172.17.0.0/16` or `10.2.9.80`) |
| data | Match values kept in the minion's datastore (created using the *data* execution module) |
| range | *Range* cluster |
| compound | Complex expression combining multiple match types (see *here*) |
| nodegroup | Pre-defined compound expressions in the master config file (see *here*) |

Below is a slightly more complex top file example, showing some of the above match types:

```
# All files will be taken from the file path specified in the base
# environment in the ``file_roots`` configuration value.

base:
    # All minions which begin with the strings 'nag1' or any minion with
    # a grain set called 'role' with the value of 'monitoring' will have
    # the 'server.sls' state file applied from the 'nagios/' directory.

    'nag1* or G@role:monitoring':
        - nagios.server

    # All minions get the following three state files applied

    '*':
        - ldap-client
        - networking
        - salt.minion

    # All minions which have an ID that begins with the phrase
    # 'salt-master' will have an SLS file applied that is named
    # 'master.sls' and is in the 'salt' directory, underneath
    # the root specified in the ``base`` environment in the
    # configuration value for ``file_roots``.

    'salt-master*':
        - salt.master

    # Minions that have an ID matching the following regular
    # expression will have the state file called 'web.sls' in the
    # nagios/mon directory applied. Additionally, minions matching
    # the regular expression will also have the 'server.sls' file
    # in the apache/ directory applied.
```

```
# NOTE!
#
# Take note of the 'match' directive here, which tells Salt
# to treat the target string as a regex to be matched!

'^(memcache|web).(qa|prod).loc$':
    - match: pcre
    - nagios.mon.web
    - apache.server

# Minions that have a grain set indicating that they are running
# the Ubuntu operating system will have the state file called
# 'ubuntu.sls' in the 'repos' directory applied.
#
# Again take note of the 'match' directive here which tells
# Salt to match against a grain instead of a minion ID.

'os:Ubuntu':
    - match: grain
    - repos.ubuntu

# Minions that are either RedHat or CentOS should have the 'epel.sls'
# state applied, from the 'repos/' directory.

'os:(RedHat|CentOS)':
    - match: grain_pcre
    - repos.epel

# The three minions with the IDs of 'foo', 'bar' and 'baz' should
# have 'database.sls' applied.

'foo,bar,baz':
    - match: list
    - database

# Any minion for which the pillar key 'somekey' is set and has a value
# of that key matching 'abc' will have the 'xyz.sls' state applied.

'somekey:abc':
    - match: pillar
    - xyz
```

### How Top Files Are Compiled

When a *highstate* is executed and an environment is specified (either using the `environment` config option or by passing the saltenv when executing the *highstate*), then that environment's top file is the only top file used to assign states to minions, and only states from the specified environment will be run.

The remainder of this section applies to cases in which a *highstate* is executed without an environment specified.

With no environment specified, the minion will look for a top file in each environment, and each top file will be processed to determine the SLS files to run on the minions. By default, the top files from each environment will be merged together. In configurations with many environments, such as with *GitFS* where each branch and tag is treated as a distinct environment, this may cause unexpected results as SLS files from older tags cause defunct SLS files to be included in the highstate. In cases like this, it can be helpful to set `top_file_merging_strategy` to `same` to force each environment to use its own top file.

```
top_file_merging_strategy: same
```

Another option would be to set *state_top_saltenv* to a specific environment, to ensure that any top files in other environments are disregarded:

```
state_top_saltenv: base
```

With *GitFS*, it can also be helpful to simply manage each environment's top file separately, and/or manually specify the environment when executing the highstate to avoid any complicated merging scenarios. *gitfs_env_whitelist* and *gitfs_env_blacklist* can also be used to hide unneeded branches and tags from GitFS to reduce the number of top files in play.

When using multiple environments, it is not necessary to create a top file for each environment. The easiest-to-maintain approach is to use a single top file placed in the `base` environment. This is often infeasible with *GitFS* though, since branching/tagging can easily result in extra top files. However, when only the default (`roots`) fileserver backend is used, a single top file in the `base` environment is the most common way of configuring a *highstate*.

The following minion configuration options affect how top files are compiled when no environment is specified:

- *state_top_saltenv*
- *top_file_merging_strategy*
- *env_order*
- *default_top*

### Top File Compilation Examples

For the scenarios below, assume the following configuration:

**/etc/salt/master**:

```
file_roots:
  base:
    - /srv/salt/base
  dev:
    - /srv/salt/dev
  qa:
    - /srv/salt/qa
```

**/srv/salt/base/top.sls**:

```
base:
  '*':
    - base1
dev:
  '*':
    - dev1
qa:
  '*':
    - qa1
```

**/srv/salt/dev/top.sls**:

```
base:
  'minion1':
    - base2
dev:
```

```
  'minion2':
    - dev2
qa:
  '*':
    - qa2
```

**Note:** For the purposes of these examples, there is no top file in the `qa` environment.

#### Scenario 1 - `dev` Environment Specified

In this scenario, the *highstate* was either invoked with `saltenv=dev` or the minion has `environment: dev` set in the minion config file. The result will be that only the `dev2` SLS from the dev environment will be part of the *highstate*, and it will be applied to minion2, while minion1 will have no states applied to it.

If the `base` environment were specified, the result would be that only the `base1` SLS from the `base` environment would be part of the *highstate*, and it would be applied to all minions.

If the `qa` environment were specified, the *highstate* would exit with an error.

#### Scenario 2 - No Environment Specified, `top_file_merging_strategy` is ``merge''

In this scenario, assuming that the `base` environment's top file was evaluated first, the `base1`, `dev1`, and `qa1` states would be applied to all minions. If, for instance, the `qa` environment is not defined in **/srv/salt/base/top.sls**, then because there is no top file for the `qa` environment, no states from the `qa` environment would be applied.

#### Scenario 3 - No Environment Specified, `top_file_merging_strategy` is ``same''

Changed in version 2016.11.0: In prior versions, ``same'' did not quite work as described below (see here). This has now been corrected. It was decided that changing something like top file handling in a point release had the potential to unexpectedly impact users' top files too much, and it would be better to make this correction in a feature release.

In this scenario, `base1` from the `base` environment is applied to all minions. Additionally, `dev2` from the `dev` environment is applied to minion2.

If *`default_top`* is unset (or set to `base`, which happens to be the default), then `qa1` from the `qa` environment will be applied to all minions. If *`default_top`* were set to `dev`, then `qa2` from the `qa` environment would be applied to all minions.

### 5.6.18 SLS Template Variable Reference

The template engines available to sls files and file templates come loaded with a number of context variables. These variables contain information and functions to assist in the generation of templates. See each variable below for its availability -- not all variables are available in all templating contexts.

#### Salt

The *salt* variable is available to abstract the salt library functions. This variable is a python dictionary containing all of the functions available to the running salt minion. It is available in all salt templates.

```
{% for file in salt['cmd.run']('ls -1 /opt/to_remove').splitlines() %}
/opt/to_remove/{{ file }}:
  file.absent
{% endfor %}
```

#### Opts

The *opts* variable abstracts the contents of the minion's configuration file directly to the template. The *opts* variable is a dictionary. It is available in all templates.

```
{{ opts['cachedir'] }}
```

The `config.get` function also searches for values in the *opts* dictionary.

#### Pillar

The *pillar* dictionary can be referenced directly, and is available in all templates:

```
{{ pillar['key'] }}
```

Using the `pillar.get` function via the *salt* variable is generally recommended since a default can be safely set in the event that the value is not available in pillar and dictionaries can be traversed directly:

```
{{ salt['pillar.get']('key', 'failover_value') }}
{{ salt['pillar.get']('stuff:more:deeper') }}
```

#### Grains

The *grains* dictionary makes the minion's grains directly available, and is available in all templates:

```
{{ grains['os'] }}
```

The `grains.get` function can be used to traverse deeper grains and set defaults:

```
{{ salt['grains.get']('os') }}
```

#### saltenv

The *saltenv* variable is available in only in sls files when gathering the sls from an environment.

```
{{ saltenv }}
```

#### sls

The *sls* variable contains the sls reference value, and is only available in the actual SLS file (not in any files referenced in that SLS). The sls reference value is the value used to include the sls in top files or via the include option.

```
{{ sls }}
```

#### slspath

The *slspath* variable contains the path to the current sls file. The value of *slspath* in files referenced in the current sls depends on the reference method. For jinja includes *slspath* is the path to the current file. For salt includes *slspath* is the path to the included file.

```
{{ slspath }}
```

### 5.6.19 State Modules

State Modules are the components that map to actual enforcement and management of Salt states.

#### States are Easy to Write!

State Modules should be easy to write and straightforward. The information passed to the SLS data structures will map directly to the states modules.

Mapping the information from the SLS data is simple, this example should illustrate:

```
/etc/salt/master: # maps to "name"
  file.managed: # maps to <filename>.<function> - e.g. "managed" in https://github.com/
↪saltstack/salt/tree/develop/salt/states/file.py
    - user: root # one of many options passed to the manage function
    - group: root
    - mode: 644
    - source: salt://salt/master
```

Therefore this SLS data can be directly linked to a module, function, and arguments passed to that function.

This does issue the burden, that function names, state names and function arguments should be very human readable inside state modules, since they directly define the user interface.

---

**Keyword Arguments**

Salt passes a number of keyword arguments to states when rendering them, including the environment, a unique identifier for the state, and more. Additionally, keep in mind that the requisites for a state are part of the keyword arguments. Therefore, if you need to iterate through the keyword arguments in a state, these must be considered and handled appropriately. One such example is in the *pkgrepo.managed* state, which needs to be able to handle arbitrary keyword arguments and pass them to module execution functions. An example of how these keyword arguments can be handled can be found here.

---

#### Using Custom State Modules

Place your custom state modules inside a `_states` directory within the *file_roots* specified by the master config file. These custom state modules can then be distributed in a number of ways. Custom state modules are distributed when `state.apply` is run, or by executing the *saltutil.sync_states* or *saltutil.sync_all* functions.

Any custom states which have been synced to a minion, that are named the same as one of Salt's default set of states, will take the place of the default state with the same name. Note that a state's default name is its filename (i.e. `foo.py` becomes state `foo`), but that its name can be overridden by using a *__virtual__ function*.

### Cross Calling Execution Modules from States

As with Execution Modules, State Modules can also make use of the `__salt__` and `__grains__` data. See *cross calling execution modules*.

It is important to note that the real work of state management should not be done in the state module unless it is needed. A good example is the pkg state module. This module does not do any package management work, it just calls the pkg execution module. This makes the pkg state module completely generic, which is why there is only one pkg state module and many backend pkg execution modules.

On the other hand some modules will require that the logic be placed in the state module, a good example of this is the file module. But in the vast majority of cases this is not the best approach, and writing specific execution modules to do the backend work will be the optimal solution.

### Cross Calling State Modules

All of the Salt state modules are available to each other and state modules can call functions available in other state modules.

The variable `__states__` is packed into the modules after they are loaded into the Salt minion.

The `__states__` variable is a Python dictionary containing all of the state modules. Dictionary keys are strings representing the names of the modules and the values are the functions themselves.

Salt state modules can be cross-called by accessing the value in the `__states__` dict:

```
ret = __states__['file.managed'](name='/tmp/myfile', source='salt://myfile')
```

This code will call the *managed* function in the *file* state module and pass the arguments `name` and `source` to it.

### Return Data

A State Module must return a dict containing the following keys/values:

- **name**: The same value passed to the state as ``name''.
- **changes**: A dict describing the changes made. Each thing changed should be a key, with its value being another dict with keys called ``old'' and ``new'' containing the old/new values. For example, the pkg state's **changes** dict has one key for each package changed, with the ``old'' and ``new'' keys in its sub-dict containing the old and new versions of the package. For example, the final changes dictionary for this scenario would look something like this:

```
ret['changes'].update({'my_pkg_name': {'old': '',
                                       'new': 'my_pkg_name-1.0'}})
```

- **result**: A tristate value. `True` if the action was successful, `False` if it was not, or `None` if the state was run in test mode, `test=True`, and changes would have been made if the state was not run in test mode.

| | live mode | test mode |
|---|---|---|
| no changes | `True` | `True` |
| successful changes | `True` | `None` |
| failed changes | `False` | `None` |

**Note**: Test mode does not predict if the changes will be successful or not.

- **comment**: A string containing a summary of the result.

The return data can also, include the **pchanges** key, this stands for *predictive changes*. The **pchanges** key informs the State system what changes are predicted to occur.

---

**Note:** States should not return data which cannot be serialized such as frozensets.

---

### Test State

All states should check for and support `test` being passed in the options. This will return data about what changes would occur if the state were actually run. An example of such a check could look like this:

```
# Return comment of changes if test.
if __opts__['test']:
    ret['result'] = None
    ret['comment'] = 'State Foo will execute with param {0}'.format(bar)
    return ret
```

Make sure to test and return before performing any real actions on the minion.

---

**Note:** Be sure to refer to the `result` table listed above and displaying any possible changes when writing support for `test`. Looking for changes in a state is essential to `test=true` functionality. If a state is predicted to have no changes when `test=true` (or `test: true` in a config file) is used, then the result of the final state **should not** be `None`.

---

### Watcher Function

If the state being written should support the watch requisite then a watcher function needs to be declared. The watcher function is called whenever the watch requisite is invoked and should be generic to the behavior of the state itself.

The watcher function should accept all of the options that the normal state functions accept (as they will be passed into the watcher function).

A watcher function typically is used to execute state specific reactive behavior, for instance, the watcher for the service module restarts the named service and makes it useful for the watcher to make the service react to changes in the environment.

The watcher function also needs to return the same data that a normal state function returns.

### Mod_init Interface

Some states need to execute something only once to ensure that an environment has been set up, or certain conditions global to the state behavior can be predefined. This is the realm of the mod_init interface.

A state module can have a function called **mod_init** which executes when the first state of this type is called. This interface was created primarily to improve the pkg state. When packages are installed the package metadata needs to be refreshed, but refreshing the package metadata every time a package is installed is wasteful. The mod_init function for the pkg state sets a flag down so that the first, and only the first, package installation attempt will refresh the package database (the package database can of course be manually called to refresh via the `refresh` option in the pkg state).

The mod_init function must accept the **Low State Data** for the given executing state as an argument. The low state data is a dict and can be seen by executing the state.show_lowstate function. Then the mod_init function must return

a bool. If the return value is True, then the mod_init function will not be executed again, meaning that the needed behavior has been set up. Otherwise, if the mod_init function returns False, then the function will be called the next time.

A good example of the mod_init function is found in the pkg state module:

```
def mod_init(low):
    '''
    Refresh the package database here so that it only needs to happen once
    '''
    if low['fun'] == 'installed' or low['fun'] == 'latest':
        rtag = __gen_rtag()
        if not os.path.exists(rtag):
            open(rtag, 'w+').write('')
        return True
    else:
        return False
```

The mod_init function in the pkg state accepts the low state data as `low` and then checks to see if the function being called is going to install packages, if the function is not going to install packages then there is no need to refresh the package database. Therefore if the package database is prepared to refresh, then return True and the mod_init will not be called the next time a pkg state is evaluated, otherwise return False and the mod_init will be called next time a pkg state is evaluated.

### Log Output

You can call the logger from custom modules to write messages to the minion logs. The following code snippet demonstrates writing log messages:

```
import logging

log = logging.getLogger(__name__)

log.info('Here is Some Information')
log.warning('You Should Not Do That')
log.error('It Is Busted')
```

### Full State Module Example

The following is a simplistic example of a full state module and function. Remember to call out to execution modules to perform all the real work. The state module should only perform ``before'' and ``after'' checks.

1. Make a custom state module by putting the code into a file at the following path: **/srv/salt/_states/my_custom_state.py**.
2. Distribute the custom state module to the minions:

   ```
   salt '*' saltutil.sync_states
   ```

3. Write a new state to use the custom state by making a new state file, for instance **/srv/salt/my_custom_state.sls**.
4. Add the following SLS configuration to the file created in Step 3:

   ```
   human_friendly_state_id:        # An arbitrary state ID declaration.
     my_custom_state:              # The custom state module name.
   ```

```
    - enforce_custom_thing      # The function in the custom state module.
    - name: a_value             # Maps to the ``name`` parameter in the custom
↪function.
    - foo: Foo                  # Specify the required ``foo`` parameter.
    - bar: False                # Override the default value for the ``bar``
↪parameter.
```

### Example state module

```
import salt.exceptions

def enforce_custom_thing(name, foo, bar=True):
    '''
    Enforce the state of a custom thing

    This state module does a custom thing. It calls out to the execution module
    ``my_custom_module`` in order to check the current system and perform any
    needed changes.

    name
        The thing to do something to
    foo
        A required argument
    bar : True
        An argument with a default value
    '''
    ret = {
        'name': name,
        'changes': {},
        'result': False,
        'comment': '',
        'pchanges': {},
        }

    # Start with basic error-checking. Do all the passed parameters make sense
    # and agree with each-other?
    if bar == True and foo.startswith('Foo'):
        raise salt.exceptions.SaltInvocationError(
            'Argument "foo" cannot start with "Foo" if argument "bar" is True.')

    # Check the current state of the system. Does anything need to change?
    current_state = __salt__['my_custom_module.current_state'](name)

    if current_state == foo:
        ret['result'] = True
        ret['comment'] = 'System already in the correct state'
        return ret

    # The state of the system does need to be changed. Check if we're running
    # in ``test=true`` mode.
    if __opts__['test'] == True:
        ret['comment'] = 'The state of "{0}" will be changed.'.format(name)
        ret['pchanges'] = {
            'old': current_state,
            'new': 'Description, diff, whatever of the new state',
        }
```

```
        # Return ``None`` when running with ``test=true``.
        ret['result'] = None

        return ret

    # Finally, make the actual change and return the result.
    new_state = __salt__['my_custom_module.change_state'](name, foo)

    ret['comment'] = 'The state of "{0}" was changed!'.format(name)

    ret['changes'] = {
        'old': current_state,
        'new': new_state,
    }

    ret['result'] = True

    return ret
```

### 5.6.20 State Management

State management, also frequently called Software Configuration Management (SCM), is a program that puts and keeps a system into a predetermined state. It installs software packages, starts or restarts services or puts configuration files in place and watches them for changes.

Having a state management system in place allows one to easily and reliably configure and manage a few servers or a few thousand servers. It allows configurations to be kept under version control.

Salt States is an extension of the Salt Modules that we discussed in the previous *remote execution* tutorial. Instead of calling one-off executions the state of a system can be easily defined and then enforced.

### 5.6.21 Understanding the Salt State System Components

The Salt state system is comprised of a number of components. As a user, an understanding of the SLS and renderer systems are needed. But as a developer, an understanding of Salt states and how to write the states is needed as well.

---

**Note:** States are compiled and executed only on minions that have been targeted. To execute functions directly on masters, see *runners*.

---

#### Salt SLS System

The primary system used by the Salt state system is the SLS system. SLS stands for SaLt State.

The Salt States are files which contain the information about how to configure Salt minions. The states are laid out in a directory tree and can be written in many different formats.

The contents of the files and they way they are laid out is intended to be as simple as possible while allowing for maximum flexibility. The files are laid out in states and contains information about how the minion needs to be configured.

### SLS File Layout

SLS files are laid out in the Salt file server.

A simple layout can look like this:

```
top.sls
ssh.sls
sshd_config
users/init.sls
users/admin.sls
salt/master.sls
web/init.sls
```

The `top.sls` file is a key component. The `top.sls` files is used to determine which SLS files should be applied to which minions.

The rest of the files with the `.sls` extension in the above example are state files.

Files without a `.sls` extensions are seen by the Salt master as files that can be downloaded to a Salt minion.

States are translated into dot notation. For example, the `ssh.sls` file is seen as the ssh state and the `users/admin.sls` file is seen as the users.admin state.

Files named `init.sls` are translated to be the state name of the parent directory, so the `web/init.sls` file translates to the `web` state.

In Salt, everything is a file; there is no ``magic translation'' of files and file types. This means that a state file can be distributed to minions just like a plain text or binary file.

### SLS Files

The Salt state files are simple sets of data. Since SLS files are just data they can be represented in a number of different ways.

The default format is YAML generated from a Jinja template. This allows for the states files to have all the language constructs of Python and the simplicity of YAML.

State files can then be complicated Jinja templates that translate down to YAML, or just plain and simple YAML files.

The State files are simply common data structures such as dictionaries and lists, constructed using a templating language such as YAML.

Here is an example of a Salt State:

```
vim:
  pkg.installed: []

salt:
  pkg.latest:
    - name: salt
  service.running:
    - names:
      - salt-master
      - salt-minion
    - require:
      - pkg: salt
    - watch:
      - file: /etc/salt/minion
```

```
/etc/salt/minion:
  file.managed:
    - source: salt://salt/minion
    - user: root
    - group: root
    - mode: 644
    - require:
      - pkg: salt
```

This short stanza will ensure that vim is installed, Salt is installed and up to date, the salt-master and salt-minion daemons are running and the Salt minion configuration file is in place. It will also ensure everything is deployed in the right order and that the Salt services are restarted when the watched file updated.

### The Top File

The top file controls the mapping between minions and the states which should be applied to them.

The top file specifies which minions should have which SLS files applied and which environments they should draw those SLS files from.

The top file works by specifying environments on the top-level.

Each environment contains *target expressions* to match minions. Finally, each target expression contains a list of Salt states to apply to matching minions:

```
base:
  '*':
    - salt
    - users
    - users.admin
  'saltmaster.*':
    - match: pcre
    - salt.master
```

This above example uses the base environment which is built into the default Salt setup.

The base environment has target expressions. The first one matches all minions, and the SLS files below it apply to all minions.

The second expression is a regular expression that will match all minions with an ID matching `saltmaster.*` and specifies that for those minions, the salt.master state should be applied. To

---

**Important**: Since version 2014.7.0, the default matcher (when one is not explicitly defined as in the second expression in the above example) is the *compound* matcher. Since this matcher parses individual words in the expression, minion IDs containing spaces will not match properly using this matcher. Therefore, if your target expression is designed to match a minion ID containing spaces, it will be necessary to specify a different match type (such as `glob`). For example:

```
base:
  'test minion':
    - match: glob
    - foo
    - bar
    - baz
```

---

A full table of match types available in the top file can be found *here*.

### Reloading Modules

Some Salt states require that specific packages be installed in order for the module to load. As an example the *pip* state module requires the pip package for proper name and version parsing.

In most of the common cases, Salt is clever enough to transparently reload the modules. For example, if you install a package, Salt reloads modules because some other module or state might require just that package which was installed.

On some edge-cases salt might need to be told to reload the modules. Consider the following state file which we'll call `pep8.sls`:

```
python-pip:
  cmd.run:
    - name: |
        easy_install --script-dir=/usr/bin -U pip
    - cwd: /

pep8:
  pip.installed:
    - require:
      - cmd: python-pip
```

The above example installs pip using `easy_install` from setuptools and installs pep8 using *pip*, which, as told earlier, requires pip to be installed system-wide. Let's execute this state:

```
salt-call state.apply pep8
```

The execution output would be something like:

```
----------
    State: - pip
    Name:      pep8
    Function:  installed
        Result:    False
        Comment:   State pip.installed found in sls pep8 is unavailable

        Changes:

Summary
------------
Succeeded: 1
Failed:    1
------------
Total:     2
```

If we executed the state again the output would be:

```
----------
    State: - pip
    Name:      pep8
    Function:  installed
        Result:    True
        Comment:   Package was successfully installed
        Changes:   pep8==1.4.6: Installed

Summary
------------
Succeeded: 2
```

```
Failed:    0
------------
Total:     2
```

Since we installed pip using *cmd*, Salt has no way to know that a system-wide package was installed.

On the second execution, since the required pip package was installed, the state executed correctly.

---

**Note**: Salt does not reload modules on every state run because doing so would greatly slow down state execution.

---

So how do we solve this *edge-case*? `reload_modules`!

`reload_modules` is a boolean option recognized by salt on **all** available states which forces salt to reload its modules once a given state finishes.

The modified state file would now be:

```
python-pip:
  cmd.run:
    - name: |
        easy_install --script-dir=/usr/bin -U pip
    - cwd: /
    - reload_modules: true

pep8:
  pip.installed:
    - require:
      - cmd: python-pip
```

Let's run it, once:

```
salt-call state.apply pep8
```

The output is:

```
----------
    State: - pip
    Name:      pep8
    Function:  installed
        Result:    True
        Comment:   Package was successfully installed
        Changes:   pep8==1.4.6: Installed

Summary
------------
Succeeded: 2
Failed:    0
------------
Total:     2
```

CHAPTER 6

# Events & Reactor

## 6.1 Event System

The Salt Event System is used to fire off events enabling third party applications or external processes to react to behavior within Salt.

The event system is comprised of a two primary components:

- The event sockets which publishes events.
- The event library which can listen to events and send events into the salt system.

### 6.1.1 Event types

#### Salt Master Events

These events are fired on the Salt Master event bus. This list is **not** comprehensive.

#### Authentication events

**`salt/auth`**
Fired when a minion performs an authentication check with the master.

**Variables**

- **`id`** -- The minion ID.
- **`act`** -- The current status of the minion key: `accept`, `pend`, `reject`.
- **`pub`** -- The minion public key.

---

**Note:** Minions fire auth events on fairly regular basis for a number of reasons. Writing reactors to respond to events through the auth cycle can lead to infinite reactor event loops (minion tries to auth, reactor responds by doing something that generates another auth event, minion sends auth event, etc.). Consider reacting to `salt/key` or `salt/minion/<MID>/start` or firing a custom event tag instead.

---

### Start events

**salt/minion/<MID>/start**
Fired every time a minion connects to the Salt master.

**Variables** **id** -- The minion ID.

### Key events

**salt/key**
Fired when accepting and rejecting minions keys on the Salt master. These happen as a result of actions undertaken by the *salt-key* command.

**Variables**

- **id** -- The minion ID.
- **act** -- The new status of the minion key: `accept`, `delete`,

**Warning**: If a master is in `auto_accept mode`, `salt/key` events will not be fired when the keys are accepted. In addition, pre-seeding keys (like happens through *Salt-Cloud*) will not cause firing of these events.

### Job events

**salt/job/<JID>/new**
Fired as a new job is sent out to minions.

**Variables**

- **jid** -- The job ID.
- **tgt** -- The target of the job: `*`, a minion ID, `G@os_family:RedHat`, etc.
- **tgt_type** -- The type of targeting used: `glob`, `grain`, `compound`, etc.
- **fun** -- The function to run on minions: `test.ping`, `network.interfaces`, etc.
- **arg** -- A list of arguments to pass to the function that will be called.
- **minions** -- A list of minion IDs that Salt expects will return data for this job.
- **user** -- The name of the user that ran the command as defined in Salt's Publisher ACL or external auth.

**salt/job/<JID>/ret/<MID>**
Fired each time a minion returns data for a job.

**Variables**

- **id** -- The minion ID.
- **jid** -- The job ID.
- **retcode** -- The return code for the job.
- **fun** -- The function the minion ran. E.g., `test.ping`.
- **return** -- The data returned from the execution module.

**salt/job/<JID>/prog/<MID>/<RUN NUM>**
Fired each time a each function in a state run completes execution. Must be enabled using the *state_events* option.

**Variables**

- **data** -- The data returned from the state module function.
- **id** -- The minion ID.
- **jid** -- The job ID.

### Presence events

**salt/presence/present**
Events fired on a regular interval about currently connected, newly connected, or recently disconnected minions. Requires the *presence_events* setting to be enabled.

**Variables** **present** -- A list of minions that are currently connected to the Salt master.

**salt/presence/change**
Fired when the Presence system detects new minions connect or disconnect.

**Variables**

- **new** -- A list of minions that have connected since the last presence event.
- **lost** -- A list of minions that have disconnected since the last presence event.

### Cloud Events

Unlike other Master events, `salt-cloud` events are not fired on behalf of a Salt Minion. Instead, `salt-cloud` events are fired on behalf of a VM. This is because the minion-to-be may not yet exist to fire events to or also may have been destroyed.

This behavior is reflected by the `name` variable in the event data for `salt-cloud` events as compared to the `id` variable for Salt Minion-triggered events.

**salt/cloud/<VM NAME>/creating**
Fired when salt-cloud starts the VM creation process.

**Variables**

- **name** -- the name of the VM being created.
- **event** -- description of the event.
- **provider** -- the cloud provider of the VM being created.
- **profile** -- the cloud profile for the VM being created.

**salt/cloud/<VM NAME>/deploying**
Fired when the VM is available and salt-cloud begins deploying Salt to the new VM.

**Variables**

- **name** -- the name of the VM being created.
- **event** -- description of the event.

- **kwargs** -- options available as the deploy script is invoked: `conf_file`, `deploy_command`, `display_ssh_output`, `host`, `keep_tmp`, `key_filename`, `make_minion`, `minion_conf`, `name`, `parallel`, `preseed_minion_keys`, `script`, `script_args`, `script_env`, `sock_dir`, `start_action`, `sudo`, `tmp_dir`, `tty`, `username`

**salt/cloud/<VM NAME>/requesting**
Fired when salt-cloud sends the request to create a new VM.

**Variables**

- **event** -- description of the event.
- **location** -- the location of the VM being requested.
- **kwargs** -- options available as the VM is being requested: `Action`, `ImageId`, `InstanceType`, `KeyName`, `MaxCount`, `MinCount`, `SecurityGroup.1`

**salt/cloud/<VM NAME>/querying**
Fired when salt-cloud queries data for a new instance.

**Variables**

- **event** -- description of the event.
- **instance_id** -- the ID of the new VM.

**salt/cloud/<VM NAME>/tagging**
Fired when salt-cloud tags a new instance.

**Variables**

- **event** -- description of the event.
- **tags** -- tags being set on the new instance.

**salt/cloud/<VM NAME>/waiting_for_ssh**
Fired while the salt-cloud deploy process is waiting for ssh to become available on the new instance.

**Variables**

- **event** -- description of the event.
- **ip_address** -- IP address of the new instance.

**salt/cloud/<VM NAME>/deploy_script**
Fired once the deploy script is finished.

**Variables** **event** -- description of the event.

**salt/cloud/<VM NAME>/created**
Fired once the new instance has been fully created.

**Variables**

- **name** -- the name of the VM being created.
- **event** -- description of the event.
- **instance_id** -- the ID of the new instance.
- **provider** -- the cloud provider of the VM being created.
- **profile** -- the cloud profile for the VM being created.

**salt/cloud/<VM NAME>/destroying**
Fired when salt-cloud requests the destruction of an instance.

Variables

- **name** -- the name of the VM being created.
- **event** -- description of the event.
- **instance_id** -- the ID of the new instance.

**salt/cloud/<VM NAME>/destroyed**

Fired when an instance has been destroyed.

Variables

- **name** -- the name of the VM being created.
- **event** -- description of the event.
- **instance_id** -- the ID of the new instance.

### 6.1.2 Listening for Events

Salt's Event Bus is used heavily within Salt and it is also written to integrate heavily with existing tooling and scripts. There is a variety of ways to consume it.

#### From the CLI

The quickest way to watch the event bus is by calling the *state.event runner*:

```
salt-run state.event pretty=True
```

That runner is designed to interact with the event bus from external tools and shell scripts. See the documentation for more examples.

#### Remotely via the REST API

Salt's event bus can be consumed *salt.netapi.rest_cherrypy.app.Events* as an HTTP stream from external tools or services.

```
curl -SsNk https://salt-api.example.com:8000/events?token=05A3
```

#### From Python

Python scripts can access the event bus only as the same system user that Salt is running as.

The event system is accessed via the event library and can only be accessed by the same system user that Salt is running as. To listen to events a SaltEvent object needs to be created and then the get_event function needs to be run. The SaltEvent object needs to know the location that the Salt Unix sockets are kept. In the configuration this is the `sock_dir` option. The `sock_dir` option defaults to ``/var/run/salt/master'' on most systems.

The following code will check for a single event:

```
import salt.config
import salt.utils.event

opts = salt.config.client_config('/etc/salt/master')
```

```
event = salt.utils.event.get_event(
        'master',
        sock_dir=opts['sock_dir'],
        transport=opts['transport'],
        opts=opts)

data = event.get_event()
```

Events will also use a ``tag''. Tags allow for events to be filtered by prefix. By default all events will be returned. If only authentication events are desired, then pass the tag ``salt/auth''.

The `get_event` method has a default poll time assigned of 5 seconds. To change this time set the ``wait'' option.

The following example will only listen for auth events and will wait for 10 seconds instead of the default 5.

```
data = event.get_event(wait=10, tag='salt/auth')
```

To retrieve the tag as well as the event data, pass `full=True`:

```
evdata = event.get_event(wait=10, tag='salt/job', full=True)

tag, data = evdata['tag'], evdata['data']
```

Instead of looking for a single event, the `iter_events` method can be used to make a generator which will continually yield salt events.

The iter_events method also accepts a tag but not a wait time:

```
for data in event.iter_events(tag='salt/auth'):
    print(data)
```

And finally event tags can be globbed, such as they can be in the Reactor, using the fnmatch library.

```
import fnmatch

import salt.config
import salt.utils.event

opts = salt.config.client_config('/etc/salt/master')

sevent = salt.utils.event.get_event(
        'master',
        sock_dir=opts['sock_dir'],
        transport=opts['transport'],
        opts=opts)

while True:
    ret = sevent.get_event(full=True)
    if ret is None:
        continue

    if fnmatch.fnmatch(ret['tag'], 'salt/job/*/ret/*'):
        do_something_with_job_return(ret['data'])
```

### 6.1.3 Firing Events

It is possible to fire events on either the minion's local bus or to fire events intended for the master.

To fire a local event from the minion on the command line call the *event.fire* execution function:

```
salt-call event.fire '{"data": "message to be sent in the event"}' 'tag'
```

To fire an event to be sent up to the master from the minion call the *event.send* execution function. Remember YAML can be used at the CLI in function arguments:

```
salt-call event.send 'myco/mytag/success' '{success: True, message: "It works!"}'
```

If a process is listening on the minion, it may be useful for a user on the master to fire an event to it:

```
# Job on minion
import salt.utils.event

event = salt.utils.event.MinionEvent(**__opts__)

for evdata in event.iter_events(tag='customtag/'):
    return evdata # do your processing here...
```

```
salt minionname event.fire '{"data": "message for the minion"}' 'customtag/african/
↪unladen'
```

### 6.1.4 Firing Events from Python

#### From Salt execution modules

Events can be very useful when writing execution modules, in order to inform various processes on the master when a certain task has taken place. This is easily done using the normal cross-calling syntax:

```
# /srv/salt/_modules/my_custom_module.py

def do_something():
    '''
    Do something and fire an event to the master when finished

    CLI Example::

        salt '*' my_custom_module:do_something
    '''
    # do something!
    __salt__['event.send']('myco/my_custom_module/finished', {
        'finished': True,
        'message': "The something is finished!",
    })
```

#### From Custom Python Scripts

Firing events from custom Python code is quite simple and mirrors how it is done at the CLI:

```
import salt.client

caller = salt.client.Caller()

caller.sminion.functions['event.send'](
```

```
    'myco/myevent/success',
    {
        'success': True,
        'message': "It works!",
    }
)
```

## 6.2 Beacons

Beacons let you use the Salt event system to monitor non-Salt processes. The beacon system allows the minion to hook into a variety of system processes and continually monitor these processes. When monitored activity occurs in a system process, an event is sent on the Salt event bus that can be used to trigger a *reactor*.

Salt beacons can currently monitor and send Salt events for many system activities, including:

- file system changes
- system load
- service status
- shell activity, such as user login
- network and disk usage

See *beacon modules* for a current list.

---

**Note**: Salt beacons are an event generation mechanism. Beacons leverage the Salt *reactor* system to make changes when beacon events occur.

---

### 6.2.1 Configuring Beacons

Salt beacons do not require any changes to the system components that are being monitored, everything is configured using Salt.

Beacons are typically enabled by placing a `beacons:` top level block in `/etc/salt/minion` or any file in `/etc/salt/minion.d/` such as `/etc/salt/minion.d/beacons.conf`:

```
beacons:
  inotify:
    /etc/important_file: {}
    /opt: {}
```

The beacon system, like many others in Salt, can also be configured via the minion pillar, grains, or local config file.

---

**Note**: The *inotify* beacon only works on OSes that have *inotify* kernel support. Currently this excludes FreeBSD, Mac OS X, and Windows.

---

#### Beacon Monitoring Interval

Beacons monitor on a 1-second interval by default. To set a different interval, provide an `interval` argument to a beacon. The following beacons run on 5- and 10-second intervals:

```
beacons:
  inotify:
    /etc/important_file: {}
    /opt: {}
    interval: 5
    disable_during_state_run: True
  load:
    1m:
      - 0.0
      - 2.0
    5m:
      - 0.0
      - 1.5
    15m:
      - 0.1
      - 1.0
    interval: 10
```

#### Avoiding Event Loops

It is important to carefully consider the possibility of creating a loop between a reactor and a beacon. For example, one might set up a beacon which monitors whether a file is read which in turn fires a reactor to run a state which in turn reads the file and re-fires the beacon.

To avoid these types of scenarios, the `disable_during_state_run` argument may be set. If a state run is in progress, the beacon will not be run on its regular interval until the minion detects that the state run has completed, at which point the normal beacon interval will resume.

```
beacons:
  inotify:
    /etc/important_file: {}
    disable_during_state_run: True
```

**Note:** For beacon writers: If you need extra stuff to happen, like closing file handles for the `disable_during_state_run` to actually work, you can add a *close()* function to the beacon to run those extra things. See the *inotify* beacon.

### 6.2.2 Beacon Example

This example demonstrates configuring the *`inotify`* beacon to monitor a file for changes, and then restores the file to its original contents if a change was made.

**Note:** The inotify beacon requires Pyinotify on the minion, install it using `salt myminion pkg.install python-inotify`.

#### Create Watched File

Create the file named `/etc/important_file` and add some simple content:

```
important_config: True
```

### Add Beacon Configs to Minion

On the Salt minion, add the following configuration to `/etc/salt/minion.d/beacons.conf`:

```
beacons:
  inotify:
    /etc/important_file:
      mask:
        - modify
    disable_during_state_run: True
```

Save the configuration file and restart the minion service. The beacon is now set up to notify salt upon modifications made to the file.

---

**Note**: The `disable_during_state_run: True` parameter *prevents* the inotify beacon from generating reactor events due to salt itself modifying the file.

---

### View Events on the Master

On your Salt master, start the event runner using the following command:

```
salt-run state.event pretty=true
```

This runner displays events as they are received by the master on the Salt event bus. To test the beacon you set up in the previous section, make and save a modification to `/etc/important_file`. You'll see an event similar to the following on the event bus:

```
salt/beacon/larry/inotify//etc/important_file       {
 "_stamp": "2015-09-09T15:59:37.972753",
 "data": {
     "change": "IN_IGNORED",
     "id": "larry",
     "path": "/etc/important_file"
 },
 "tag": "salt/beacon/larry/inotify//etc/important_file"
}
```

This indicates that the event is being captured and sent correctly. Now you can create a reactor to take action when this event occurs.

### Create a Reactor

This reactor reverts the file named `/etc/important_file` to the contents provided by salt each time it is modified.

### Reactor SLS

On your Salt master, create a file named `/srv/reactor/revert.sls`.

**Note**: If the `/srv/reactor` directory doesn't exist, create it.

```
mkdir -p /srv/reactor
```

Add the following to `/srv/reactor/revert.sls`:

```
revert-file:
  local.state.apply:
    - tgt: {{ data['data']['id'] }}
    - mods: maintain_important_file
```

**Note**: In addition to *setting* `disable_during_state_run: True` for an inotify beacon whose reaction is to modify the watched file, it is important to ensure the state applied is also idempotent.

**Note**: The expression `{{ data['data']['id'] }}` *is correct* as it matches the event structure *shown above*.

### State SLS

Create the state sls file referenced by the reactor sls file. This state file will be located at `/srv/salt/maintain_important_file.sls`.

```
important_file:
  file.managed:
    - name: /etc/important_file
    - contents: |
        important_config: True
```

### Master Config

Configure the master to map the inotify beacon event to the `revert` reaction in `/etc/salt/master.d/reactor.conf`:

```
reactor:
  - salt/beacon/*/inotify//etc/important_file:
    - /srv/reactor/revert.sls
```

**Note**: You can have only one top level `reactor` section, so if one already exists, add this code to the existing section. See *Understanding the Structure of Reactor Formulas* to learn more about reactor SLS syntax.

### Start the Salt Master in Debug Mode

To help with troubleshooting, start the Salt master in debug mode:

```
service salt-master stop
salt-master -l debug
```

When debug logging is enabled, event and reactor data are displayed so you can discover syntax and other issues.

#### Trigger the Reactor

On your minion, make and save another change to `/etc/important_file`. On the Salt master, you'll see debug messages that indicate the event was received and the `state.apply` job was sent. When you inspect the file on the minion, you'll see that the file contents have been restored to `important_config: True`.

All beacons are configured using a similar process of enabling the beacon, writing a reactor SLS (and state SLS if needed), and mapping a beacon event to the reactor SLS.

### 6.2.3 Writing Beacon Plugins

Beacon plugins use the standard Salt loader system, meaning that many of the constructs from other plugin systems holds true, such as the `__virtual__` function.

The important function in the Beacon Plugin is the `beacon` function. When the beacon is configured to run, this function will be executed repeatedly by the minion. The `beacon` function therefore cannot block and should be as lightweight as possible. The `beacon` also must return a list of dicts, each dict in the list will be translated into an event on the master.

Please see the *inotify* beacon as an example.

#### The *beacon* Function

The beacons system will look for a function named *beacon* in the module. If this function is not present then the beacon will not be fired. This function is called on a regular basis and defaults to being called on every iteration of the minion, which can be tens to hundreds of times a second. This means that the *beacon* function cannot block and should not be CPU or IO intensive.

The beacon function will be passed in the configuration for the executed beacon. This makes it easy to establish a flexible configuration for each called beacon. This is also the preferred way to ingest the beacon's configuration as it allows for the configuration to be dynamically updated while the minion is running by configuring the beacon in the minion's pillar.

#### The Beacon Return

The information returned from the beacon is expected to follow a predefined structure. The returned value needs to be a list of dictionaries (standard python dictionaries are preferred, no ordered dicts are needed).

The dictionaries represent individual events to be fired on the minion and master event buses. Each dict is a single event. The dict can contain any arbitrary keys but the `tag' key will be extracted and added to the tag of the fired event.

The return data structure would look something like this:

```
[{'changes': ['/foo/bar'], 'tag': 'foo'},
 {'changes': ['/foo/baz'], 'tag': 'bar'}]
```

#### Calling Execution Modules

Execution modules are still the preferred location for all work and system interaction to happen in Salt. For this reason the *__salt__* variable is available inside the beacon.

Please be careful when calling functions in *__salt__*, while this is the preferred means of executing complicated routines in Salt not all of the execution modules have been written with beacons in mind. Watch out for execution modules that may be CPU intense or IO bound. Please feel free to add new execution modules and functions to back specific beacons.

#### Distributing Custom Beacons

Custom beacons can be distributed to minions using `saltutil`, see *Dynamic Module Distribution*.

## 6.3 Reactor System

Salt's Reactor system gives Salt the ability to trigger actions in response to an event. It is a simple interface to watching Salt's event bus for event tags that match a given pattern and then running one or more commands in response.

This system binds sls files to event tags on the master. These sls files then define reactions. This means that the reactor system has two parts. First, the reactor option needs to be set in the master configuration file. The reactor option allows for event tags to be associated with sls reaction files. Second, these reaction files use highdata (like the state system) to define reactions to be executed.

### 6.3.1 Event System

A basic understanding of the event system is required to understand reactors. The event system is a local ZeroMQ PUB interface which fires salt events. This event bus is an open system used for sending information notifying Salt and other systems about operations.

The event system fires events with a very specific criteria. Every event has a **tag**. Event tags allow for fast top level filtering of events. In addition to the tag, each event has a data structure. This data structure is a dict, which contains information about the event.

### 6.3.2 Mapping Events to Reactor SLS Files

Reactor SLS files and event tags are associated in the master config file. By default this is /etc/salt/master, or /etc/salt/master.d/reactor.conf.

New in version 2014.7.0: Added Reactor support for `salt://` file paths.

In the master config section `reactor:' is a list of event tags to be matched and each event tag has a list of reactor SLS files to be run.

```
reactor:                            # Master config section "reactor"

  - 'salt/minion/*/start':          # Match tag "salt/minion/*/start"
    - /srv/reactor/start.sls        # Things to do when a minion starts
    - /srv/reactor/monitor.sls      # Other things to do

  - 'salt/cloud/*/destroyed':       # Globs can be used to match tags
    - /srv/reactor/destroy/*.sls    # Globs can be used to match file names

  - 'myco/custom/event/tag':        # React to custom event tags
    - salt://reactor/mycustom.sls   # Reactor files can come from the salt fileserver
```

**Note:** In the above example, `salt://reactor/mycustom.sls` refers to the `base` environment. To pull this file from a different environment, use the *querystring syntax* (e.g. `salt://reactor/mycustom.sls?saltenv=reactor`).

Reactor sls files are similar to state and pillar sls files. They are by default yaml + Jinja templates and are passed familiar context variables.

They differ because of the addition of the `tag` and `data` variables.

- The `tag` variable is just the tag in the fired event.
- The `data` variable is the event's data dict.

Here is a simple reactor sls:

```
{% if data['id'] == 'mysql1' %}
highstate_run:
  local.state.apply:
    - tgt: mysql1
{% endif %}
```

This simple reactor file uses Jinja to further refine the reaction to be made. If the `id` in the event data is `mysql1` (in other words, if the name of the minion is `mysql1`) then the following reaction is defined. The same data structure and compiler used for the state system is used for the reactor system. The only difference is that the data is matched up to the salt command API and the runner system. In this example, a command is published to the `mysql1` minion with a function of `state.apply`. Similarly, a runner can be called:

```
{% if data['data']['orchestrate'] == 'refresh' %}
orchestrate_run:
  runner.state.orchestrate
{% endif %}
```

This example will execute the state.orchestrate runner and initiate an orchestrate execution.

### 6.3.3 The Goal of Writing Reactor SLS Files

Reactor SLS files share the familiar syntax from Salt States but there are important differences. The goal of a Reactor file is to process a Salt event as quickly as possible and then to optionally start a **new** process in response.

1. The Salt Reactor watches Salt's event bus for new events.
2. The event tag is matched against the list of event tags under the `reactor` section in the Salt Master config.
3. The SLS files for any matches are Rendered into a data structure that represents one or more function calls.
4. That data structure is given to a pool of worker threads for execution.

Matching and rendering Reactor SLS files is done sequentially in a single process. Complex Jinja that calls out to slow Execution or Runner modules slows down the rendering and causes other reactions to pile up behind the current one. The worker pool is designed to handle complex and long-running processes such as Salt Orchestrate.

tl;dr: Rendering Reactor SLS files MUST be simple and quick. The new process started by the worker threads can be long-running.

### Jinja Context

Reactor files only have access to a minimal Jinja context. `grains` and `pillar` are not available. The `salt` object is available for calling Runner and Execution modules but it should be used sparingly and only for quick tasks for the reasons mentioned above.

### Advanced State System Capabilities

Reactor SLS files, by design, do not support Requisites, ordering, `onlyif`/`unless` conditionals and most other powerful constructs from Salt's State system.

Complex Master-side operations are best performed by Salt's Orchestrate system so using the Reactor to kick off an Orchestrate run is a very common pairing.

For example:

```
# /etc/salt/master.d/reactor.conf
# A custom event containing: {"foo": "Foo!", "bar: "bar*", "baz": "Baz!"}
reactor:
  - myco/custom/event:
    - /srv/reactor/some_event.sls
```

```
# /srv/reactor/some_event.sls
invoke_orchestrate_file:
  runner.state.orchestrate:
    - mods: orch.do_complex_thing
    - pillar:
        event_tag: {{ tag }}
        event_data: {{ data | json() }}
```

```
# /srv/salt/orch/do_complex_thing.sls
{% set tag = salt.pillar.get('event_tag') %}
{% set data = salt.pillar.get('event_data') %}

# Pass data from the event to a custom runner function.
# The function expects a 'foo' argument.
do_first_thing:
  salt.runner:
    - name: custom_runner.custom_function
    - foo: {{ data.foo }}

# Wait for the runner to finish then send an execution to minions.
# Forward some data from the event down to the minion's state run.
do_second_thing:
  salt.state:
    - tgt: {{ data.bar }}
    - sls:
      - do_thing_on_minion
    - pillar:
        baz: {{ data.baz }}
    - require:
      - salt: do_first_thing
```

#### Beacons and Reactors

An event initiated by a beacon, when it arrives at the master will be wrapped inside a second event, such that the data object containing the beacon information will be `data['data']`, rather than `data`.

For example, to access the `id` field of the beacon event in a reactor file, you will need to reference `{{ data['data']['id'] }}` rather than `{{ data['id'] }}` as for events initiated directly on the event bus.

See the *beacon documentation* for examples.

### 6.3.4 Fire an event

To fire an event from a minion call `event.send`

```
salt-call event.send 'foo' '{orchestrate: refresh}'
```

After this is called, any reactor sls files matching event tag `foo` will execute with `{{ data['data']['orchestrate'] }}` equal to `'refresh'`.

See *salt.modules.event* for more information.

### 6.3.5 Knowing what event is being fired

The best way to see exactly what events are fired and what data is available in each event is to use the *state.event runner*.

**See also**:

*Common Salt Events*

Example usage:

```
salt-run state.event pretty=True
```

Example output:

```
salt/job/20150213001905721678/new       {
    "_stamp": "2015-02-13T00:19:05.724583",
    "arg": [],
    "fun": "test.ping",
    "jid": "20150213001905721678",
    "minions": [
        "jerry"
    ],
    "tgt": "*",
    "tgt_type": "glob",
    "user": "root"
}
salt/job/20150213001910749506/ret/jerry {
    "_stamp": "2015-02-13T00:19:11.136730",
    "cmd": "_return",
    "fun": "saltutil.find_job",
    "fun_args": [
        "20150213001905721678"
    ],
    "id": "jerry",
```

```
    "jid": "20150213001910749506",
    "retcode": 0,
    "return": {},
    "success": true
}
```

### 6.3.6 Debugging the Reactor

The best window into the Reactor is to run the master in the foreground with debug logging enabled. The output will include when the master sees the event, what the master does in response to that event, and it will also include the rendered SLS file (or any errors generated while rendering the SLS file).

1. Stop the master.
2. Start the master manually:

   ```
   salt-master -l debug
   ```

3. Look for log entries in the form:

   ```
   [DEBUG   ] Gathering reactors for tag foo/bar
   [DEBUG   ] Compiling reactions for tag foo/bar
   [DEBUG   ] Rendered data from file: /path/to/the/reactor_file.sls:
   <... Rendered output appears here. ...>
   ```

   The rendered output is the result of the Jinja parsing and is a good way to view the result of referencing Jinja variables. If the result is empty then Jinja produced an empty result and the Reactor will ignore it.

### 6.3.7 Understanding the Structure of Reactor Formulas

**I.e., when to use `arg` and `kwarg` and when to specify the function arguments directly.**

While the reactor system uses the same basic data structure as the state system, the functions that will be called using that data structure are different functions than are called via Salt's state system. The Reactor can call Runner modules using the *runner* prefix, Wheel modules using the *wheel* prefix, and can also cause minions to run Execution modules using the *local* prefix.

Changed in version 2014.7.0: The `cmd` prefix was renamed to `local` for consistency with other parts of Salt. A backward-compatible alias was added for `cmd`.

The Reactor runs on the master and calls functions that exist on the master. In the case of Runner and Wheel functions the Reactor can just call those functions directly since they exist on the master and are run on the master.

In the case of functions that exist on minions and are run on minions, the Reactor still needs to call a function on the master in order to send the necessary data to the minion so the minion can execute that function.

The Reactor calls functions exposed in *Salt's Python API documentation*. and thus the structure of Reactor files very transparently reflects the function signatures of those functions.

#### Calling Execution modules on Minions

The Reactor sends commands down to minions in the exact same way Salt's CLI interface does. It calls a function locally on the master that sends the name of the function as well as a list of any arguments and a dictionary of any keyword arguments that the minion should use to execute that function.

Specifically, the Reactor calls the async version of *this function*. You can see that function has `arg' and `kwarg' parameters which are both values that are sent down to the minion.

Executing remote commands maps to the **LocalClient** interface which is used by the **salt** command. This interface more specifically maps to the **cmd_async** method inside of the **LocalClient** class. This means that the arguments passed are being passed to the **cmd_async** method, not the remote method. A field starts with **local** to use the **LocalClient** subsystem. The result is, to execute a remote command, a reactor formula would look like this:

```
clean_tmp:
  local.cmd.run:
    - tgt: '*'
    - arg:
      - rm -rf /tmp/*
```

The `arg` option takes a list of arguments as they would be presented on the command line, so the above declaration is the same as running this salt command:

```
salt '*' cmd.run 'rm -rf /tmp/*'
```

Use the `expr_form` argument to specify a matcher:

```
clean_tmp:
  local.cmd.run:
    - tgt: 'os:Ubuntu'
    - expr_form: grain
    - arg:
      - rm -rf /tmp/*


clean_tmp:
  local.cmd.run:
    - tgt: 'G@roles:hbase_master'
    - expr_form: compound
    - arg:
      - rm -rf /tmp/*
```

**Note:** An easy mistake to make here is to use `tgt_type` instead of `expr_form`, since the job cache and events all refer to the targeting method as `tgt_type`. As of the Nitrogen release of Salt, `expr_form` will be deprecated in favor of using `tgt_type`, to help with this confusion.

Any other parameters in the *LocalClient().cmd()* method can be specified as well.

### Calling Runner modules and Wheel modules

Calling Runner modules and Wheel modules from the Reactor uses a more direct syntax since the function is being executed locally instead of sending a command to a remote system to be executed there. There are no `arg' or `kwarg' parameters (unless the Runner function or Wheel function accepts a parameter with either of those names.)

For example:

```
clear_the_grains_cache_for_all_minions:
  runner.cache.clear_grains
```

If the *the runner takes arguments* then they must be specified as keyword arguments.

```
spin_up_more_web_machines:
  runner.cloud.profile:
    - prof: centos_6
    - instances:
      - web11       # These VM names would be generated via Jinja in a
      - web12       # real-world example.
```

To determine the proper names for the arguments, check the documentation or source code for the runner function you wish to call.

### Passing event data to Minions or Orchestrate as Pillar

An interesting trick to pass data from the Reactor script to `state.apply` is to pass it as inline Pillar data since both functions take a keyword argument named `pillar`.

The following example uses Salt's Reactor to listen for the event that is fired when the key for a new minion is accepted on the master using `salt-key`.

`/etc/salt/master.d/reactor.conf`:

```
reactor:
  - 'salt/key':
    - /srv/salt/haproxy/react_new_minion.sls
```

The Reactor then fires a :`state.apply` command targeted to the HAProxy servers and passes the ID of the new minion from the event to the state file via inline Pillar.

`/srv/salt/haproxy/react_new_minion.sls`:

```
{% if data['act'] == 'accept' and data['id'].startswith('web') %}
add_new_minion_to_pool:
  local.state.apply:
    - tgt: 'haproxy*'
    - arg:
      - haproxy.refresh_pool
    - kwarg:
        pillar:
          new_minion: {{ data['id'] }}
{% endif %}
```

The above command is equivalent to the following command at the CLI:

```
salt 'haproxy*' state.apply haproxy.refresh_pool 'pillar={new_minion: minionid}'
```

This works with Orchestrate files as well:

```
call_some_orchestrate_file:
  runner.state.orchestrate:
    - mods: some_orchestrate_file
    - pillar:
        stuff: things
```

Which is equivalent to the following command at the CLI:

```
salt-run state.orchestrate some_orchestrate_file pillar='{stuff: things}'
```

Finally, that data is available in the state file using the normal Pillar lookup syntax. The following example is grabbing web server names and IP addresses from *Salt Mine*. If this state is invoked from the Reactor then the custom Pillar value from above will be available and the new minion will be added to the pool but with the `disabled` flag so that HAProxy won't yet direct traffic to it.

`/srv/salt/haproxy/refresh_pool.sls`:

```
{% set new_minion = salt['pillar.get']('new_minion') %}

listen web *:80
    balance source
    {% for server,ip in salt['mine.get']('web*', 'network.interfaces', ['eth0']).
↪items() %}
    {% if server == new_minion %}
    server {{ server }} {{ ip }}:80 disabled
    {% else %}
    server {{ server }} {{ ip }}:80 check
    {% endif %}
    {% endfor %}
```

### 6.3.8 A Complete Example

In this example, we're going to assume that we have a group of servers that will come online at random and need to have keys automatically accepted. We'll also add that we don't want all servers being automatically accepted. For this example, we'll assume that all hosts that have an id that starts with `ink' will be automatically accepted and have `state.apply` executed. On top of this, we're going to add that a host coming up that was replaced (meaning a new key) will also be accepted.

Our master configuration will be rather simple. All minions that attempte to authenticate will match the **tag** of **salt/auth**. When it comes to the minion key being accepted, we get a more refined **tag** that includes the minion id, which we can use for matching.

`/etc/salt/master.d/reactor.conf`:

```
reactor:
  - 'salt/auth':
    - /srv/reactor/auth-pending.sls
  - 'salt/minion/ink*/start':
    - /srv/reactor/auth-complete.sls
```

In this sls file, we say that if the key was rejected we will delete the key on the master and then also tell the master to ssh in to the minion and tell it to restart the minion, since a minion process will die if the key is rejected.

We also say that if the key is pending and the id starts with ink we will accept the key. A minion that is waiting on a pending key will retry authentication every ten seconds by default.

`/srv/reactor/auth-pending.sls`:

```
{# Ink server failed to authenticate -- remove accepted key #}
{% if not data['result'] and data['id'].startswith('ink') %}
minion_remove:
  wheel.key.delete:
    - match: {{ data['id'] }}
minion_rejoin:
  local.cmd.run:
    - tgt: salt-master.domain.tld
    - arg:
      - ssh -o UserKnownHostsFile=/dev/null -o StrictHostKeyChecking=no "{{ data['id']
↪}}" 'sleep 10 && /etc/init.d/salt-minion restart'
```

```
{% endif %}

{# Ink server is sending new key -- accept this key #}
{% if 'act' in data and data['act'] == 'pend' and data['id'].startswith('ink') %}
minion_add:
  wheel.key.accept:
    - match: {{ data['id'] }}
{% endif %}
```

No if statements are needed here because we already limited this action to just Ink servers in the master configuration.

`/srv/reactor/auth-complete.sls`:

```
{# When an Ink server connects, run state.apply. #}
highstate_run:
  local.state.apply:
    - tgt: {{ data['id'] }}
    - ret: smtp
```

The above will also return the *highstate* result data using the *smtp_return* returner (use virtualname like when using from the command line with *--return*). The returner needs to be configured on the minion for this to work. See `salt.returners.smtp_return` documentation for that.

### 6.3.9 Syncing Custom Types on Minion Start

Salt will sync all custom types (by running a `saltutil.sync_all`) on every *highstate*. However, there is a chicken-and-egg issue where, on the initial *highstate*, a minion will not yet have these custom types synced when the top file is first compiled. This can be worked around with a simple reactor which watches for `minion_start` events, which each minion fires when it first starts up and connects to the master.

On the master, create **/srv/reactor/sync_grains.sls** with the following contents:

```
sync_grains:
  local.saltutil.sync_grains:
    - tgt: {{ data['id'] }}
```

And in the master config file, add the following reactor configuration:

```
reactor:
  - 'salt/minion/*/start':
    - /srv/reactor/sync_grains.sls
```

This will cause the master to instruct each minion to sync its custom grains when it starts, making these grains available when the initial *highstate* is executed.

Other types can be synced by replacing `local.saltutil.sync_grains` with `local.saltutil.sync_modules`, `local.saltutil.sync_all`, or whatever else suits the intended use case.

Also, if it is not desirable that *every* minion syncs on startup, the `*` can be replaced with a different glob to narrow down the set of minions which will match that reactor (e.g. `salt/minion/appsrv*/start`, which would only match minion IDs beginning with `appsrv`).

CHAPTER 7

# Orchestration

## 7.1 Orchestrate Runner

Orchestration is accomplished in salt primarily through the *Orchestrate Runner*. Added in version 0.17.0, this Salt *Runner* can use the full suite of *Requisites and Other Global State Arguments* available in states, and can also execute states/functions using salt-ssh.

### 7.1.1 The Orchestrate Runner

New in version 0.17.0.

---

**Note:** Orchestrate Deprecates OverState

The Orchestrate Runner (originally called the state.sls runner) offers all the functionality of the OverState, but with some advantages:

- All *Requisites and Other Global State Arguments* available in states can be used.
- The states/functions will also work on salt-ssh minions.

The Orchestrate Runner was added with the intent to eventually deprecate the OverState system, however the OverState will still be maintained until Salt 2015.8.0.

---

The orchestrate runner generalizes the Salt state system to a Salt master context. Whereas the `state.sls`, `state.highstate`, et al functions are concurrently and independently executed on each Salt minion, the `state.orchestrate` runner is executed on the master, giving it a master-level view and control over requisites, such as state ordering and conditionals. This allows for inter minion requisites, like ordering the application of states on different minions that must not happen simultaneously, or for halting the state run on all minions if a minion fails one of its states.

If you want to setup a load balancer in front of a cluster of web servers, for example, you can ensure the load balancer is setup before the web servers or stop the state run altogether if one of the minions does not set up correctly.

The `state.sls`, `state.highstate`, et al functions allow you to statefully manage each minion and the `state.orchestrate` runner allows you to statefully manage your entire infrastructure.

#### Executing the Orchestrate Runner

The Orchestrate Runner command format is the same as for the `state.sls` function, except that since it is a runner, it is executed with `salt-run` rather than `salt`. Assuming you have a state.sls file called

`/srv/salt/orch/webserver.sls` the following command run on the master will apply the states defined in that file.

```
salt-run state.orchestrate orch.webserver
```

**Note:** `state.orch` is a synonym for `state.orchestrate`

Changed in version 2014.1.1: The runner function was renamed to `state.orchestrate` to avoid confusion with the *`state.sls`* execution function. In versions 0.17.0 through 2014.1.0, `state.sls` must be used.

### Examples

#### Function

To execute a function, use *`salt.function`*:

```
# /srv/salt/orch/cleanfoo.sls
cmd.run:
  salt.function:
    - tgt: '*'
    - arg:
      - rm -rf /tmp/foo
```

```
salt-run state.orchestrate orch.cleanfoo
```

If you omit the ``name'' argument, the ID of the state will be the default name, or in the case of `salt.function`, the execution module function to run. You can specify the ``name'' argument to avoid conflicting IDs:

```
copy_some_file:
  salt.function:
    - name: file.copy
    - tgt: '*'
    - arg:
      - /path/to/file
      - /tmp/copy_of_file
    - kwarg:
        remove_existing: true
```

#### State

To execute a state, use *`salt.state`*.

```
# /srv/salt/orch/webserver.sls
install_nginx:
  salt.state:
    - tgt: 'web*'
    - sls:
      - nginx
```

```
salt-run state.orchestrate orch.webserver
```

### Highstate

To run a highstate, set `highstate: True` in your state config:

```
# /srv/salt/orch/web_setup.sls
webserver_setup:
  salt.state:
    - tgt: 'web*'
    - highstate: True
```

```
salt-run state.orchestrate orch.web_setup
```

### More Complex Orchestration

Many states/functions can be configured in a single file, which when combined with the full suite of *Requisites and Other Global State Arguments*, can be used to easily configure complex orchestration tasks. Additionally, the states/functions will be executed in the order in which they are defined, unless prevented from doing so by any *Requisites and Other Global State Arguments*, as is the default in SLS files since 0.17.0.

```
bootstrap_servers:
  salt.function:
    - name: cmd.run
    - tgt: 10.0.0.0/24
    - tgt_type: ipcidr
    - arg:
      - bootstrap

storage_setup:
  salt.state:
    - tgt: 'role:storage'
    - tgt_type: grain
    - sls: ceph
    - require:
      - salt: webserver_setup

webserver_setup:
  salt.state:
    - tgt: 'web*'
    - highstate: True
```

Given the above setup, the orchestration will be carried out as follows:

1. The shell command `bootstrap` will be executed on all minions in the 10.0.0.0/24 subnet.
2. A Highstate will be run on all minions whose ID starts with ``web'', since the `storage_setup` state requires it.
3. Finally, the `ceph` SLS target will be executed on all minions which have a grain called `role` with a value of `storage`.

**Note:** Remember, salt-run is always executed on the master.

CHAPTER 8

# Salt SSH

## 8.1 Getting Started

Salt SSH is very easy to use, simply set up a basic *roster* file of the systems to connect to and run `salt-ssh` commands in a similar way as standard `salt` commands.

- Salt ssh is considered production ready in version 2014.7.0
- Python is required on the remote system (unless using the `-r` option to send raw ssh commands)
- On many systems, the `salt-ssh` executable will be in its own package, usually named `salt-ssh`
- The Salt SSH system does not supersede the standard Salt communication systems, it simply offers an SSH-based alternative that does not require ZeroMQ and a remote agent. Be aware that since all communication with Salt SSH is executed via SSH it is substantially slower than standard Salt with ZeroMQ.
- At the moment fileserver operations must be wrapped to ensure that the relevant files are delivered with the `salt-ssh` commands. The state module is an exception, which compiles the state run on the master, and in the process finds all the references to `salt://` paths and copies those files down in the same tarball as the state run. However, needed fileserver wrappers are still under development.

## 8.2 Salt SSH Roster

The roster system in Salt allows for remote minions to be easily defined.

**Note:** See the *SSH roster docs* for more details.

Simply create the roster file, the default location is */etc/salt/roster*:

```
web1: 192.168.42.1
```

This is a very basic roster file where a Salt ID is being assigned to an IP address. A more elaborate roster can be created:

```
web1:
  host: 192.168.42.1 # The IP addr or DNS hostname
  user: fred         # Remote executions will be executed as user fred
  passwd: foobarbaz  # The password to use for login, if omitted, keys are used
  sudo: True         # Whether to sudo to root, not enabled by default
```

```
web2:
  host: 192.168.42.2
```

**Note**: sudo works only if NOPASSWD is set for user in /etc/sudoers: `fred ALL=(ALL) NOPASSWD: ALL`

## 8.3 Deploy ssh key for salt-ssh

By default, salt-ssh will generate key pairs for ssh, the default path will be /etc/salt/pki/master/ssh/salt-ssh.rsa

You can use ssh-copy-id, (the OpenSSH key deployment tool) to deploy keys to your servers.

```
ssh-copy-id -i /etc/salt/pki/master/ssh/salt-ssh.rsa.pub user@server.demo.com
```

One could also create a simple shell script, named salt-ssh-copy-id.sh as follows:

```
#!/bin/bash
if [ -z $1 ]; then
   echo $0 user@host.com
   exit 0
fi
ssh-copy-id -i /etc/salt/pki/master/ssh/salt-ssh.rsa.pub $1
```

**Note**: Be certain to chmod +x salt-ssh-copy-id.sh.

```
./salt-ssh-copy-id.sh user@server1.host.com
./salt-ssh-copy-id.sh user@server2.host.com
```

Once keys are successfully deployed, salt-ssh can be used to control them.

## 8.4 Calling Salt SSH

**Note**: `salt-ssh` on RHEL/CentOS 5

The `salt-ssh` command requires at least python 2.6, which is not installed by default on RHEL/CentOS 5. An easy workaround in this situation is to use the `-r` option to run a raw shell command that installs python26:

```
salt-ssh centos-5-minion -r 'yum -y install epel-release ; yum -y install python26'
```

The `salt-ssh` command can be easily executed in the same way as a salt command:

```
salt-ssh '*' test.ping
```

Commands with `salt-ssh` follow the same syntax as the `salt` command.

The standard salt functions are available! The output is the same as `salt` and many of the same flags are available. Please see http://docs.saltstack.com/ref/cli/salt-ssh.html for all of the available options.

### 8.4.1 Raw Shell Calls

By default `salt-ssh` runs Salt execution modules on the remote system, but `salt-ssh` can also execute raw shell commands:

```
salt-ssh '*' -r 'ifconfig'
```

## 8.5 States Via Salt SSH

The Salt State system can also be used with `salt-ssh`. The state system abstracts the same interface to the user in `salt-ssh` as it does when using standard `salt`. The intent is that Salt Formulas defined for standard `salt` will work seamlessly with `salt-ssh` and vice-versa.

The standard Salt States walkthroughs function by simply replacing `salt` commands with `salt-ssh`.

## 8.6 Targeting with Salt SSH

Due to the fact that the targeting approach differs in salt-ssh, only glob and regex targets are supported as of this writing, the remaining target systems still need to be implemented.

---

**Note:** By default, Grains are settable through `salt-ssh`. By default, these grains will *not* be persisted across reboots.

See the ``thin_dir'' setting in *Roster documentation* for more details.

---

## 8.7 Configuring Salt SSH

Salt SSH takes its configuration from a master configuration file. Normally, this file is in `/etc/salt/master`. If one wishes to use a customized configuration file, the `-c` option to Salt SSH facilitates passing in a directory to look inside for a configuration file named `master`.

### 8.7.1 Minion Config

New in version 2015.5.1.

Minion config options can be defined globally using the master configuration option `ssh_minion_opts`. It can also be defined on a per-minion basis with the `minion_opts` entry in the roster.

## 8.8 Running Salt SSH as non-root user

By default, Salt read all the configuration from /etc/salt/. If you are running Salt SSH with a regular user you have to modify some paths or you will get ``Permission denied'' messages. You have to modify two parameters: `pki_dir` and `cachedir`. Those should point to a full path writable for the user.

It's recommended not to modify /etc/salt for this purpose. Create a private copy of /etc/salt for the user and run the command with `-c /new/config/path`.

## 8.9 Define CLI Options with Saltfile

If you are commonly passing in CLI options to `salt-ssh`, you can create a `Saltfile` to automatically use these options. This is common if you're managing several different salt projects on the same server.

So you can `cd` into a directory that has a `Saltfile` with the following YAML contents:

```
salt-ssh:
  config_dir: path/to/config/dir
  ssh_max_procs: 30
  ssh_wipe: True
```

Instead of having to call `salt-ssh --config-dir=path/to/config/dir --max-procs=30 --wipe \* test.ping` you can call `salt-ssh \* test.ping`.

Boolean-style options should be specified in their YAML representation.

---

**Note**: The option keys specified must match the destination attributes for the options specified in the parser `salt.utils.parsers.SaltSSHOptionParser`. For example, in the case of the `--wipe` command line option, its `dest` is configured to be `ssh_wipe` and thus this is what should be configured in the `Saltfile`. Using the names of flags for this option, being `wipe: True` or `w: True`, will not work.

---

## 8.10 Debugging salt-ssh

One common approach for debugging `salt-ssh` is to simply use the tarball that salt ships to the remote machine and call `salt-call` directly.

To determine the location of `salt-call`, simply run `salt-ssh` with the `-ltrace` flag and look for a line containing the string, `SALT_ARGV`. This contains the `salt-call` command that `salt-ssh` attempted to execute.

It is recommended that one modify this command a bit by removing the `-l quiet`, `--metadata` and `--output json` to get a better idea of what's going on on the target system.

### 8.10.1 Salt Rosters

Salt rosters are pluggable systems added in Salt 0.17.0 to facilitate the `salt-ssh` system. The roster system was created because `salt-ssh` needs a means to identify which systems need to be targeted for execution.

**See also**:

*roster modules*

---

**Note**: The Roster System is not needed or used in standard Salt because the master does not need to be initially aware of target systems, since the Salt Minion checks itself into the master.

---

Since the roster system is pluggable, it can be easily augmented to attach to any existing systems to gather information about what servers are presently available and should be attached to by `salt-ssh`. By default the roster file is located at /etc/salt/roster.

### How Rosters Work

The roster system compiles a data structure internally referred to as `targets`. The `targets` is a list of target systems and attributes about how to connect to said systems. The only requirement for a roster module in Salt is to return the `targets` data structure.

### Targets Data

The information which can be stored in a roster `target` is the following:

```
<Salt ID>:       # The id to reference the target system with
    host:        # The IP address or DNS name of the remote host
    user:        # The user to log in as
    passwd:      # The password to log in with

    # Optional parameters
    port:        # The target system's ssh port number
    sudo:        # Boolean to run command via sudo
    sudo_user:   # Str: Set this to execute Salt as a sudo user other than root.
                 # This user must be in the same system group as the remote user
                 # that is used to login and is specified above. Alternatively,
                 # the user must be a super-user.
    tty:         # Boolean: Set this option to True if sudo is also set to
                 # True and requiretty is also set on the target system
    priv:        # File path to ssh private key, defaults to salt-ssh.rsa
    timeout:     # Number of seconds to wait for response when establishing
                 # an SSH connection
    minion_opts: # Dictionary of minion opts
    thin_dir:    # The target system's storage directory for Salt
                 # components. Defaults to /tmp/salt-<hash>.
    cmd_umask:   # umask to enforce for the salt-call command. Should be in
                 # octal (so for 0o077 in YAML you would do 0077, or 63)
```

### thin_dir

Salt needs to upload a standalone environment to the target system, and this defaults to /tmp/salt-<hash>. This directory will be cleaned up per normal systems operation.

If you need a persistent Salt environment, for instance to set persistent grains, this value will need to be changed.

CHAPTER 9

# Salt Cloud

## 9.1 Configuration

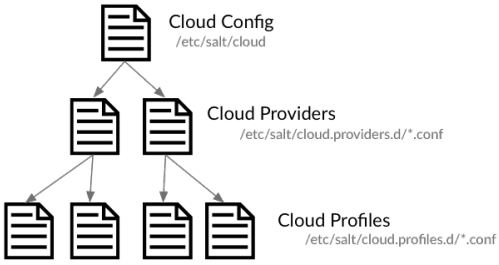
Salt Cloud provides a powerful interface to interact with cloud hosts. This interface is tightly integrated with Salt, and new virtual machines are automatically connected to your Salt master after creation.

Since Salt Cloud is designed to be an automated system, most configuration is done using the following YAML configuration files:

- `/etc/salt/cloud`: The main configuration file, contains global settings that apply to all cloud hosts. See *Salt Cloud Configuration*.
- `/etc/salt/cloud.providers.d/*.conf`: Contains settings that configure a specific cloud host, such as credentials, region settings, and so on. Since configuration varies significantly between each cloud host, a separate file should be created for each cloud host. In Salt Cloud, a provider is synonymous with a cloud host (Amazon EC2, Google Compute Engine, Rackspace, and so on). See *Provider Specifics*.
- `/etc/salt/cloud.profiles.d/*.conf`: Contains settings that define a specific VM type. A profile defines the systems specs and image, and any other settings that are specific to this VM type. Each specific VM type is called a profile, and multiple profiles can be defined in a profile file. Each profile references a parent provider that defines the cloud host in which the VM is created (the provider settings are in the provider configuration explained above). Based on your needs, you might define different profiles for web servers, database servers, and so on. See *VM Profiles*.

## 9.2 Configuration Inheritance

Configuration settings are inherited in order from the cloud config => providers => profile.




For example, if you wanted to use the same image for all virtual machines for a specific provider, the image name could be placed in the provider file. This value is inherited by all profiles that use that provider, but is overridden if a image name is defined in the profile.

Most configuration settings can be defined in any file, the main difference being how that setting is inherited.

## 9.3 QuickStart

The *Salt Cloud Quickstart* walks you through defining a provider, a VM profile, and shows you how to create virtual machines using Salt Cloud.

Note that if you installed Salt via Salt Bootstrap, it may not have automatically installed salt-cloud for you. Use your distribution's package manager to install the `salt-cloud` package from the same repo that you used to install Salt. These repos will automatically be setup by Salt Bootstrap.

If there is no salt-cloud package, install with `pip install salt-cloud`.

## 9.4 Using Salt Cloud

### 9.4.1 `salt-cloud`

Provision virtual machines in the cloud with Salt

#### Synopsis

```
salt-cloud -m /etc/salt/cloud.map

salt-cloud -m /etc/salt/cloud.map NAME

salt-cloud -m /etc/salt/cloud.map NAME1 NAME2

salt-cloud -p PROFILE NAME

salt-cloud -p PROFILE NAME1 NAME2 NAME3 NAME4 NAME5 NAME6
```

#### Description

Salt Cloud is the system used to provision virtual machines on various public clouds via a cleanly controlled profile and mapping system.

#### Options

**`--version`**
: Print the version of Salt that is running.

**`--versions-report`**
: Show program's dependencies and version number, and then exit

**`-h, --help`**
: Show the help message and exit

**`-c`** `CONFIG_DIR`, **`--config-dir`**`=CONFIG_dir`
: The location of the Salt configuration directory. This directory contains the configuration files for Salt master and minions. The default location on most systems is `/etc/salt`.

### Execution Options

**-L** LOCATION, **--location**=LOCATION
: Specify which region to connect to.

**-a** ACTION, **--action**=ACTION
: Perform an action that may be specific to this cloud provider. This argument requires one or more instance names to be specified.

**-f** <FUNC-NAME> <PROVIDER>, **--function**=<FUNC-NAME> <PROVIDER>
: Perform an function that may be specific to this cloud provider, that does not apply to an instance. This argument requires a provider to be specified (i.e.: nova).

**-p** PROFILE, **--profile**=PROFILE
: Select a single profile to build the named cloud VMs from. The profile must be defined in the specified profiles file.

**-m** MAP, **--map**=MAP
: Specify a map file to use. If used without any other options, this option will ensure that all of the mapped VMs are created. If the named VM already exists then it will be skipped.

**-H, --hard**
: When specifying a map file, the default behavior is to ensure that all of the VMs specified in the map file are created. If the --hard option is set, then any VMs that exist on configured cloud providers that are not specified in the map file will be destroyed. Be advised that this can be a destructive operation and should be used with care.

**-d, --destroy**
: Pass in the name(s) of VMs to destroy, salt-cloud will search the configured cloud providers for the specified names and destroy the VMs. Be advised that this is a destructive operation and should be used with care. Can be used in conjunction with the -m option to specify a map of VMs to be deleted.

**-P, --parallel**
: Normally when building many cloud VMs they are executed serially. The -P option will run each cloud vm build in a separate process allowing for large groups of VMs to be build at once.

  Be advised that some cloud provider's systems don't seem to be well suited for this influx of vm creation. When creating large groups of VMs watch the cloud provider carefully.

**-u, --update-bootstrap**
: Update salt-bootstrap to the latest stable bootstrap release.

**-y, --assume-yes**
: Default yes in answer to all confirmation questions.

**-k, --keep-tmp**
: Do not remove files from /tmp/ after deploy.sh finishes.

**--show-deploy-args**
: Include the options used to deploy the minion in the data returned.

**--script-args**=SCRIPT_ARGS
: Script arguments to be fed to the bootstrap script when deploying the VM.

### Query Options

**-Q, --query**
: Execute a query and return some information about the nodes running on configured cloud providers

**-F, --full-query**
Execute a query and print out all available information about all cloud VMs. Can be used in conjunction with -m to display only information about the specified map.

**-S, --select-query**
Execute a query and print out selected information about all cloud VMs. Can be used in conjunction with -m to display only information about the specified map.

**--list-providers**
Display a list of configured providers.

**--list-profiles**
New in version 2014.7.0.

Display a list of configured profiles. Pass in a cloud provider to view the provider's associated profiles, such as `digital_ocean`, or pass in `all` to list all the configured profiles.

### Cloud Providers Listings

**--list-locations**=LIST_LOCATIONS
Display a list of locations available in configured cloud providers. Pass the cloud provider that available locations are desired on, aka ``linode'', or pass ``all'' to list locations for all configured cloud providers

**--list-images**=LIST_IMAGES
Display a list of images available in configured cloud providers. Pass the cloud provider that available images are desired on, aka ``linode'', or pass ``all'' to list images for all configured cloud providers

**--list-sizes**=LIST_SIZES
Display a list of sizes available in configured cloud providers. Pass the cloud provider that available sizes are desired on, aka ``AWS'', or pass ``all'' to list sizes for all configured cloud providers

### Cloud Credentials

**--set-password**=<USERNAME> <PROVIDER>
Configure password for a cloud provider and save it to the keyring. PROVIDER can be specified with or without a driver, for example: ``--set-password bob rackspace'' or more specific ``--set-password bob rackspace:openstack'' DEPRECATED!

### Output Options

**--out**
Pass in an alternative outputter to display the return of data. This outputter can be any of the available outputters:

`grains`, `highstate`, `json`, `key`, `overstatestage`, `pprint`, `raw`, `txt`, `yaml`

Some outputters are formatted only for data returned from specific functions; for instance, the `grains` outputter will not work for non-grains data.

If an outputter is used that does not support the data passed into it, then Salt will fall back on the `pprint` outputter and display the return data using the Python `pprint` standard library module.

---

**Note:** If using `--out=json`, you will probably want `--static` as well. Without the static option, you will get a separate JSON string per minion which makes JSON output invalid as a whole. This is due to using an

iterative outputter. So if you want to feed it to a JSON parser, use `--static` as well.

**--out-indent** OUTPUT_INDENT, **--output-indent** OUTPUT_INDENT
Print the output indented by the provided value in spaces. Negative values disable indentation. Only applicable in outputters that support indentation.

**--out-file**=OUTPUT_FILE, **--output-file**=OUTPUT_FILE
Write the output to the specified file.

**--no-color**
Disable all colored output

**--force-color**
Force colored output

**Note:** When using colored output the color codes are as follows:

`green` denotes success, `red` denotes failure, `blue` denotes changes and success and `yellow` denotes a expected future change in configuration.

### Examples

To create 4 VMs named web1, web2, db1, and db2 from specified profiles:

```
salt-cloud -p fedora_rackspace web1 web2 db1 db2
```

To read in a map file and create all VMs specified therein:

```
salt-cloud -m /path/to/cloud.map
```

To read in a map file and create all VMs specified therein in parallel:

```
salt-cloud -m /path/to/cloud.map -P
```

To delete any VMs specified in the map file:

```
salt-cloud -m /path/to/cloud.map -d
```

To delete any VMs NOT specified in the map file:

```
salt-cloud -m /path/to/cloud.map -H
```

To display the status of all VMs specified in the map file:

```
salt-cloud -m /path/to/cloud.map -Q
```

### See also

*salt-cloud(7) salt(7) salt-master(1) salt-minion(1)*

## 9.4.2 Salt Cloud basic usage

Salt Cloud needs, at least, one configured *Provider* and *Profile* to be functional.

#### Creating a VM

To create a VM with salt cloud, use command:

```
salt-cloud -p <profile> name_of_vm
```

Assuming there is a profile configured as following:

```
fedora_rackspace:
    provider: my-rackspace-config
    image: Fedora 17
    size: 256 server
    script: bootstrap-salt
```

Then, the command to create new VM named `fedora_http_01` is:

```
salt-cloud -p fedora_rackspace fedora_http_01
```

#### Destroying a VM

To destroy a created-by-salt-cloud VM, use command:

```
salt-cloud -d name_of_vm
```

For example, to delete the VM created on above example, use:

```
salt-cloud -d fedora_http_01
```

### 9.4.3 VM Profiles

Salt cloud designates virtual machines inside the profile configuration file. The profile configuration file defaults to `/etc/salt/cloud.profiles` and is a yaml configuration. The syntax for declaring profiles is simple:

```
fedora_rackspace:
    provider: my-rackspace-config
    image: Fedora 17
    size: 256 server
    script: bootstrap-salt
```

It should be noted that the `script` option defaults to `bootstrap-salt`, and does not normally need to be specified. Further examples in this document will not show the `script` option.

A few key pieces of information need to be declared and can change based on the cloud provider. A number of additional parameters can also be inserted:

```
centos_rackspace:
  provider: my-rackspace-config
  image: CentOS 6.2
  size: 1024 server
  minion:
    master: salt.example.com
    append_domain: webs.example.com
    grains:
      role: webserver
```

The image must be selected from available images. Similarly, sizes must be selected from the list of sizes. To get a list of available images and sizes use the following command:

```
salt-cloud --list-images openstack
salt-cloud --list-sizes openstack
```

Some parameters can be specified in the main Salt cloud configuration file and then are applied to all cloud profiles. For instance if only a single cloud provider is being used then the provider option can be declared in the Salt cloud configuration file.

### Multiple Configuration Files

In addition to `/etc/salt/cloud.profiles`, profiles can also be specified in any file matching `cloud.profiles.d/*conf` which is a sub-directory relative to the profiles configuration file(with the above configuration file as an example, `/etc/salt/cloud.profiles.d/*.conf`). This allows for more extensible configuration, and plays nicely with various configuration management tools as well as version control systems.

### Larger Example

```
rhel_ec2:
  provider: my-ec2-config
  image: ami-e565ba8c
  size: t1.micro
  minion:
    cheese: edam

ubuntu_ec2:
  provider: my-ec2-config
  image: ami-7e2da54e
  size: t1.micro
  minion:
    cheese: edam

ubuntu_rackspace:
  provider: my-rackspace-config
  image: Ubuntu 12.04 LTS
  size: 256 server
  minion:
    cheese: edam

fedora_rackspace:
  provider: my-rackspace-config
  image: Fedora 17
  size: 256 server
  minion:
    cheese: edam

cent_linode:
  provider: my-linode-config
  image: CentOS 6.2 64bit
  size: Linode 512

cent_gogrid:
  provider: my-gogrid-config
  image: 12834
```

```
  size: 512MB

cent_joyent:
  provider: my-joyent-config
  image: centos-7
  size: g4-highram-16G
```

### 9.4.4 Cloud Map File

A number of options exist when creating virtual machines. They can be managed directly from profiles and the command line execution, or a more complex map file can be created. The map file allows for a number of virtual machines to be created and associated with specific profiles. The map file is designed to be run once to create these more complex scenarios using salt-cloud.

Map files have a simple format, specify a profile and then a list of virtual machines to make from said profile:

```
fedora_small:
  - web1
  - web2
  - web3
fedora_high:
  - redis1
  - redis2
  - redis3
cent_high:
  - riak1
  - riak2
  - riak3
```

This map file can then be called to roll out all of these virtual machines. Map files are called from the salt-cloud command with the -m option:

```
$ salt-cloud -m /path/to/mapfile
```

Remember, that as with direct profile provisioning the -P option can be passed to create the virtual machines in parallel:

```
$ salt-cloud -m /path/to/mapfile -P
```

**Note**: Due to limitations in the GoGrid API, instances cannot be provisioned in parallel with the GoGrid driver. Map files will work with GoGrid, but the `-P` argument should not be used on maps referencing GoGrid instances.

A map file can also be enforced to represent the total state of a cloud deployment by using the `--hard` option. When using the hard option any vms that exist but are not specified in the map file will be destroyed:

```
$ salt-cloud -m /path/to/mapfile -P -H
```

Be careful with this argument, it is very dangerous! In fact, it is so dangerous that in order to use it, you must explicitly enable it in the main configuration file.

```
enable_hard_maps: True
```

A map file can include grains and minion configuration options:

```
fedora_small:
  - web1:
      minion:
        log_level: debug
      grains:
        cheese: tasty
        omelet: du fromage
  - web2:
      minion:
        log_level: warn
      grains:
        cheese: more tasty
        omelet: with peppers
```

A map file may also be used with the various query options:

```
$ salt-cloud -m /path/to/mapfile -Q
{'ec2': {'web1': {'id': 'i-e6aqfegb',
                  'image': None,
                  'private_ips': [],
                  'public_ips': [],
                  'size': None,
                  'state': 0}},
         'web2': {'Absent'}}
```

...or with the delete option:

```
$ salt-cloud -m /path/to/mapfile -d
The following virtual machines are set to be destroyed:
  web1
  web2

Proceed? [N/y]
```

**Warning**: Specifying Nodes with Maps on the Command Line Specifying the name of a node or nodes with the maps options on the command line is *not* supported. This is especially important to remember when using `--destroy` with maps; `salt-cloud` will ignore any arguments passed in which are not directly relevant to the map file. *When using ``--destroy`` with a map, every node in the map file will be deleted!* Maps don't provide any useful information for destroying individual nodes, and should not be used to destroy a subset of a map.

### Setting up New Salt Masters

Bootstrapping a new master in the map is as simple as:

```
fedora_small:
  - web1:
      make_master: True
  - web2
  - web3
```

Notice that **ALL** bootstrapped minions from the map will answer to the newly created salt-master.

To make any of the bootstrapped minions answer to the bootstrapping salt-master as opposed to the newly created salt-master, as an example:

```
fedora_small:
  - web1:
      make_master: True
      minion:
        master: <the local master ip address>
        local_master: True
  - web2
  - web3
```

The above says the minion running on the newly created salt-master responds to the local master, ie, the master used to bootstrap these VMs.

Another example:

```
fedora_small:
  - web1:
      make_master: True
  - web2
  - web3:
      minion:
        master: <the local master ip address>
        local_master: True
```

The above example makes the `web3` minion answer to the local master, not the newly created master.

### 9.4.5 Cloud Actions

Once a VM has been created, there are a number of actions that can be performed on it. The ``reboot'' action can be used across all providers, but all other actions are specific to the cloud provider. In order to perform an action, you may specify it from the command line, including the name(s) of the VM to perform the action on:

```
$ salt-cloud -a reboot vm_name
$ salt-cloud -a reboot vm1 vm2 vm2
```

Or you may specify a map which includes all VMs to perform the action on:

```
$ salt-cloud -a reboot -m /path/to/mapfile
```

The following is a list of actions currently supported by salt-cloud:

```
all providers:
    - reboot
ec2:
    - start
    - stop
joyent:
    - stop
linode:
    - start
    - stop
```

Another useful reference for viewing more salt-cloud actions is the :ref:Salt Cloud Feature Matrix <salt-cloud-feature-matrix>

### 9.4.6 Cloud Functions

Cloud functions work much the same way as cloud actions, except that they don't perform an operation on a specific instance, and so do not need a machine name to be specified. However, since they perform an operation on a specific cloud provider, that provider must be specified.

```
$ salt-cloud -f show_image ec2 image=ami-fd20ad94
```

There are three universal salt-cloud functions that are extremely useful for gathering information about instances on a provider basis:

- `list_nodes`: Returns some general information about the instances for the given provider.
- `list_nodes_full`: Returns all information about the instances for the given provider.
- `list_nodes_select`: Returns select information about the instances for the given provider.

```
$ salt-cloud -f list_nodes linode
$ salt-cloud -f list_nodes_full linode
$ salt-cloud -f list_nodes_select linode
```

Another useful reference for viewing salt-cloud functions is the *Salt Cloud Feature Matrix*.

## 9.5 Core Configuration

### 9.5.1 Install Salt Cloud

Salt Cloud is now part of Salt proper. It was merged in as of *Salt version 2014.1.0*.

On Ubuntu, install Salt Cloud by using following command:

```
sudo add-apt-repository ppa:saltstack/salt
sudo apt-get update
sudo apt-get install salt-cloud
```

If using Salt Cloud on OS X, `curl-ca-bundle` must be installed. Presently, this package is not available via `brew`, but it is available using MacPorts:

```
sudo port install curl-ca-bundle
```

Salt Cloud depends on `apache-libcloud`. Libcloud can be installed via pip with `pip install apache-libcloud`.

#### Installing Salt Cloud for development

Installing Salt for development enables Salt Cloud development as well, just make sure `apache-libcloud` is installed as per above paragraph.

See these instructions: *Installing Salt for development*.

### 9.5.2 Core Configuration

A number of core configuration options and some options that are global to the VM profiles can be set in the cloud configuration file. By default this file is located at `/etc/salt/cloud`.

### Thread Pool Size

When salt cloud is operating in parallel mode via the `-P` argument, you can control the thread pool size by specifying the `pool_size` parameter with a positive integer value.

By default, the thread pool size will be set to the number of VMs that salt cloud is operating on.

```
pool_size: 10
```

### Minion Configuration

The default minion configuration is set up in this file. Minions created by salt-cloud derive their configuration from this file. Almost all parameters found in *Configuring the Salt Minion* can be used here.

```
minion:
  master: saltmaster.example.com
```

In particular, this is the location to specify the location of the salt master and its listening port, if the port is not set to the default.

Similar to most other settings, Minion configuration settings are inherited across configuration files. For example, the master setting might be contained in the main `cloud` configuration file as demonstrated above, but additional settings can be placed in the provider or profile:

```
ec2-web:
  size: t1.micro
  minion:
    environment: test
    startup_states: sls
    sls_list:
      - web
```

### Cloud Configuration Syntax

The data specific to interacting with public clouds is set up *here*.

Cloud provider configuration settings can live in several places. The first is in `/etc/salt/cloud`:

```
# /etc/salt/cloud
providers:
  my-aws-migrated-config:
    id: HJGRYCILJLKJYG
    key: 'kdjgfsgm;woormgl/aserigjksjdhasdfgn'
    keyname: test
    securitygroup: quick-start
    private_key: /root/test.pem
    driver: ec2
```

Cloud provider configuration data can also be housed in `/etc/salt/cloud.providers` or any file matching `/etc/salt/cloud.providers.d/*.conf`. All files in any of these locations will be parsed for cloud provider data.

Using the example configuration above:

```
# /etc/salt/cloud.providers
# or could be /etc/salt/cloud.providers.d/*.conf
my-aws-config:
  id: HJGRYCILJLKJYG
  key: 'kdjgfsgm;woormgl/aserigjksjdhasdfgn'
  keyname: test
  securitygroup: quick-start
  private_key: /root/test.pem
  driver: ec2
```

**Note**: Salt Cloud provider configurations within `/etc/cloud.provider.d/` should not specify the ``providers` starting key.

It is also possible to have multiple cloud configuration blocks within the same alias block. For example:

```
production-config:
  - id: HJGRYCILJLKJYG
    key: 'kdjgfsgm;woormgl/aserigjksjdhasdfgn'
    keyname: test
    securitygroup: quick-start
    private_key: /root/test.pem
    driver: ec2

  - user: example_user
    apikey: 123984bjjas87034
    driver: rackspace
```

However, using this configuration method requires a change with profile configuration blocks. The provider alias needs to have the provider key value appended as in the following example:

```
rhel_aws_dev:
  provider: production-config:ec2
  image: ami-e565ba8c
  size: t1.micro

rhel_aws_prod:
  provider: production-config:ec2
  image: ami-e565ba8c
  size: High-CPU Extra Large Instance

database_prod:
  provider: production-config:rackspace
  image: Ubuntu 12.04 LTS
  size: 256 server
```

Notice that because of the multiple entries, one has to be explicit about the provider alias and name, from the above example, `production-config: ec2`.

This data interactions with the `salt-cloud` binary regarding its `--list-location`, `--list-images`, and `--list-sizes` which needs a cloud provider as an argument. The argument used should be the configured cloud provider alias. If the provider alias has multiple entries, `<provider-alias>: <provider-name>` should be used.

To allow for a more extensible configuration, `--providers-config`, which defaults to `/etc/salt/cloud.providers`, was added to the cli parser. It allows for the providers' configuration to be added on a per-file basis.

### Pillar Configuration

It is possible to configure cloud providers using pillars. This is only used when inside the cloud module. You can setup a variable called `cloud` that contains your profile and provider to pass that information to the cloud servers instead of having to copy the full configuration to every minion. In your pillar file, you would use something like this:

```
cloud:
  ssh_key_name: saltstack
  ssh_key_file: /root/.ssh/id_rsa
  update_cachedir: True
  diff_cache_events: True
  change_password: True

  providers:
    my-nova:
      identity_url: https://identity.api.rackspacecloud.com/v2.0/
      compute_region: IAD
      user: myuser
      api_key: apikey
      tenant: 123456
      driver: nova

    my-openstack:
      identity_url: https://identity.api.rackspacecloud.com/v2.0/tokens
      user: user2
      apikey: apikey2
      tenant: 654321
      compute_region: DFW
      driver: openstack
      compute_name: cloudServersOpenStack

  profiles:
    ubuntu-nova:
      provider: my-nova
      size: performance1-8
      image: bb02b1a3-bc77-4d17-ab5b-421d89850fca
      script_args: git develop

    ubuntu-openstack:
      provider: my-openstack
      size: performance1-8
      image: bb02b1a3-bc77-4d17-ab5b-421d89850fca
      script_args: git develop
```

### Cloud Configurations

### Scaleway

To use Salt Cloud with Scaleway, you need to get an `access key` and an `API token`. `API tokens` are unique identifiers associated with your Scaleway account. To retrieve your `access key` and `API token`, log-in to the Scaleway control panel, open the pull-down menu on your account name and click on ``My Credentials'' link.

If you do not have `API token` you can create one by clicking the ``Create New Token'' button on the right corner.

```
my-scaleway-config:
  access_key: 15cf404d-4560-41b1-9a0c-21c3d5c4ff1f
  token: a7347ec8-5de1-4024-a5e3-24b77d1ba91d
  driver: scaleway
```

**Note**: In the cloud profile that uses this provider configuration, the syntax for the `provider` required field would be `provider: my-scaleway-config`.

### Rackspace

Rackspace cloud requires two configuration options; a `user` and an `apikey`:

```
my-rackspace-config:
  user: example_user
  apikey: 123984bjjas87034
  driver: rackspace
```

**Note**: In the cloud profile that uses this provider configuration, the syntax for the `provider` required field would be `provider: my-rackspace-config`.

### Amazon AWS

A number of configuration options are required for Amazon AWS including `id`, `key`, `keyname`, `securitygroup`, and `private_key`:

```
my-aws-quick-start:
  id: HJGRYCILJLKJYG
  key: 'kdjgfsgm;woormgl/aserigjksjdhasdfgn'
  keyname: test
  securitygroup: quick-start
  private_key: /root/test.pem
  driver: ec2

my-aws-default:
  id: HJGRYCILJLKJYG
  key: 'kdjgfsgm;woormgl/aserigjksjdhasdfgn'
  keyname: test
  securitygroup: default
  private_key: /root/test.pem
  driver: ec2
```

**Note**: In the cloud profile that uses this provider configuration, the syntax for the `provider` required field would be either `provider: my-aws-quick-start` or `provider: my-aws-default`.

### Linode

Linode requires a single API key, but the default root password also needs to be set:

```
my-linode-config:
  apikey: asldkgfakl;sdfjsjaslfjaklsdjf;askldjfaaklsjdfhasldsadfghdkf
  password: F00barbaz
  ssh_pubkey: ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAAIKHEOLLbeXgaqRQT9NBAopVz366SdYc0KKX33vAnq+2R user@host
  ssh_key_file: ~/.ssh/id_ed25519
  driver: linode
```

The password needs to be 8 characters and contain lowercase, uppercase, and numbers.

---

**Note**: In the cloud profile that uses this provider configuration, the syntax for the `provider` required field would be `provider: my-linode-config`

---

### Joyent Cloud

The Joyent cloud requires three configuration parameters: The username and password that are used to log into the Joyent system, as well as the location of the private SSH key associated with the Joyent account. The SSH key is needed to send the provisioning commands up to the freshly created virtual machine.

```
my-joyent-config:
  user: fred
  password: saltybacon
  private_key: /root/joyent.pem
  driver: joyent
```

---

**Note**: In the cloud profile that uses this provider configuration, the syntax for the `provider` required field would be `provider: my-joyent-config`

---

### GoGrid

To use Salt Cloud with GoGrid, log into the GoGrid web interface and create an API key. Do this by clicking on ``My Account'' and then going to the API Keys tab.

The `apikey` and the `sharedsecret` configuration parameters need to be set in the configuration file to enable interfacing with GoGrid:

```
my-gogrid-config:
  apikey: asdff7896asdh789
  sharedsecret: saltybacon
  driver: gogrid
```

---

**Note**: In the cloud profile that uses this provider configuration, the syntax for the `provider` required field would be `provider: my-gogrid-config`.

---

### OpenStack

OpenStack configuration differs between providers, and at the moment several options need to be specified. This module has been officially tested against the HP and the Rackspace implementations, and some examples are provided for both.

```
# For HP
my-openstack-hp-config:
  identity_url:
  'https://region-a.geo-1.identity.hpcloudsvc.com:35357/v2.0/'
  compute_name: Compute
  compute_region: 'az-1.region-a.geo-1'
  tenant: myuser-tenant1
  user: myuser
  ssh_key_name: mykey
  ssh_key_file: '/etc/salt/hpcloud/mykey.pem'
  password: mypass
  driver: openstack

# For Rackspace
my-openstack-rackspace-config:
  identity_url: 'https://identity.api.rackspacecloud.com/v2.0/tokens'
  compute_name: cloudServersOpenStack
  protocol: ipv4
  compute_region: DFW
  protocol: ipv4
  user: myuser
  tenant: 5555555
  password: mypass
  driver: openstack
```

If you have an API key for your provider, it may be specified instead of a password:

```
my-openstack-hp-config:
  apikey: 901d3f579h23c8v73q9

my-openstack-rackspace-config:
  apikey: 901d3f579h23c8v73q9
```

**Note**: In the cloud profile that uses this provider configuration, the syntax for the `provider` required field would be either `provider: my-openstack-hp-config` or `provider: my-openstack-rackspace-config`.

You will certainly need to configure the `user`, `tenant`, and either `password` or `apikey`.

If your OpenStack instances only have private IP addresses and a CIDR range of private addresses are not reachable from the salt-master, you may set your preference to have Salt ignore it:

```
my-openstack-config:
  ignore_cidr: 192.168.0.0/16
```

For in-house OpenStack Essex installation, libcloud needs the service_type :

```
my-openstack-config:
  identity_url: 'http://control.openstack.example.org:5000/v2.0/'
  compute_name : Compute Service
  service_type : compute
```

### DigitalOcean

Using Salt for DigitalOcean requires a `client_key` and an `api_key`. These can be found in the DigitalOcean web interface, in the ``My Settings'' section, under the API Access tab.

```
my-digitalocean-config:
  driver: digital_ocean
  personal_access_token: xxx
  location: New York 1
```

**Note**: In the cloud profile that uses this provider configuration, the syntax for the `provider` required field would be `provider: my-digital-ocean-config`.

### Parallels

Using Salt with Parallels requires a `user`, `password` and `URL`. These can be obtained from your cloud provider.

```
my-parallels-config:
  user: myuser
  password: xyzzy
  url: https://api.cloud.xmission.com:4465/paci/v1.0/
  driver: parallels
```

**Note**: In the cloud profile that uses this provider configuration, the syntax for the `provider` required field would be `provider: my-parallels-config`.

### Proxmox

Using Salt with Proxmox requires a `user`, `password`, and `URL`. These can be obtained from your cloud host. Both PAM and PVE users can be used.

```
my-proxmox-config:
  driver: proxmox
  user: saltcloud@pve
  password: xyzzy
  url: your.proxmox.host
```

**Note**: In the cloud profile that uses this provider configuration, the syntax for the `provider` required field would be `provider: my-proxmox-config`.

### LXC

The lxc driver uses saltify to install salt and attach the lxc container as a new lxc minion. As soon as we can, we manage baremetal operation over SSH. You can also destroy those containers via this driver.

```
devhost10-lxc:
  target: devhost10
  driver: lxc
```

And in the map file:

```
devhost10-lxc:
  provider: devhost10-lxc
  from_container: ubuntu
  backing: lvm
  sudo: True
  size: 3g
  ip: 10.0.3.9
  minion:
    master: 10.5.0.1
    master_port: 4506
  lxc_conf:
    - lxc.utsname: superlxc
```

**Note**: In the cloud profile that uses this provider configuration, the syntax for the `provider` required field would be `provider: devhost10-lxc`.

### Saltify

The Saltify driver is a new, experimental driver designed to install Salt on a remote machine, virtual or bare metal, using SSH. This driver is useful for provisioning machines which are already installed, but not Salted. For more information about using this driver and for configuration examples, please see the *Gettting Started with Saltify* documentation.

### Extending Profiles and Cloud Providers Configuration

As of 0.8.7, the option to extend both the profiles and cloud providers configuration and avoid duplication was added. The extends feature works on the current profiles configuration, but, regarding the cloud providers configuration, **only** works in the new syntax and respective configuration files, i.e. `/etc/salt/salt/cloud.providers` or `/etc/salt/cloud.providers.d/*.conf`.

**Note**: Extending cloud profiles and providers is not recursive. For example, a profile that is extended by a second profile is possible, but the second profile cannot be extended by a third profile.

Also, if a profile (or provider) is extending another profile and each contains a list of values, the lists from the extending profile will override the list from the original profile. The lists are not merged together.

### Extending Profiles

Some example usage on how to use `extends` with profiles. Consider `/etc/salt/salt/cloud.profiles` containing:

```
development-instances:
  provider: my-ec2-config
```

```
  size: t1.micro
  ssh_username: ec2_user
  securitygroup:
    - default
  deploy: False

Amazon-Linux-AMI-2012.09-64bit:
  image: ami-54cf5c3d
  extends: development-instances

Fedora-17:
  image: ami-08d97e61
  extends: development-instances

CentOS-5:
  provider: my-aws-config
  image: ami-09b61d60
  extends: development-instances
```

The above configuration, once parsed would generate the following profiles data:

```
[{'deploy': False,
  'image': 'ami-08d97e61',
  'profile': 'Fedora-17',
  'provider': 'my-ec2-config',
  'securitygroup': ['default'],
  'size': 't1.micro',
  'ssh_username': 'ec2_user'},
 {'deploy': False,
  'image': 'ami-09b61d60',
  'profile': 'CentOS-5',
  'provider': 'my-aws-config',
  'securitygroup': ['default'],
  'size': 't1.micro',
  'ssh_username': 'ec2_user'},
 {'deploy': False,
  'image': 'ami-54cf5c3d',
  'profile': 'Amazon-Linux-AMI-2012.09-64bit',
  'provider': 'my-ec2-config',
  'securitygroup': ['default'],
  'size': 't1.micro',
  'ssh_username': 'ec2_user'},
 {'deploy': False,
  'profile': 'development-instances',
  'provider': 'my-ec2-config',
  'securitygroup': ['default'],
  'size': 't1.micro',
  'ssh_username': 'ec2_user'}]
```

Pretty cool right?

### Extending Providers

Some example usage on how to use `extends` within the cloud providers configuration. Consider `/etc/salt/salt/cloud.providers` containing:

```
my-develop-envs:
  - id: HJGRYCILJLKJYG
    key: 'kdjgfsgm;woormgl/aserigjksjdhasdfgn'
    keyname: test
    securitygroup: quick-start
    private_key: /root/test.pem
    location: ap-southeast-1
    availability_zone: ap-southeast-1b
    driver: ec2

  - user: myuser@mycorp.com
    password: mypass
    ssh_key_name: mykey
    ssh_key_file: '/etc/salt/ibm/mykey.pem'
    location: Raleigh
    driver: ibmsce


my-productions-envs:
  - extends: my-develop-envs:ibmsce
    user: my-production-user@mycorp.com
    location: us-east-1
    availability_zone: us-east-1
```

The above configuration, once parsed would generate the following providers data:

```
'providers': {
    'my-develop-envs': [
        {'availability_zone': 'ap-southeast-1b',
         'id': 'HJGRYCILJLKJYG',
         'key': 'kdjgfsgm;woormgl/aserigjksjdhasdfgn',
         'keyname': 'test',
         'location': 'ap-southeast-1',
         'private_key': '/root/test.pem',
         'driver': 'aws',
         'securitygroup': 'quick-start'
        },
        {'location': 'Raleigh',
         'password': 'mypass',
         'driver': 'ibmsce',
         'ssh_key_file': '/etc/salt/ibm/mykey.pem',
         'ssh_key_name': 'mykey',
         'user': 'myuser@mycorp.com'
        }
    ],
    'my-productions-envs': [
        {'availability_zone': 'us-east-1',
         'location': 'us-east-1',
         'password': 'mypass',
         'driver': 'ibmsce',
         'ssh_key_file': '/etc/salt/ibm/mykey.pem',
         'ssh_key_name': 'mykey',
         'user': 'my-production-user@mycorp.com'
        }
    ]
}
```

## 9.6 Windows Configuration

### 9.6.1 Spinning up Windows Minions

It is possible to use Salt Cloud to spin up Windows instances, and then install Salt on them. This functionality is available on all cloud providers that are supported by Salt Cloud. However, it may not necessarily be available on all Windows images.

#### Requirements

Salt Cloud makes use of *impacket* and *winexe* to set up the Windows Salt Minion installer.

*impacket* is usually available as either the *impacket* or the *python-impacket* package, depending on the distribution. More information on *impacket* can be found at the project home:

- impacket project home

*winexe* is less commonly available in distribution-specific repositories. However, it is currently being built for various distributions in 3rd party channels:

- RPMs at pbone.net
- OpenSuse Build Service

Optionally WinRM can be used instead of *winexe* if the python module *pywinrm* is available and WinRM is supported on the target Windows version. Information on pywinrm can be found at the project home:

- pywinrm project home

Additionally, a copy of the Salt Minion Windows installer must be present on the system on which Salt Cloud is running. This installer may be downloaded from saltstack.com:

- SaltStack Download Area

#### Firewall Settings

Because Salt Cloud makes use of *smbclient* and *winexe*, port 445 must be open on the target image. This port is not generally open by default on a standard Windows distribution, and care must be taken to use an image in which this port is open, or the Windows firewall is disabled.

If supported by the cloud provider, a PowerShell script may be used to open up this port automatically, using the cloud provider's *userdata*. The following script would open up port 445, and apply the changes:

```
<powershell>
New-NetFirewallRule -Name "SMB445" -DisplayName "SMB445" -Protocol TCP -LocalPort 445
Set-Item (dir wsman:\localhost\Listener\*\Port -Recurse).pspath 445 -Force
Restart-Service winrm
</powershell>
```

For EC2, this script may be saved as a file, and specified in the provider or profile configuration as *userdata_file*. For instance:

```
userdata_file: /etc/salt/windows-firewall.ps1
```

If you are using WinRM on EC2 the HTTPS port for the WinRM service must also be enabled in your userdata. By default EC2 Windows images only have insecure HTTP enabled. To enable HTTPS and basic authentication required by pywinrm consider the following userdata example:

```
<powershell>
New-NetFirewallRule -Name "SMB445" -DisplayName "SMB445" -Protocol TCP -LocalPort 445
New-NetFirewallRule -Name "WINRM5986" -DisplayName "WINRM5986" -Protocol TCP -
 ↪LocalPort 5986

winrm quickconfig -q
winrm set winrm/config/winrs '@{MaxMemoryPerShellMB="300"}'
winrm set winrm/config '@{MaxTimeoutms="1800000"}'
winrm set winrm/config/service/auth '@{Basic="true"}'

$SourceStoreScope = 'LocalMachine'
$SourceStorename = 'Remote Desktop'

$SourceStore = New-Object  -TypeName System.Security.Cryptography.X509Certificates.
 ↪X509Store  -ArgumentList $SourceStorename, $SourceStoreScope
$SourceStore.Open([System.Security.Cryptography.X509Certificates.OpenFlags]::ReadOnly)

$cert = $SourceStore.Certificates | Where-Object  -FilterScript {
    $_.subject -like '*'
}

$DestStoreScope = 'LocalMachine'
$DestStoreName = 'My'

$DestStore = New-Object  -TypeName System.Security.Cryptography.X509Certificates.
 ↪X509Store  -ArgumentList $DestStoreName, $DestStoreScope
$DestStore.Open([System.Security.Cryptography.X509Certificates.OpenFlags]::ReadWrite)
$DestStore.Add($cert)

$SourceStore.Close()
$DestStore.Close()

winrm create winrm/config/listener?Address=*+Transport=HTTPS  `@`{Hostname=`"($certId)`
 ↪"`;CertificateThumbprint=`"($cert.Thumbprint)`"`}

Restart-Service winrm
</powershell>
```

No certificate store is available by default on EC2 images and creating one does not seem possible without an MMC (cannot be automated). To use the default EC2 Windows images the above copies the RDP store.

### Configuration

Configuration is set as usual, with some extra configuration settings. The location of the Windows installer on the machine that Salt Cloud is running on must be specified. This may be done in any of the regular configuration files (main, providers, profiles, maps). For example:

Setting the installer in `/etc/salt/cloud.providers`:

```
my-softlayer:
  driver: softlayer
  user: MYUSER1138
  apikey: 'e3b68aa711e6deadc62d5b76355674beef7cc3116062ddbacafe5f7e465bfdc9'
  minion:
    master: saltmaster.example.com
  win_installer: /root/Salt-Minion-2014.7.0-AMD64-Setup.exe
  win_username: Administrator
```

```
  win_password: letmein
  smb_port: 445
```

The default Windows user is *Administrator*, and the default Windows password is blank.

If WinRM is to be used `use_winrm` needs to be set to *True*. `winrm_port` can be used to specify a custom port (must be HTTPS listener).

#### Auto-Generated Passwords on EC2

On EC2, when the *win_password* is set to *auto*, Salt Cloud will query EC2 for an auto-generated password. This password is expected to take at least 4 minutes to generate, adding additional time to the deploy process.

When the EC2 API is queried for the auto-generated password, it will be returned in a message encrypted with the specified *keyname*. This requires that the appropriate *private_key* file is also specified. Such a profile configuration might look like:

```
windows-server-2012:
  provider: my-ec2-config
  image: ami-c49c0dac
  size: m1.small
  securitygroup: windows
  keyname: mykey
  private_key: /root/mykey.pem
  userdata_file: /etc/salt/windows-firewall.ps1
  win_installer: /root/Salt-Minion-2014.7.0-AMD64-Setup.exe
  win_username: Administrator
  win_password: auto
```

## 9.7 Cloud Provider Specifics

### 9.7.1 Getting Started With Aliyun ECS

The Aliyun ECS (Elastic Computer Service) is one of the most popular public cloud hosts in China. This cloud host can be used to manage aliyun instance using salt-cloud.

http://www.aliyun.com/

#### Dependencies

This driver requires the Python `requests` library to be installed.

#### Configuration

Using Salt for Aliyun ECS requires aliyun access key id and key secret. These can be found in the aliyun web interface, in the ``User Center'' section, under ``My Service'' tab.

```
# Note: This example is for /etc/salt/cloud.providers or any file in the
# /etc/salt/cloud.providers.d/ directory.

my-aliyun-config:
  # aliyun Access Key ID
```

```
  id: wDGEwGregedg3435gDgxd
  # aliyun Access Key Secret
  key: GDd45t43RDBTrkkkg43934t34qT43t4dgegerGEgg
  location: cn-qingdao
  driver: aliyun
```

**Note**: Changed in version 2015.8.0.

The `provider` parameter in cloud provider definitions was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile definitions. Cloud provider definitions now use `driver` to refer to the Salt cloud module that provides the underlying functionality to connect to a cloud host, while cloud profiles continue to use `provider` to refer to provider configurations that you define.

### Profiles

#### Cloud Profiles

Set up an initial profile at `/etc/salt/cloud.profiles` or in the `/etc/salt/cloud.profiles.d/` directory:

```
aliyun_centos:
    provider: my-aliyun-config
    size: ecs.t1.small
    location: cn-qingdao
    securitygroup: G1989096784427999
    image: centos6u3_64_20G_aliaegis_20130816.vhd
```

Sizes can be obtained using the `--list-sizes` option for the `salt-cloud` command:

```
# salt-cloud --list-sizes my-aliyun-config
my-aliyun-config:
    ----------
    aliyun:
        ----------
        ecs.c1.large:
            ----------
            CpuCoreCount:
                8
            InstanceTypeId:
                ecs.c1.large
            MemorySize:
                16.0

...SNIP...
```

Images can be obtained using the `--list-images` option for the `salt-cloud` command:

```
# salt-cloud --list-images my-aliyun-config
my-aliyun-config:
    ----------
    aliyun:
        ----------
        centos5u8_64_20G_aliaegis_20131231.vhd:
            ----------
```

```
            Architecture:
                x86_64
            Description:

            ImageId:
                centos5u8_64_20G_aliaegis_20131231.vhd
            ImageName:
                CentOS 5.8 64
            ImageOwnerAlias:
                system
            ImageVersion:
                1.0
            OSName:
                CentOS  5.8 64
            Platform:
                CENTOS5
            Size:
                20
            Visibility:
                public
...SNIP...
```

Locations can be obtained using the `--list-locations` option for the `salt-cloud` command:

```
my-aliyun-config:
    ----------
    aliyun:
        ----------
        cn-beijing:
            ----------
            LocalName:
                
            RegionId:
                cn-beijing
        cn-hangzhou:
            ----------
            LocalName:
                
            RegionId:
                cn-hangzhou
        cn-hongkong:
            ----------
            LocalName:
                
            RegionId:
                cn-hongkong
        cn-qingdao:
            ----------
            LocalName:
                
            RegionId:
                cn-qingdao
```

Security Group can be obtained using the `-f list_securitygroup` option for the `salt-cloud` command:

```
# salt-cloud --location=cn-qingdao -f list_securitygroup my-aliyun-config
my-aliyun-config:
    ----------
```

```
    aliyun:
        ----------
        G1989096784427999:
            ----------
            Description:
                G1989096784427999
            SecurityGroupId:
                G1989096784427999
```

**Note**: Aliyun ECS REST API documentation is available from Aliyun ECS API.

### 9.7.2 Getting Started With Azure

New in version 2014.1.0.

Azure is a cloud service by Microsoft providing virtual machines, SQL services, media services, and more. This document describes how to use Salt Cloud to create a virtual machine on Azure, with Salt installed.

More information about Azure is located at http://www.windowsazure.com/.

#### Dependencies

- Microsoft Azure SDK for Python >= 1.0.2
- The python-requests library, for Python < 2.7.9.
- A Microsoft Azure account
- OpenSSL (to generate the certificates)
- Salt

**Note**: The Azure driver is currently being updated to work with the new version of the Python Azure SDK, 1.0.0. However until that process is complete, this driver will not work with Azure 1.0.0. Please be sure you're running on a minimum version of 0.10.2 and less than version 1.0.0.

See Issue #27980 for more information.

#### Configuration

Set up the provider config at `/etc/salt/cloud.providers.d/azure.conf`:

```
# Note: This example is for /etc/salt/cloud.providers.d/azure.conf

my-azure-config:
  driver: azure
  subscription_id: 3287abc8-f98a-c678-3bde-326766fd3617
  certificate_path: /etc/salt/azure.pem

  # Set up the location of the salt master
  #
  minion:
    master: saltmaster.example.com
```

```
  # Optional
  management_host: management.core.windows.net
```

The certificate used must be generated by the user. OpenSSL can be used to create the management certificates. Two certificates are needed: a .cer file, which is uploaded to Azure, and a .pem file, which is stored locally.

To create the .pem file, execute the following command:

```
openssl req -x509 -nodes -days 365 -newkey rsa:1024 -keyout /etc/salt/azure.pem -out /
 ↪etc/salt/azure.pem
```

To create the .cer file, execute the following command:

```
openssl x509 -inform pem -in /etc/salt/azure.pem -outform der -out /etc/salt/azure.cer
```

After creating these files, the .cer file will need to be uploaded to Azure via the ``Upload a Management Certificate'' action of the ``Management Certificates'' tab within the ``Settings'' section of the management portal.

Optionally, a `management_host` may be configured, if necessary for the region.

---

**Note**: Changed in version 2015.8.0.

The `provider` parameter in cloud provider definitions was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile definitions. Cloud provider definitions now use `driver` to refer to the Salt cloud module that provides the underlying functionality to connect to a cloud host, while cloud profiles continue to use `provider` to refer to provider configurations that you define.

---

### Cloud Profiles

Set up an initial profile at `/etc/salt/cloud.profiles`:

```
azure-ubuntu:
  provider: my-azure-config
  image: 'b39f27a8b8c64d52b05eac6a62ebad85__Ubuntu-12_04_3-LTS-amd64-server-20131003-
 ↪en-us-30GB'
  size: Small
  location: 'East US'
  ssh_username: azureuser
  ssh_password: verybadpass
  slot: production
  media_link: 'http://portalvhdabcdefghijklmn.blob.core.windows.net/vhds'
  virtual_network_name: azure-virtual-network
  subnet_name: azure-subnet
```

These options are described in more detail below. Once configured, the profile can be realized with a salt command:

```
salt-cloud -p azure-ubuntu newinstance
```

This will create an salt minion instance named `newinstance` in Azure. If the command was executed on the salt-master, its Salt key will automatically be signed on the master.

Once the instance has been created with salt-minion installed, connectivity to it can be verified with Salt:

```
salt newinstance test.ping
```

### Profile Options

The following options are currently available for Azure.

#### provider

The name of the provider as configured in */etc/salt/cloud.providers.d/azure.conf*.

#### image

The name of the image to use to create a VM. Available images can be viewed using the following command:

```
salt-cloud --list-images my-azure-config
```

#### size

The name of the size to use to create a VM. Available sizes can be viewed using the following command:

```
salt-cloud --list-sizes my-azure-config
```

#### location

The name of the location to create a VM in. Available locations can be viewed using the following command:

```
salt-cloud --list-locations my-azure-config
```

#### affinity_group

The name of the affinity group to create a VM in. Either a `location` or an `affinity_group` may be specified, but not both. See Affinity Groups below.

#### ssh_username

The user to use to log into the newly-created VM to install Salt.

#### ssh_password

The password to use to log into the newly-created VM to install Salt.

#### slot

The environment to which the hosted service is deployed. Valid values are *staging* or *production*. When set to *production*, the resulting URL of the new VM will be *<vm_name>.cloudapp.net*. When set to *staging*, the resulting URL will contain a generated hash instead.

#### media_link

This is the URL of the container that will store the disk that this VM uses. Currently, this container must already exist. If a VM has previously been created in the associated account, a container should already exist. In the web interface, go into the Storage area and click one of the available storage selections. Click the Containers link, and then copy the URL from the container that will be used. It generally looks like:

```
http://portalvhdabcdefghijklmn.blob.core.windows.net/vhds
```

#### service_name

The name of the service in which to create the VM. If this is not specified, then a service will be created with the same name as the VM.

#### virtual_network_name

Optional. The name of the virtual network for the VM to join. If this is not specified, then no virtual network will be joined.

#### subnet_name

Optional. The name of the subnet in the virtual network for the VM to join. Requires that a `virtual_network_name` is specified.

### Show Instance

This action is a thin wrapper around `--full-query`, which displays details on a single instance only. In an environment with several machines, this will save a user from having to sort through all instance data, just to examine a single instance.

```
salt-cloud -a show_instance myinstance
```

### Destroying VMs

There are certain options which can be specified in the global cloud configuration file (usually `/etc/salt/cloud`) which affect Salt Cloud's behavior when a VM is destroyed.

#### cleanup_disks

New in version 2015.8.0.

Default is `False`. When set to `True`, Salt Cloud will wait for the VM to be destroyed, then attempt to destroy the main disk that is associated with the VM.

#### cleanup_vhds

New in version 2015.8.0.

Default is `False`. Requires `cleanup_disks` to be set to `True`. When also set to `True`, Salt Cloud will ask Azure to delete the VHD associated with the disk that is also destroyed.

#### cleanup_services

New in version 2015.8.0.

Default is `False`. Requires `cleanup_disks` to be set to `True`. When also set to `True`, Salt Cloud will wait for the disk to be destroyed, then attempt to remove the service that is associated with the VM. Because the disk belongs to the service, the disk must be destroyed before the service can be.

### Managing Hosted Services

New in version 2015.8.0.

An account can have one or more hosted services. A hosted service is required in order to create a VM. However, as mentioned above, if a hosted service is not specified when a VM is created, then one will automatically be created with the name of the name. The following functions are also available.

#### create_service

Create a hosted service. The following options are available.

#### name

Required. The name of the hosted service to create.

#### label

Required. A label to apply to the hosted service.

#### description

Optional. A longer description of the hosted service.

#### location

Required, if `affinity_group` is not set. The location in which to create the hosted service. Either the `location` or the `affinity_group` must be set, but not both.

#### affinity_group

Required, if `location` is not set. The affinity group in which to create the hosted service. Either the `location` or the `affinity_group` must be set, but not both.

#### extended_properties

Optional. Dictionary containing name/value pairs of hosted service properties. You can have a maximum of 50 extended property name/value pairs. The maximum length of the Name element is 64 characters, only alphanumeric characters and underscores are valid in the Name, and the name must start with a letter. The value has a maximum length of 255 characters.

### CLI Example

The following example illustrates creating a hosted service.

```
salt-cloud -f create_service my-azure name=my-service label=my-service location='West
 ↪US'
```

#### show_service

Return details about a specific hosted service. Can also be called with `get_service`.

```
salt-cloud -f show_storage my-azure name=my-service
```

#### list_services

List all hosted services associates with the subscription.

```
salt-cloud -f list_services my-azure-config
```

#### delete_service

Delete a specific hosted service.

```
salt-cloud -f delete_service my-azure name=my-service
```

### Managing Storage Accounts

New in version 2015.8.0.

Salt Cloud can manage storage accounts associated with the account. The following functions are available. Deprecated marked as deprecated are marked as such as per the SDK documentation, but are still included for completeness with the SDK.

#### create_storage

Create a storage account. The following options are supported.

#### name

Required. The name of the storage account to create.

#### label

Required. A label to apply to the storage account.

#### description

Optional. A longer description of the storage account.

#### location

Required, if `affinity_group` is not set. The location in which to create the storage account. Either the `location` or the `affinity_group` must be set, but not both.

#### affinity_group

Required, if `location` is not set. The affinity group in which to create the storage account. Either the `location` or the `affinity_group` must be set, but not both.

#### extended_properties

Optional. Dictionary containing name/value pairs of storage account properties. You can have a maximum of 50 extended property name/value pairs. The maximum length of the Name element is 64 characters, only alphanumeric characters and underscores are valid in the Name, and the name must start with a letter. The value has a maximum length of 255 characters.

#### geo_replication_enabled

Deprecated. Replaced by the account_type parameter.

#### account_type

Specifies whether the account supports locally-redundant storage, geo-redundant storage, zone-redundant storage, or read access geo-redundant storage. Possible values are:

- Standard_LRS
- Standard_ZRS
- Standard_GRS
- Standard_RAGRS

#### CLI Example

The following example illustrates creating a storage account.

```
salt-cloud -f create_storage my-azure name=my-storage label=my-storage location='West
↪US'
```

### list_storage

List all storage accounts associates with the subscription.

```
salt-cloud -f list_storage my-azure-config
```

### show_storage

Return details about a specific storage account. Can also be called with `get_storage`.

```
salt-cloud -f show_storage my-azure name=my-storage
```

### update_storage

Update details concerning a storage account. Any of the options available in `create_storage` can be used, but the name cannot be changed.

```
salt-cloud -f update_storage my-azure name=my-storage label=my-storage
```

### delete_storage

Delete a specific storage account.

```
salt-cloud -f delete_storage my-azure name=my-storage
```

### show_storage_keys

Returns the primary and secondary access keys for the specified storage account.

```
salt-cloud -f show_storage_keys my-azure name=my-storage
```

### regenerate_storage_keys

Regenerate storage account keys. Requires a key_type (``primary'' or ``secondary'') to be specified.

```
salt-cloud -f regenerate_storage_keys my-azure name=my-storage key_type=primary
```

### Managing Disks

New in version 2015.8.0.

When a VM is created, a disk will also be created for it. The following functions are available for managing disks. Deprecated marked as deprecated are marked as such as per the SDK documentation, but are still included for completeness with the SDK.

#### show_disk

Return details about a specific disk. Can also be called with `get_disk`.

```
salt-cloud -f show_disk my-azure name=my-disk
```

#### list_disks

List all disks associates with the account.

```
salt-cloud -f list_disks my-azure
```

#### update_disk

Update details for a disk. The following options are available.

#### name

Required. The name of the disk to update.

#### has_operating_system

Deprecated.

#### label

Required. The label for the disk.

#### media_link

Deprecated. The location of the disk in the account, including the storage container that it is in. This should not need to be changed.

#### new_name

Deprecated. If renaming the disk, the new name.

#### os

Deprecated.

### CLI Example

The following example illustrates updating a disk.

```
salt-cloud -f update_disk my-azure name=my-disk label=my-disk
```

### delete_disk

Delete a specific disk.

```
salt-cloud -f delete_disk my-azure name=my-disk
```

### Managing Service Certificates

New in version 2015.8.0.

Stored at the cloud service level, these certificates are used by your deployed services. For more information on service certificates, see the following link:

- Manage Certificates

The following functions are available.

### list_service_certificates

List service certificates associated with the account.

```
salt-cloud -f list_service_certificates my-azure
```

### show_service_certificate

Show the data for a specific service certificate associated with the account. The `name`, `thumbprint`, and `thumbalgorithm` can be obtained from `list_service_certificates`. Can also be called with `get_service_certificate`.

```
salt-cloud -f show_service_certificate my-azure name=my_service_certificate \
    thumbalgorithm=sha1 thumbprint=0123456789ABCDEF
```

### add_service_certificate

Add a service certificate to the account. This requires that a certificate already exists, which is then added to the account. For more information on creating the certificate itself, see:

- Create a Service Certificate for Azure

The following options are available.

### name

Required. The name of the hosted service that the certificate will belong to.

#### data

Required. The base-64 encoded form of the pfx file.

#### certificate_format

Required. The service certificate format. The only supported value is pfx.

#### password

The certificate password.

```
salt-cloud -f add_service_certificate my-azure name=my-cert \
    data='...CERT_DATA...' certificate_format=pfx password=verybadpass
```

#### delete_service_certificate

Delete a service certificate from the account. The `name`, `thumbprint`, and `thumbalgorithm` can be obtained from `list_service_certificates`.

```
salt-cloud -f delete_service_certificate my-azure \
    name=my_service_certificate \
    thumbalgorithm=sha1 thumbprint=0123456789ABCDEF
```

### Managing Management Certificates

New in version 2015.8.0.

A Azure management certificate is an X.509 v3 certificate used to authenticate an agent, such as Visual Studio Tools for Windows Azure or a client application that uses the Service Management API, acting on behalf of the subscription owner to manage subscription resources. Azure management certificates are uploaded to Azure and stored at the subscription level. The management certificate store can hold up to 100 certificates per subscription. These certificates are used to authenticate your Windows Azure deployment.

For more information on management certificates, see the following link.

- Manage Certificates

The following functions are available.

#### list_management_certificates

List management certificates associated with the account.

```
salt-cloud -f list_management_certificates my-azure
```

#### show_management_certificate

Show the data for a specific management certificate associated with the account. The `name`, `thumbprint`, and `thumbalgorithm` can be obtained from `list_management_certificates`. Can also be called with `get_management_certificate`.

```
salt-cloud -f show_management_certificate my-azure name=my_management_certificate \
    thumbalgorithm=sha1 thumbprint=0123456789ABCDEF
```

#### add_management_certificate

Management certificates must have a key length of at least 2048 bits and should reside in the Personal certificate store. When the certificate is installed on the client, it should contain the private key of the certificate. To upload to the certificate to the Microsoft Azure Management Portal, you must export it as a .cer format file that does not contain the private key. For more information on creating management certificates, see the following link:

- Create and Upload a Management Certificate for Azure

The following options are available.

#### public_key

A base64 representation of the management certificate public key.

#### thumbprint

The thumb print that uniquely identifies the management certificate.

#### data

The certificate's raw data in base-64 encoded .cer format.

```
salt-cloud -f add_management_certificate my-azure public_key='...PUBKEY...' \
    thumbprint=0123456789ABCDEF data='...CERT_DATA...'
```

#### delete_management_certificate

Delete a management certificate from the account. The `thumbprint` can be obtained from `list_management_certificates`.

```
salt-cloud -f delete_management_certificate my-azure thumbprint=0123456789ABCDEF
```

#### Virtual Network Management

New in version 2015.8.0.

The following are functions for managing virtual networks.

#### list_virtual_networks

List input endpoints associated with the deployment.

```
salt-cloud -f list_virtual_networks my-azure service=myservice deployment=mydeployment
```

### Managing Input Endpoints

New in version 2015.8.0.

Input endpoints are used to manage port access for roles. Because endpoints cannot be managed by the Azure Python SDK, Salt Cloud uses the API directly. With versions of Python before 2.7.9, the `requests-python` package needs to be installed in order for this to work. Additionally, the following needs to be set in the master's configuration file:

```
requests_lib: True
```

The following functions are available.

#### list_input_endpoints

List input endpoints associated with the deployment

```
salt-cloud -f list_input_endpoints my-azure service=myservice deployment=mydeployment
```

#### show_input_endpoint

Show an input endpoint associated with the deployment

```
salt-cloud -f show_input_endpoint my-azure service=myservice \
    deployment=mydeployment name=SSH
```

#### add_input_endpoint

Add an input endpoint to the deployment. Please note that there may be a delay before the changes show up. The following options are available.

#### service

Required. The name of the hosted service which the VM belongs to.

#### deployment

Required. The name of the deployment that the VM belongs to. If the VM was created with Salt Cloud, the deployment name probably matches the VM name.

#### role

Required. The name of the role that the VM belongs to. If the VM was created with Salt Cloud, the role name probably matches the VM name.

#### name

Required. The name of the input endpoint. This typically matches the port that the endpoint is set to. For instance, port 22 would be called SSH.

#### port

Required. The public (Internet-facing) port that is used for the endpoint.

#### local_port

Optional. The private port on the VM itself that will be matched with the port. This is typically the same as the `port`. If this value is not specified, it will be copied from `port`.

#### protocol

Required. Either `tcp` or `udp`.

#### enable_direct_server_return

Optional. If an internal load balancer exists in the account, it can be used with a direct server return. The default value is `False`. Please see the following article for an explanation of this option.

- Load Balancing for Azure Infrastructure Services

#### timeout_for_tcp_idle_connection

Optional. The default value is 4. Please see the following article for an explanation of this option.

- Configurable Idle Timeout for Azure Load Balancer

#### CLI Example

The following example illustrates adding an input endpoint.

```
salt-cloud -f add_input_endpoint my-azure service=myservice \
    deployment=mydeployment role=myrole name=HTTP local_port=80 \
    port=80 protocol=tcp enable_direct_server_return=False \
    timeout_for_tcp_idle_connection=4
```

#### update_input_endpoint

Updates the details for a specific input endpoint. All options from `add_input_endpoint` are supported.

```
salt-cloud -f update_input_endpoint my-azure service=myservice \
    deployment=mydeployment role=myrole name=HTTP local_port=80 \
    port=80 protocol=tcp enable_direct_server_return=False \
    timeout_for_tcp_idle_connection=4
```

#### delete_input_endpoint

Delete an input endpoint from the deployment. Please note that there may be a delay before the changes show up. The following items are required.

#### CLI Example

The following example illustrates deleting an input endpoint.

#### service

The name of the hosted service which the VM belongs to.

#### deployment

The name of the deployment that the VM belongs to. If the VM was created with Salt Cloud, the deployment name probably matches the VM name.

#### role

The name of the role that the VM belongs to. If the VM was created with Salt Cloud, the role name probably matches the VM name.

#### name

The name of the input endpoint. This typically matches the port that the endpoint is set to. For instance, port 22 would be called SSH.

```
salt-cloud -f delete_input_endpoint my-azure service=myservice \
    deployment=mydeployment role=myrole name=HTTP
```

#### Managing Affinity Groups

New in version 2015.8.0.

Affinity groups allow you to group your Azure services to optimize performance. All services and VMs within an affinity group will be located in the same region. For more information on Affinity groups, see the following link:

- Create an Affinity Group in the Management Portal

The following functions are available.

#### list_affinity_groups

List input endpoints associated with the account

```
salt-cloud -f list_affinity_groups my-azure
```

#### show_affinity_group

Show an affinity group associated with the account

```
salt-cloud -f show_affinity_group my-azure service=myservice \
    deployment=mydeployment name=SSH
```

#### create_affinity_group

Create a new affinity group. The following options are supported.

#### name

Required. The name of the new affinity group.

#### location

Required. The region in which the affinity group lives.

#### label

Required. A label describing the new affinity group.

#### description

Optional. A longer description of the affinity group.

```
salt-cloud -f create_affinity_group my-azure name=my_affinity_group \
   label=my-affinity-group location='West US'
```

#### update_affinity_group

Update an affinity group's properties

```
salt-cloud -f update_affinity_group my-azure name=my_group label=my_group
```

#### delete_affinity_group

Delete a specific affinity group associated with the account

```
salt-cloud -f delete_affinity_group my-azure name=my_affinity_group
```

### Managing Blob Storage

New in version 2015.8.0.

Azure storage containers and their contents can be managed with Salt Cloud. This is not as elegant as using one of the other available clients in Windows, but it benefits Linux and Unix users, as there are fewer options available on those platforms.

### Blob Storage Configuration

Blob storage must be configured differently than the standard Azure configuration. Both a `storage_account` and a `storage_key` must be specified either through the Azure provider configuration (in addition to the other Azure configuration) or via the command line.

```
storage_account: mystorage
storage_key: ffhj334fDSGFEGDFGFDewr34fwfsFSDFwe==
```

#### storage_account

This is one of the storage accounts that is available via the `list_storage` function.

#### storage_key

Both a primary and a secondary `storage_key` can be obtained by running the `show_storage_keys` function. Either key may be used.

### Blob Functions

The following functions are made available through Salt Cloud for managing blog storage.

#### make_blob_url

Creates the URL to access a blob

```
salt-cloud -f make_blob_url my-azure container=mycontainer blob=myblob
```

#### container

Name of the container.

#### blob

Name of the blob.

#### account

Name of the storage account. If not specified, derives the host base from the provider configuration.

#### protocol

Protocol to use: `http' or `https'. If not specified, derives the host base from the provider configuration.

#### host_base

Live host base URL. If not specified, derives the host base from the provider configuration.

#### list_storage_containers

List containers associated with the storage account

```
salt-cloud -f list_storage_containers my-azure
```

#### create_storage_container

Create a storage container

```
salt-cloud -f create_storage_container my-azure name=mycontainer
```

#### name

Name of container to create.

#### meta_name_values

Optional. A dict with name_value pairs to associate with the container as metadata. Example:{`Category':'test'}

#### blob_public_access

Optional. Possible values include: container, blob

#### fail_on_exist

Specify whether to throw an exception when the container exists.

#### show_storage_container

Show a container associated with the storage account

```
salt-cloud -f show_storage_container my-azure name=myservice
```

#### name

Name of container to show.

#### show_storage_container_metadata

Show a storage container's metadata

```
salt-cloud -f show_storage_container_metadata my-azure name=myservice
```

#### name

Name of container to show.

#### lease_id

If specified, show_storage_container_metadata only succeeds if the container's lease is active and matches this ID.

#### set_storage_container_metadata

Set a storage container's metadata

```
salt-cloud -f set_storage_container my-azure name=mycontainer \
    x_ms_meta_name_values='{"my_name": "my_value"}'
```

#### name

Name of existing container. meta_name_values ``````````` A dict containing name, value for metadata. Example: {`category':'test'} lease_id ````` If specified, set_storage_container_metadata only succeeds if the container's lease is active and matches this ID.

#### show_storage_container_acl

Show a storage container's acl

```
salt-cloud -f show_storage_container_acl my-azure name=myservice
```

#### name

Name of existing container.

#### lease_id

If specified, show_storage_container_acl only succeeds if the container's lease is active and matches this ID.

### set_storage_container_acl

Set a storage container's acl

```
salt-cloud -f set_storage_container my-azure name=mycontainer
```

#### name

Name of existing container.

#### signed_identifiers

SignedIdentifers instance

#### blob_public_access

Optional. Possible values include: container, blob

#### lease_id

If specified, set_storage_container_acl only succeeds if the container's lease is active and matches this ID.

### delete_storage_container

Delete a container associated with the storage account

```
salt-cloud -f delete_storage_container my-azure name=mycontainer
```

#### name

Name of container to create.

#### fail_not_exist

Specify whether to throw an exception when the container exists.

#### lease_id

If specified, delete_storage_container only succeeds if the container's lease is active and matches this ID.

#### lease_storage_container

Lease a container associated with the storage account

```
salt-cloud -f lease_storage_container my-azure name=mycontainer
```

#### name

Name of container to create.

#### lease_action

Required. Possible values: acquire|renew|release|break|change

#### lease_id

Required if the container has an active lease.

#### lease_duration

Specifies the duration of the lease, in seconds, or negative one (-1) for a lease that never expires. A non-infinite lease can be between 15 and 60 seconds. A lease duration cannot be changed using renew or change. For backwards compatibility, the default is 60, and the value is only used on an acquire operation.

#### lease_break_period

Optional. For a break operation, this is the proposed duration of seconds that the lease should continue before it is broken, between 0 and 60 seconds. This break period is only used if it is shorter than the time remaining on the lease. If longer, the time remaining on the lease is used. A new lease will not be available before the break period has expired, but the lease may be held for longer than the break period. If this header does not appear with a break operation, a fixed-duration lease breaks after the remaining lease period elapses, and an infinite lease breaks immediately.

#### proposed_lease_id

Optional for acquire, required for change. Proposed lease ID, in a GUID string format.

### list_blobs

List blobs associated with the container

```
salt-cloud -f list_blobs my-azure container=mycontainer
```

### container

The name of the storage container

### prefix

Optional. Filters the results to return only blobs whose names begin with the specified prefix.

### marker

Optional. A string value that identifies the portion of the list to be returned with the next list operation. The operation returns a marker value within the response body if the list returned was not complete. The marker value may then be used in a subsequent call to request the next set of list items. The marker value is opaque to the client.

### maxresults

Optional. Specifies the maximum number of blobs to return, including all BlobPrefix elements. If the request does not specify maxresults or specifies a value greater than 5,000, the server will return up to 5,000 items. Setting maxresults to a value less than or equal to zero results in error response code 400 (Bad Request).

### include

Optional. Specifies one or more datasets to include in the response. To specify more than one of these options on the URI, you must separate each option with a comma. Valid values are:

```
snapshots:
    Specifies that snapshots should be included in the
    enumeration. Snapshots are listed from oldest to newest in
    the response.
metadata:
    Specifies that blob metadata be returned in the response.
uncommittedblobs:
    Specifies that blobs for which blocks have been uploaded,
    but which have not been committed using Put Block List
    (REST API), be included in the response.
copy:
    Version 2012-02-12 and newer. Specifies that metadata
    related to any current or previous Copy Blob operation
    should be included in the response.
```

#### delimiter

Optional. When the request includes this parameter, the operation returns a BlobPrefix element in the response body that acts as a placeholder for all blobs whose names begin with the same substring up to the appearance of the delimiter character. The delimiter may be a single character or a string.

#### show_blob_service_properties

Show a blob's service properties

```
salt-cloud -f show_blob_service_properties my-azure
```

#### set_blob_service_properties

Sets the properties of a storage account's Blob service, including Windows Azure Storage Analytics. You can also use this operation to set the default request version for all incoming requests that do not have a version specified.

```
salt-cloud -f set_blob_service_properties my-azure
```

#### properties

a StorageServiceProperties object.

#### timeout

Optional. The timeout parameter is expressed in seconds.

#### show_blob_properties

Returns all user-defined metadata, standard HTTP properties, and system properties for the blob.

```
salt-cloud -f show_blob_properties my-azure container=mycontainer blob=myblob
```

#### container

Name of existing container.

#### blob

Name of existing blob.

#### lease_id

Required if the blob has an active lease.

#### set_blob_properties

Set a blob's properties

```
salt-cloud -f set_blob_properties my-azure
```

#### container

Name of existing container.

#### blob

Name of existing blob.

#### blob_cache_control

Optional. Modifies the cache control string for the blob.

#### blob_content_type

Optional. Sets the blob's content type.

#### blob_content_md5

Optional. Sets the blob's MD5 hash.

#### blob_content_encoding

Optional. Sets the blob's content encoding.

#### blob_content_language

Optional. Sets the blob's content language.

#### lease_id

Required if the blob has an active lease.

#### blob_content_disposition

Optional. Sets the blob's Content-Disposition header. The Content-Disposition response header field conveys additional information about how to process the response payload, and also can be used to attach additional metadata. For example, if set to attachment, it indicates that the user-agent should not display the response, but instead show a Save As dialog with a filename other than the blob name specified.

#### put_blob

Upload a blob

```
salt-cloud -f put_blob my-azure container=base name=top.sls blob_path=/srv/salt/top.sls
salt-cloud -f put_blob my-azure container=base name=content.txt blob_content='Some
 ↪content'
```

#### container

Name of existing container.

#### name

Name of existing blob.

#### blob_path

The path on the local machine of the file to upload as a blob. Either this or blob_content must be specified.

#### blob_content

The actual content to be uploaded as a blob. Either this or blob_path must me specified.

#### cache_control

Optional. The Blob service stores this value but does not use or modify it.

#### content_language

Optional. Specifies the natural languages used by this resource.

#### content_md5

Optional. An MD5 hash of the blob content. This hash is used to verify the integrity of the blob during transport. When this header is specified, the storage service checks the hash that has arrived with the one that was sent. If the two hashes do not match, the operation will fail with error code 400 (Bad Request).

#### blob_content_type

Optional. Set the blob's content type.

#### blob_content_encoding

Optional. Set the blob's content encoding.

#### blob_content_language

Optional. Set the blob's content language.

#### blob_content_md5

Optional. Set the blob's MD5 hash.

#### blob_cache_control

Optional. Sets the blob's cache control.

#### meta_name_values

A dict containing name, value for metadata.

#### lease_id

Required if the blob has an active lease.

#### get_blob

Download a blob

```
salt-cloud -f get_blob my-azure container=base name=top.sls local_path=/srv/salt/top.
 ↪sls
salt-cloud -f get_blob my-azure container=base name=content.txt return_content=True
```

#### container

Name of existing container.

#### name

Name of existing blob.

#### local_path

The path on the local machine to download the blob to. Either this or return_content must be specified.

#### return_content

Whether or not to return the content directly from the blob. If specified, must be True or False. Either this or the local_path must be specified.

#### snapshot

Optional. The snapshot parameter is an opaque DateTime value that, when present, specifies the blob snapshot to retrieve.

#### lease_id

Required if the blob has an active lease.

#### progress_callback

callback for progress with signature function(current, total) where current is the number of bytes transferred so far, and total is the size of the blob.

#### max_connections

Maximum number of parallel connections to use when the blob size exceeds 64MB. Set to 1 to download the blob chunks sequentially. Set to 2 or more to download the blob chunks in parallel. This uses more system resources but will download faster.

#### max_retries

Number of times to retry download of blob chunk if an error occurs.

#### retry_wait

Sleep time in secs between retries.

### 9.7.3 Getting Started With DigitalOcean

DigitalOcean is a public cloud host that specializes in Linux instances.

#### Configuration

Using Salt for DigitalOcean requires a `personal_access_token`, an `ssh_key_file`, and at least one SSH key name in `ssh_key_names`. More `ssh_key_names` can be added by separating each key with a comma. The `personal_access_token` can be found in the DigitalOcean web interface in the ``Apps & API'' section. The SSH key name can be found under the ``SSH Keys'' section.

```
# Note: This example is for /etc/salt/cloud.providers or any file in the
# /etc/salt/cloud.providers.d/ directory.

my-digitalocean-config:
  driver: digital_ocean
  personal_access_token: xxx
  ssh_key_file: /path/to/ssh/key/file
  ssh_key_names: my-key-name,my-key-name-2
  location: New York 1
```

**Note:** Changed in version 2015.8.0.

The `provider` parameter in cloud provider definitions was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile definitions. Cloud provider definitions now use `driver` to refer to the Salt cloud module that provides the underlying functionality to connect to a cloud host, while cloud profiles continue to use `provider` to refer to provider configurations that you define.

### Profiles

#### Cloud Profiles

Set up an initial profile at `/etc/salt/cloud.profiles` or in the `/etc/salt/cloud.profiles.d/` directory:

```
digitalocean-ubuntu:
  provider: my-digitalocean-config
  image: 14.04 x64
  size: 512MB
  location: New York 1
  private_networking: True
  backups_enabled: True
  ipv6: True
  create_dns_record: True
```

Locations can be obtained using the `--list-locations` option for the `salt-cloud` command:

```
# salt-cloud --list-locations my-digitalocean-config
my-digitalocean-config:
    ----------
    digital_ocean:
        ----------
        Amsterdam 1:
            ----------
            available:
                False
            features:
                [u'backups']
            name:
                Amsterdam 1
            sizes:
                []
            slug:
                ams1
...SNIP...
```

Sizes can be obtained using the `--list-sizes` option for the `salt-cloud` command:

```
# salt-cloud --list-sizes my-digitalocean-config
my-digitalocean-config:
    ----------
    digital_ocean:
        ----------
        512MB:
            ----------
            cost_per_hour:
```

```
                0.00744
            cost_per_month:
                5.0
            cpu:
                1
            disk:
                20
            id:
                66
            memory:
                512
            name:
                512MB
            slug:
                None
...SNIP...
```

Images can be obtained using the `--list-images` option for the `salt-cloud` command:

```
# salt-cloud --list-images my-digitalocean-config
my-digitalocean-config:
    ----------
    digital_ocean:
        ----------
        10.1:
            ----------
            created_at:
                2015-01-20T20:04:34Z
            distribution:
                FreeBSD
            id:
                10144573
            min_disk_size:
                20
            name:
                10.1
            public:
                True
...SNIP...
```

#### Profile Specifics:

#### ssh_username

If using a FreeBSD image from Digital Ocean, you'll need to set the `ssh_username` setting to `freebsd` in your profile configuration.

```
digitalocean-freebsd:
  provider: my-digitalocean-config
  image: 10.2
  size: 512MB
  ssh_username: freebsd
```

#### Miscellaneous Information

**Note**: DigitalOcean's concept of `Applications` is nothing more than a pre-configured instance (same as a normal Droplet). You will find examples such `Docker 0.7 Ubuntu 13.04 x64` and `Wordpress on Ubuntu 12.10` when using the `--list-images` option. These names can be used just like the rest of the standard instances when specifying an image in the cloud profile configuration.

**Note**: If your domain's DNS is managed with DigitalOcean, and your minion name matches your DigitalOcean managed DNS domain, you can automatically create A and AAA records for newly created droplets. Use `create_dns_record: True` in your config to enable this. Adding `delete_dns_record: True` to also delete records when a droplet is destroyed is optional. Due to limitations in salt-cloud design, the destroy code does not have access to the VM config data. WHETHER YOU ADD `create_dns_record: True` OR NOT, salt-cloud WILL attempt to delete your DNS records if the minion name matches. This will prevent advertising any recycled IP addresses for destroyed minions.

**Note**: Additional documentation is available from DigitalOcean.

### 9.7.4 Getting Started With AWS EC2

Amazon EC2 is a very widely used public cloud platform and one of the core platforms Salt Cloud has been built to support.

Previously, the suggested driver for AWS EC2 was the `aws` driver. This has been deprecated in favor of the `ec2` driver. Configuration using the old `aws` driver will still function, but that driver is no longer in active development.

#### Dependencies

This driver requires the Python `requests` library to be installed.

#### Configuration

The following example illustrates some of the options that can be set. These parameters are discussed in more detail below.

```
# Note: This example is for /etc/salt/cloud.providers or any file in the
# /etc/salt/cloud.providers.d/ directory.

my-ec2-southeast-public-ips:
  # Set up the location of the salt master
  #
  minion:
    master: saltmaster.example.com

  # Set up grains information, which will be common for all nodes
  # using this provider
  grains:
    node_type: broker
    release: 1.0.1

  # Specify whether to use public or private IP for deploy script.
  #
```

```
  # Valid options are:
  #     private_ips - The salt-cloud command is run inside the EC2
  #     public_ips - The salt-cloud command is run outside of EC2
  #
  ssh_interface: public_ips

  # Optionally configure the Windows credential validation number of
  # retries and delay between retries.  This defaults to 10 retries
  # with a one second delay betwee retries
  win_deploy_auth_retries: 10
  win_deploy_auth_retry_delay: 1

  # Set the EC2 access credentials (see below)
  #
  id: 'use-instance-role-credentials'
  key: 'use-instance-role-credentials'

  # Make sure this key is owned by root with permissions 0400.
  #
  private_key: /etc/salt/my_test_key.pem
  keyname: my_test_key
  securitygroup: default

  # Optionally configure default region
  # Use salt-cloud --list-locations <provider> to obtain valid regions
  #
  location: ap-southeast-1
  availability_zone: ap-southeast-1b

  # Configure which user to use to run the deploy script. This setting is
  # dependent upon the AMI that is used to deploy. It is usually safer to
  # configure this individually in a profile, than globally. Typical users
  # are:
  #
  # Amazon Linux -> ec2-user
  # RHEL         -> ec2-user
  # CentOS       -> ec2-user
  # Ubuntu       -> ubuntu
  #
  ssh_username: ec2-user

  # Optionally add an IAM profile
  iam_profile: 'arn:aws:iam::123456789012:instance-profile/ExampleInstanceProfile'

  driver: ec2


my-ec2-southeast-private-ips:
  # Set up the location of the salt master
  #
  minion:
    master: saltmaster.example.com

  # Specify whether to use public or private IP for deploy script.
  #
  # Valid options are:
  #     private_ips - The salt-master is also hosted with EC2
  #     public_ips - The salt-master is hosted outside of EC2
```

```
  #
  ssh_interface: private_ips

  # Optionally configure the Windows credential validation number of
  # retries and delay between retries.  This defaults to 10 retries
  # with a one second delay betwee retries
  win_deploy_auth_retries: 10
  win_deploy_auth_retry_delay: 1

  # Set the EC2 access credentials (see below)
  #
  id: 'use-instance-role-credentials'
  key: 'use-instance-role-credentials'

  # Make sure this key is owned by root with permissions 0400.
  #
  private_key: /etc/salt/my_test_key.pem
  keyname: my_test_key

  # This one should NOT be specified if VPC was not configured in AWS to be
  # the default. It might cause an error message which says that network
  # interfaces and an instance-level security groups may not be specified
  # on the same request.
  #
  securitygroup: default

  # Optionally configure default region
  #
  location: ap-southeast-1
  availability_zone: ap-southeast-1b

  # Configure which user to use to run the deploy script. This setting is
  # dependent upon the AMI that is used to deploy. It is usually safer to
  # configure this individually in a profile, than globally. Typical users
  # are:
  #
  # Amazon Linux -> ec2-user
  # RHEL         -> ec2-user
  # CentOS       -> ec2-user
  # Ubuntu       -> ubuntu
  #
  ssh_username: ec2-user

  # Optionally add an IAM profile
  iam_profile: 'my other profile name'

  driver: ec2
```

**Note**: Changed in version 2015.8.0.

The `provider` parameter in cloud provider definitions was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile definitions. Cloud provider definitions now use `driver` to refer to the Salt cloud module that provides the underlying functionality to connect to a cloud host, while cloud profiles continue to use `provider` to refer to provider configurations that you define.

### Access Credentials

The `id` and `key` settings may be found in the Security Credentials area of the AWS Account page:

https://portal.aws.amazon.com/gp/aws/securityCredentials

Both are located in the Access Credentials area of the page, under the Access Keys tab. The `id` setting is labeled Access Key ID, and the `key` setting is labeled Secret Access Key.

Note: if either `id` or `key` is set to `use-instance-role-credentials' it is assumed that Salt is running on an AWS instance, and the instance role credentials will be retrieved and used. Since both the `id` and `key` are required parameters for the AWS ec2 provider, it is recommended to set both to `use-instance-role-credentials' for this functionality.

A ``static'' and ``permanent'' Access Key ID and Secret Key can be specified, but this is not recommended. Instance role keys are rotated on a regular basis, and are the recommended method of specifying AWS credentials.

### Windows Deploy Timeouts

For Windows instances, it may take longer than normal for the instance to be ready. In these circumstances, the provider configuration can be configured with a `win_deploy_auth_retries` and/or a `win_deploy_auth_retry_delay` setting, which default to 10 retries and a one second delay between retries. These retries and timeouts relate to validating the Administrator password once AWS provides the credentials via the AWS API.

### Key Pairs

In order to create an instance with Salt installed and configured, a key pair will need to be created. This can be done in the EC2 Management Console, in the Key Pairs area. These key pairs are unique to a specific region. Keys in the us-east-1 region can be configured at:

https://console.aws.amazon.com/ec2/home?region=us-east-1#s=KeyPairs

Keys in the us-west-1 region can be configured at

https://console.aws.amazon.com/ec2/home?region=us-west-1#s=KeyPairs

...and so on. When creating a key pair, the browser will prompt to download a pem file. This file must be placed in a directory accessible by Salt Cloud, with permissions set to either 0400 or 0600.

### Security Groups

An instance on EC2 needs to belong to a security group. Like key pairs, these are unique to a specific region. These are also configured in the EC2 Management Console. Security groups for the us-east-1 region can be configured at:

https://console.aws.amazon.com/ec2/home?region=us-east-1#s=SecurityGroups

...and so on.

A security group defines firewall rules which an instance will adhere to. If the salt-master is configured outside of EC2, the security group must open the SSH port (usually port 22) in order for Salt Cloud to install Salt.

### IAM Profile

Amazon EC2 instances support the concept of an instance profile, which is a logical container for the IAM role. At the time that you launch an EC2 instance, you can associate the instance with an instance profile, which in turn

corresponds to the IAM role. Any software that runs on the EC2 instance is able to access AWS using the permissions associated with the IAM role.

Scaffolding the profile is a 2-step configuration process:

1. Configure an IAM Role from the IAM Management Console.
2. Attach this role to a new profile. It can be done with the AWS CLI:

```
> aws iam create-instance-profile --instance-profile-name PROFILE_NAME
> aws iam add-role-to-instance-profile --instance-profile-name PROFILE_
 ↪NAME --role-name ROLE_NAME
```

Once the profile is created, you can use the **PROFILE_NAME** to configure your cloud profiles.

### Cloud Profiles

Set up an initial profile at `/etc/salt/cloud.profiles`:

```
base_ec2_private:
  provider: my-ec2-southeast-private-ips
  image: ami-e565ba8c
  size: t2.micro
  ssh_username: ec2-user

base_ec2_public:
  provider: my-ec2-southeast-public-ips
  image: ami-e565ba8c
  size: t2.micro
  ssh_username: ec2-user

base_ec2_db:
  provider: my-ec2-southeast-public-ips
  image: ami-e565ba8c
  size: m1.xlarge
  ssh_username: ec2-user
  volumes:
    - { size: 10, device: /dev/sdf }
    - { size: 10, device: /dev/sdg, type: io1, iops: 1000 }
    - { size: 10, device: /dev/sdh, type: io1, iops: 1000 }
    - { size: 10, device: /dev/sdi, tags: {"Environment": "production"} }
  # optionally add tags to profile:
  tag: {'Environment': 'production', 'Role': 'database'}
  # force grains to sync after install
  sync_after_install: grains

base_ec2_vpc:
  provider: my-ec2-southeast-public-ips
  image: ami-a73264ce
  size: m1.xlarge
  ssh_username: ec2-user
  script:  /etc/salt/cloud.deploy.d/user_data.sh
  network_interfaces:
    - DeviceIndex: 0
      PrivateIpAddresses:
        - Primary: True
      #auto assign public ip (not EIP)
      AssociatePublicIpAddress: True
```

```
      SubnetId: subnet-813d4bbf
      SecurityGroupId:
        - sg-750af413
  del_root_vol_on_destroy: True
  del_all_vol_on_destroy: True
  volumes:
    - { size: 10, device: /dev/sdf }
    - { size: 10, device: /dev/sdg, type: io1, iops: 1000 }
    - { size: 10, device: /dev/sdh, type: io1, iops: 1000 }
  tag: {'Environment': 'production', 'Role': 'database'}
  sync_after_install: grains
```

The profile can now be realized with a salt command:

```
# salt-cloud -p base_ec2 ami.example.com
# salt-cloud -p base_ec2_public ami.example.com
# salt-cloud -p base_ec2_private ami.example.com
```

This will create an instance named `ami.example.com` in EC2. The minion that is installed on this instance will have an `id` of `ami.example.com`. If the command was executed on the salt-master, its Salt key will automatically be signed on the master.

Once the instance has been created with salt-minion installed, connectivity to it can be verified with Salt:

```
# salt 'ami.example.com' test.ping
```

#### Required Settings

The following settings are always required for EC2:

```
# Set the EC2 login data
my-ec2-config:
  id: HJGRYCILJLKJYG
  key: 'kdjgfsgm;woormgl/aserigjksjdhasdfgn'
  keyname: test
  securitygroup: quick-start
  private_key: /root/test.pem
  driver: ec2
```

#### Optional Settings

EC2 allows a userdata file to be passed to the instance to be created. This functionality was added to Salt in the 2015.5.0 release.

```
my-ec2-config:
  # Pass userdata to the instance to be created
  userdata_file: /etc/salt/my-userdata-file
```

EC2 allows a location to be set for servers to be deployed in. Availability zones exist inside regions, and may be added to increase specificity.

```
my-ec2-config:
  # Optionally configure default region
  location: ap-southeast-1
  availability_zone: ap-southeast-1b
```

EC2 instances can have a public or private IP, or both. When an instance is deployed, Salt Cloud needs to log into it via SSH to run the deploy script. By default, the public IP will be used for this. If the salt-cloud command is run from another EC2 instance, the private IP should be used.

```
my-ec2-config:
  # Specify whether to use public or private IP for deploy script
  # private_ips or public_ips
  ssh_interface: public_ips
```

Many EC2 instances do not allow remote access to the root user by default. Instead, another user must be used to run the deploy script using sudo. Some common usernames include ec2-user (for Amazon Linux), ubuntu (for Ubuntu instances), admin (official Debian) and bitnami (for images provided by Bitnami).

```
my-ec2-config:
  # Configure which user to use to run the deploy script
  ssh_username: ec2-user
```

Multiple usernames can be provided, in which case Salt Cloud will attempt to guess the correct username. This is mostly useful in the main configuration file:

```
my-ec2-config:
  ssh_username:
    - ec2-user
    - ubuntu
    - admin
    - bitnami
```

Multiple security groups can also be specified in the same fashion:

```
my-ec2-config:
  securitygroup:
    - default
    - extra
```

EC2 instances can be added to an AWS Placement Group by specifying the `placementgroup` option:

```
my-ec2-config:
  placementgroup: my-aws-placement-group
```

Your instances may optionally make use of EC2 Spot Instances. The following example will request that spot instances be used and your maximum bid will be $0.10. Keep in mind that different spot prices may be needed based on the current value of the various EC2 instance sizes. You can check current and past spot instance pricing via the EC2 API or AWS Console.

```
my-ec2-config:
  spot_config:
    spot_price: 0.10
```

By default, the spot instance type is set to `one-time', meaning it will be launched and, if it's ever terminated for whatever reason, it will not be recreated. If you would like your spot instances to be relaunched after a termination (by your or AWS), set the `type` to `persistent'.

NOTE: Spot instances are a great way to save a bit of money, but you do run the risk of losing your spot instances if the current price for the instance size goes above your maximum bid.

The following parameters may be set in the cloud configuration file to control various aspects of the spot instance launching:

- `wait_for_spot_timeout`: seconds to wait before giving up on spot instance launch (default=600)

- `wait_for_spot_interval`: seconds to wait in between polling requests to determine if a spot instance is available (default=30)
- `wait_for_spot_interval_multiplier`: a multiplier to add to the interval in between requests, which is useful if AWS is throttling your requests (default=1)
- `wait_for_spot_max_failures`: maximum number of failures before giving up on launching your spot instance (default=10)

If you find that you're being throttled by AWS while polling for spot instances, you can set the following in your core cloud configuration file that will double the polling interval after each request to AWS.

```
wait_for_spot_interval: 1
wait_for_spot_interval_multiplier: 2
```

See the AWS Spot Instances documentation for more information.

Block device mappings enable you to specify additional EBS volumes or instance store volumes when the instance is launched. This setting is also available on each cloud profile. Note that the number of instance stores varies by instance type. If more mappings are provided than are supported by the instance type, mappings will be created in the order provided and additional mappings will be ignored. Consult the AWS documentation for a listing of the available instance stores, and device names.

```
my-ec2-config:
  block_device_mappings:
    - DeviceName: /dev/sdb
      VirtualName: ephemeral0
    - DeviceName: /dev/sdc
      VirtualName: ephemeral1
```

You can also use block device mappings to change the size of the root device at the provisioning time. For example, assuming the root device is `/dev/sda', you can set its size to 100G by using the following configuration.

```
my-ec2-config:
  block_device_mappings:
    - DeviceName: /dev/sda
      Ebs.VolumeSize: 100
      Ebs.VolumeType: gp2
      Ebs.SnapshotId: dummy0
    - DeviceName: /dev/sdb
      # required for devices > 2TB
      Ebs.VolumeType: gp2
      Ebs.VolumeSize: 3001
```

Existing EBS volumes may also be attached (not created) to your instances or you can create new EBS volumes based on EBS snapshots. To simply attach an existing volume use the `volume_id` parameter.

```
device: /dev/xvdj
volume_id: vol-12345abcd
```

Or, to create a volume from an EBS snapshot, use the `snapshot` parameter.

```
device: /dev/xvdj
snapshot: snap-abcd12345
```

Note that `volume_id` will take precedence over the `snapshot` parameter.

Tags can be set once an instance has been launched.

```
my-ec2-config:
    tag:
        tag0: value
        tag1: value
```

### Setting up a Master inside EC2

Salt Cloud can configure Salt Masters as well as Minions. Use the `make_master` setting to use this functionality.

```
my-ec2-config:
  # Optionally install a Salt Master in addition to the Salt Minion
  make_master: True
```

When creating a Salt Master inside EC2 with `make_master: True`, or when the Salt Master is already located and configured inside EC2, by default, minions connect to the master's public IP address during Salt Cloud's provisioning process. Depending on how your security groups are defined, the minions may or may not be able to communicate with the master. In order to use the master's private IP in EC2 instead of the public IP, set the `salt_interface` to `private_ips`.

```
my-ec2-config:
  # Optionally set the IP configuration to private_ips
  salt_interface: private_ips
```

### Modify EC2 Tags

One of the features of EC2 is the ability to tag resources. In fact, under the hood, the names given to EC2 instances by salt-cloud are actually just stored as a tag called Name. Salt Cloud has the ability to manage these tags:

```
salt-cloud -a get_tags mymachine
salt-cloud -a set_tags mymachine tag1=somestuff tag2='Other stuff'
salt-cloud -a del_tags mymachine tag1,tag2,tag3
```

It is possible to manage tags on any resource in EC2 with a Resource ID, not just instances:

```
salt-cloud -f get_tags my_ec2 resource_id=af5467ba
salt-cloud -f set_tags my_ec2 resource_id=af5467ba tag1=somestuff
salt-cloud -f del_tags my_ec2 resource_id=af5467ba tag1,tag2,tag3
```

### Rename EC2 Instances

As mentioned above, EC2 instances are named via a tag. However, renaming an instance by renaming its tag will cause the salt keys to mismatch. A rename function exists which renames both the instance, and the salt keys.

```
salt-cloud -a rename mymachine newname=yourmachine
```

### Rename on Destroy

When instances on EC2 are destroyed, there will be a lag between the time that the action is sent, and the time that Amazon cleans up the instance. During this time, the instance still retails a Name tag, which will cause a collision if the creation of an instance with the same name is attempted before the cleanup occurs. In order to avoid such

collisions, Salt Cloud can be configured to rename instances when they are destroyed. The new name will look something like:

```
myinstance-DEL20f5b8ad4eb64ed88f2c428df80a1a0c
```

In order to enable this, add rename_on_destroy line to the main configuration file:

```
my-ec2-config:
  rename_on_destroy: True
```

### Listing Images

Normally, images can be queried on a cloud provider by passing the `--list-images` argument to Salt Cloud. This still holds true for EC2:

```
salt-cloud --list-images my-ec2-config
```

However, the full list of images on EC2 is extremely large, and querying all of the available images may cause Salt Cloud to behave as if frozen. Therefore, the default behavior of this option may be modified, by adding an `owner` argument to the provider configuration:

```
owner: aws-marketplace
```

The possible values for this setting are `amazon`, `aws-marketplace`, `self`, `<AWS account ID>` or `all`. The default setting is `amazon`. Take note that `all` and `aws-marketplace` may cause Salt Cloud to appear as if it is freezing, as it tries to handle the large amount of data.

It is also possible to perform this query using different settings without modifying the configuration files. To do this, call the `avail_images` function directly:

```
salt-cloud -f avail_images my-ec2-config owner=aws-marketplace
```

### EC2 Images

The following are lists of available AMI images, generally sorted by OS. These lists are on 3rd-party websites, are not managed by Salt Stack in any way. They are provided here as a reference for those who are interested, and contain no warranty (express or implied) from anyone affiliated with Salt Stack. Most of them have never been used, much less tested, by the Salt Stack team.

- Arch Linux
- FreeBSD
- Fedora
- CentOS
- Ubuntu
- Debian
- OmniOS
- All Images on Amazon

### show_image

This is a function that describes an AMI on EC2. This will give insight as to the defaults that will be applied to an instance using a particular AMI.

```
$ salt-cloud -f show_image ec2 image=ami-fd20ad94
```

### show_instance

This action is a thin wrapper around `--full-query`, which displays details on a single instance only. In an environment with several machines, this will save a user from having to sort through all instance data, just to examine a single instance.

```
$ salt-cloud -a show_instance myinstance
```

### ebs_optimized

This argument enables switching of the EbsOptimized setting which default to `false'. Indicates whether the instance is optimized for EBS I/O. This optimization provides dedicated throughput to Amazon EBS and an optimized configuration stack to provide optimal Amazon EBS I/O performance. This optimization isn't available with all instance types. Additional usage charges apply when using an EBS-optimized instance.

This setting can be added to the profile or map file for an instance.

If set to True, this setting will enable an instance to be EbsOptimized

```
ebs_optimized: True
```

This can also be set as a cloud provider setting in the EC2 cloud configuration:

```
my-ec2-config:
  ebs_optimized: True
```

### del_root_vol_on_destroy

This argument overrides the default DeleteOnTermination setting in the AMI for the EBS root volumes for an instance. Many AMIs contain `false' as a default, resulting in orphaned volumes in the EC2 account, which may unknowingly be charged to the account. This setting can be added to the profile or map file for an instance.

If set, this setting will apply to the root EBS volume

```
del_root_vol_on_destroy: True
```

This can also be set as a cloud provider setting in the EC2 cloud configuration:

```
my-ec2-config:
  del_root_vol_on_destroy: True
```

### del_all_vols_on_destroy

This argument overrides the default DeleteOnTermination setting in the AMI for the not-root EBS volumes for an instance. Many AMIs contain `false' as a default, resulting in orphaned volumes in the EC2 account, which may unknowingly be charged to the account. This setting can be added to the profile or map file for an instance.

If set, this setting will apply to any (non-root) volumes that were created by salt-cloud using the `volumes' setting.

The volumes will not be deleted under the following conditions * If a volume is detached before terminating the instance * If a volume is created without this setting and attached to the instance

```
del_all_vols_on_destroy: True
```

This can also be set as a cloud provider setting in the EC2 cloud configuration:

```
my-ec2-config:
  del_all_vols_on_destroy: True
```

The setting for this may be changed on all volumes of an existing instance using one of the following commands:

```
salt-cloud -a delvol_on_destroy myinstance
salt-cloud -a keepvol_on_destroy myinstance
salt-cloud -a show_delvol_on_destroy myinstance
```

The setting for this may be changed on a volume on an existing instance using one of the following commands:

```
salt-cloud -a delvol_on_destroy myinstance device=/dev/sda1
salt-cloud -a delvol_on_destroy myinstance volume_id=vol-1a2b3c4d
salt-cloud -a keepvol_on_destroy myinstance device=/dev/sda1
salt-cloud -a keepvol_on_destroy myinstance volume_id=vol-1a2b3c4d
salt-cloud -a show_delvol_on_destroy myinstance device=/dev/sda1
salt-cloud -a show_delvol_on_destroy myinstance volume_id=vol-1a2b3c4d
```

#### EC2 Termination Protection

EC2 allows the user to enable and disable termination protection on a specific instance. An instance with this protection enabled cannot be destroyed. The EC2 driver adds a show_term_protect action to the regular EC2 functionality.

```
salt-cloud -a show_term_protect mymachine
salt-cloud -a enable_term_protect mymachine
salt-cloud -a disable_term_protect mymachine
```

#### Alternate Endpoint

Normally, EC2 endpoints are build using the region and the service_url. The resulting endpoint would follow this pattern:

```
ec2.<region>.<service_url>
```

This results in an endpoint that looks like:

```
ec2.us-east-1.amazonaws.com
```

There are other projects that support an EC2 compatibility layer, which this scheme does not account for. This can be overridden by specifying the endpoint directly in the main cloud configuration file:

```
my-ec2-config:
  endpoint: myendpoint.example.com:1138/services/Cloud
```

### Volume Management

The EC2 driver has several functions and actions for management of EBS volumes.

### Creating Volumes

A volume may be created, independent of an instance. A zone must be specified. A size or a snapshot may be specified (in GiB). If neither is given, a default size of 10 GiB will be used. If a snapshot is given, the size of the snapshot will be used.

The following parameters may also be set (when providing a snapshot OR size):

- `type`: choose between standard (magnetic disk), gp2 (SSD), or io1 (provisioned IOPS). (default=standard)
- `iops`: the number of IOPS (only applicable to io1 volumes) (default varies on volume size)
- `encrypted`: enable encryption on the volume (default=false)

```
salt-cloud -f create_volume ec2 zone=us-east-1b
salt-cloud -f create_volume ec2 zone=us-east-1b size=10
salt-cloud -f create_volume ec2 zone=us-east-1b snapshot=snap12345678
salt-cloud -f create_volume ec2 size=10 type=standard
salt-cloud -f create_volume ec2 size=10 type=gp2
salt-cloud -f create_volume ec2 size=10 type=io1 iops=1000
```

### Attaching Volumes

Unattached volumes may be attached to an instance. The following values are required; name or instance_id, volume_id, and device.

```
salt-cloud -a attach_volume myinstance volume_id=vol-12345 device=/dev/sdb1
```

### Show a Volume

The details about an existing volume may be retrieved.

```
salt-cloud -a show_volume myinstance volume_id=vol-12345
salt-cloud -f show_volume ec2 volume_id=vol-12345
```

### Detaching Volumes

An existing volume may be detached from an instance.

```
salt-cloud -a detach_volume myinstance volume_id=vol-12345
```

### Deleting Volumes

A volume that is not attached to an instance may be deleted.

```
salt-cloud -f delete_volume ec2 volume_id=vol-12345
```

### Managing Key Pairs

The EC2 driver has the ability to manage key pairs.

### Creating a Key Pair

A key pair is required in order to create an instance. When creating a key pair with this function, the return data will contain a copy of the private key. This private key is not stored by Amazon, will not be obtainable past this point, and should be stored immediately.

```
salt-cloud -f create_keypair ec2 keyname=mykeypair
```

### Importing a Key Pair

```
salt-cloud -f import_keypair ec2 keyname=mykeypair file=/path/to/id_rsa.pub
```

### Show a Key Pair

This function will show the details related to a key pair, not including the private key itself (which is not stored by Amazon).

```
salt-cloud -f show_keypair ec2 keyname=mykeypair
```

### Delete a Key Pair

This function removes the key pair from Amazon.

```
salt-cloud -f delete_keypair ec2 keyname=mykeypair
```

### Launching instances into a VPC

### Simple launching into a VPC

In the amazon web interface, identify the id of the subnet into which your image should be created. Then, edit your cloud.profiles file like so:-

```
profile-id:
  provider: provider-name
  subnetid: subnet-XXXXXXXX
  image: ami-XXXXXXXX
  size: m1.medium
  ssh_username: ubuntu
  securitygroupid:
    - sg-XXXXXXXX
```

### Specifying interface properties

New in version 2014.7.0.

Launching into a VPC allows you to specify more complex configurations for the network interfaces of your virtual machines, for example:-

```
profile-id:
  provider: provider-name
  image: ami-XXXXXXXX
  size: m1.medium
  ssh_username: ubuntu

  # Do not include either 'subnetid' or 'securitygroupid' here if you are
  # going to manually specify interface configuration
  #
  network_interfaces:
    - DeviceIndex: 0
      SubnetId: subnet-XXXXXXXX
      SecurityGroupId:
        - sg-XXXXXXXX

      # Uncomment this line if you would like to set an explicit private
      # IP address for the ec2 instance
      #
      # PrivateIpAddress: 192.168.1.66

      # Uncomment this to associate an existing Elastic IP Address with
      # this network interface:
      #
      # associate_eip: eipalloc-XXXXXXXX

      # You can allocate more than one IP address to an interface. Use the
      # 'ip addr list' command to see them.
      #
      # SecondaryPrivateIpAddressCount: 2

      # Uncomment this to allocate a new Elastic IP Address to this
      # interface (will be associated with the primary private ip address
      # of the interface
      #
      # allocate_new_eip: True

      # Uncomment this instead to allocate a new Elastic IP Address to
      # both the primary private ip address and each of the secondary ones
      #
      allocate_new_eips: True

      # Uncomment this if you're creating NAT instances. Allows an instance
      # to accept IP packets with destinations other than itself.
      # SourceDestCheck: False
```

Note that it is an error to assign a `subnetid' or `securitygroupid' to a profile where the interfaces are manually configured like this. These are both really properties of each network interface, not of the machine itself.

### 9.7.5 Getting Started With GoGrid

GoGrid is a public cloud host that supports Linux and Windows.

#### Configuration

To use Salt Cloud with GoGrid log into the GoGrid web interface and create an API key. Do this by clicking on ``My Account'' and then going to the API Keys tab.

The `apikey` and the `sharedsecret` configuration parameters need to be set in the configuration file to enable interfacing with GoGrid:

```
# Note: This example is for /etc/salt/cloud.providers or any file in the
# /etc/salt/cloud.providers.d/ directory.

my-gogrid-config:
  driver: gogrid
  apikey: asdff7896asdh789
  sharedsecret: saltybacon
```

**Note**: A Note about using Map files with GoGrid:

Due to limitations in the GoGrid API, instances cannot be provisioned in parallel with the GoGrid driver. Map files will work with GoGrid, but the `-P` argument should not be used on maps referencing GoGrid instances.

**Note**: Changed in version 2015.8.0.

The `provider` parameter in cloud provider definitions was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile definitions. Cloud provider definitions now use `driver` to refer to the Salt cloud module that provides the underlying functionality to connect to a cloud host, while cloud profiles continue to use `provider` to refer to provider configurations that you define.

#### Profiles

#### Cloud Profiles

Set up an initial profile at `/etc/salt/cloud.profiles` or in the `/etc/salt/cloud.profiles.d/` directory:

```
gogrid_512:
  provider: my-gogrid-config
  size: 512MB
  image: CentOS 6.2 (64-bit) w/ None
```

Sizes can be obtained using the `--list-sizes` option for the `salt-cloud` command:

```
# salt-cloud --list-sizes my-gogrid-config
my-gogrid-config:
    ----------
    gogrid:
        ----------
        512MB:
```

```
            ----------
            bandwidth:
                None
            disk:
                30
            driver:
            get_uuid:
            id:
                512MB
            name:
                512MB
            price:
                0.095
            ram:
                512
            uuid:
                bde1e4d7c3a643536e42a35142c7caac34b060e9
...SNIP...
```

Images can be obtained using the `--list-images` option for the `salt-cloud` command:

```
# salt-cloud --list-images my-gogrid-config
my-gogrid-config:
    ----------
    gogrid:
        ----------
        CentOS 6.4 (64-bit) w/ None:
            ----------
            driver:
            extra:
                ----------
            get_uuid:
            id:
                18094
            name:
                CentOS 6.4 (64-bit) w/ None
            uuid:
                bfd4055389919e01aa6261828a96cf54c8dcc2c4
...SNIP...
```

### Assigning IPs

New in version 2015.8.0.

The GoGrid API allows IP addresses to be manually assigned. Salt Cloud supports this functionality by allowing an IP address to be specified using the `assign_public_ip` argument. This likely makes the most sense inside a map file, but it may also be used inside a profile.

```
gogrid_512:
  provider: my-gogrid-config
  size: 512MB
  image: CentOS 6.2 (64-bit) w/ None
  assign_public_ip: 11.38.257.42
```

### 9.7.6 Getting Started With Google Compute Engine

Google Compute Engine (GCE) is Google-infrastructure as a service that lets you run your large-scale computing workloads on virtual machines. This document covers how to use Salt Cloud to provision and manage your virtual machines hosted within Google's infrastructure.

You can find out more about GCE and other Google Cloud Platform services at https://cloud.google.com.

#### Dependencies

- LibCloud >= 0.14.1
- A Google Cloud Platform account with Compute Engine enabled
- A registered Service Account for authorization
- Oh, and obviously you'll need salt

#### Google Compute Engine Setup

1. Sign up for Google Cloud Platform

   Go to https://cloud.google.com and use your Google account to sign up for Google Cloud Platform and complete the guided instructions.

2. Create a Project

   Next, go to the console at https://cloud.google.com/console and create a new Project. Make sure to select your new Project if you are not automatically directed to the Project.

   Projects are a way of grouping together related users, services, and billing. You may opt to create multiple Projects and the remaining instructions will need to be completed for each Project if you wish to use GCE and Salt Cloud to manage your virtual machines.

3. Enable the Google Compute Engine service

   In your Project, either just click *Compute Engine* to the left, or go to the *APIs & auth* section and *APIs* link and enable the Google Compute Engine service.

4. Create a Service Account

   To set up authorization, navigate to *APIs & auth* section and then the *Credentials* link and click the *CREATE NEW CLIENT ID* button. Select *Service Account* and click the *Create Client ID* button. This will automatically download a `.json` file, which may or may not be used in later steps, depending on your version of `libcloud`.

   Look for a new *Service Account* section in the page and record the generated email address for the matching key/fingerprint. The email address will be used in the `service_account_email_address` of the `/etc/salt/cloud.providers` or the `/etc/salt/cloud.providers.d/*.conf` file.

5. Key Format

   ---

   **Note**: If you are using `libcloud >= 0.17.0` it is recommended that you use the `JSON format` file you downloaded above and skip to the *Provider Configuration* section below, using the JSON file **in place of `NEW.pem'** in the documentation.

   If you are using an older version of libcloud or are unsure of the version you have, please follow the instructions below to generate and format a new P12 key.

   ---

In the new *Service Account* section, click *Generate new P12 key*, which will automatically download a `.p12` private key file. The `.p12` private key needs to be converted to a format compatible with libcloud. This new Google-generated private key was encrypted using *notasecret* as a passphrase. Use the following command and record the location of the converted private key and record the location for use in the `service_account_private_key` of the `/etc/salt/cloud` file:

```
openssl pkcs12 -in ORIG.p12 -passin pass:notasecret \
-nodes -nocerts | openssl rsa -out NEW.pem
```

### Provider Configuration

Set up the provider cloud config at `/etc/salt/cloud.providers` or `/etc/salt/cloud.providers.d/*.conf`:

```
gce-config:
  # Set up the Project name and Service Account authorization
  project: "your-project-id"
  service_account_email_address: "123-a5gt@developer.gserviceaccount.com"
  service_account_private_key: "/path/to/your/NEW.pem"

  # Set up the location of the salt master
  minion:
    master: saltmaster.example.com

  # Set up grains information, which will be common for all nodes
  # using this provider
  grains:
    node_type: broker
    release: 1.0.1

  driver: gce
```

**Note**: The value provided for `project` must not contain underscores or spaces and is labeled as ``Project ID'' on the Google Developers Console.

**Note**: Changed in version 2015.8.0.

The `provider` parameter in cloud provider definitions was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile definitions. Cloud provider definitions now use `driver` to refer to the Salt cloud module that provides the underlying functionality to connect to a cloud host, while cloud profiles continue to use `provider` to refer to provider configurations that you define.

### Profile Configuration

Set up an initial profile at `/etc/salt/cloud.profiles` or `/etc/salt/cloud.profiles.d/*.conf`:

```
my-gce-profile:
  image: centos-6
  size: n1-standard-1
  location: europe-west1-b
  network: default
```

```
  tags: '["one", "two", "three"]'
  metadata: '{"one": "1", "2": "two"}'
  use_persistent_disk: True
  delete_boot_pd: False
  deploy: True
  make_master: False
  provider: gce-config
```

The profile can be realized now with a salt command:

```
salt-cloud -p my-gce-profile gce-instance
```

This will create an salt minion instance named `gce-instance` in GCE. If the command was executed on the salt-master, its Salt key will automatically be signed on the master.

Once the instance has been created with a salt-minion installed, connectivity to it can be verified with Salt:

```
salt gce-instance test.ping
```

#### GCE Specific Settings

Consult the sample profile below for more information about GCE specific settings. Some of them are mandatory and are properly labeled below but typically also include a hard-coded default.

#### Initial Profile

Set up an initial profile at `/etc/salt/cloud.profiles` or `/etc/salt/cloud.profiles.d/gce.conf`:

```
my-gce-profile:
  image: centos-6
  size: n1-standard-1
  location: europe-west1-b
  network: default
  tags: '["one", "two", "three"]'
  metadata: '{"one": "1", "2": "two"}'
  use_persistent_disk: True
  delete_boot_pd: False
  ssh_interface: public_ips
  external_ip: "ephemeral"
```

#### image

Image is used to define what Operating System image should be used to for the instance. Examples are Debian 7 (wheezy) and CentOS 6. Required.

#### size

A `size', in GCE terms, refers to the instance's `machine type'. See the on-line documentation for a complete list of GCE machine types. Required.

#### location

A `location', in GCE terms, refers to the instance's `zone'. GCE has the notion of both Regions (e.g. us-central1, europe-west1, etc) and Zones (e.g. us-central1-a, us-central1-b, etc). Required.

#### network

Use this setting to define the network resource for the instance. All GCE projects contain a network named `default' but it's possible to use this setting to create instances belonging to a different network resource.

#### tags

GCE supports instance/network tags and this setting allows you to set custom tags. It should be a list of strings and must be parse-able by the python ast.literal_eval() function to convert it to a python list.

#### metadata

GCE supports instance metadata and this setting allows you to set custom metadata. It should be a hash of key/value strings and parse-able by the python ast.literal_eval() function to convert it to a python dictionary.

#### use_persistent_disk

Use this setting to ensure that when new instances are created, they will use a persistent disk to preserve data between instance terminations and re-creations.

#### delete_boot_pd

In the event that you wish the boot persistent disk to be permanently deleted when you destroy an instance, set delete_boot_pd to True.

#### ssh_interface

New in version 2015.5.0.

Specify whether to use public or private IP for deploy script.

Valid options are:

- private_ips: The salt-master is also hosted with GCE
- public_ips: The salt-master is hosted outside of GCE

#### external_ip

Per instance setting: Used a named fixed IP address to this host.

Valid options are:

- ephemeral: The host will use a GCE ephemeral IP

- None: No external IP will be configured on this host.

Optionally, pass the name of a GCE address to use a fixed IP address. If the address does not already exist, it will be created.

### ex_disk_type

GCE supports two different disk types, `pd-standard` and `pd-ssd`. The default disk type setting is `pd-standard`. To specify using an SSD disk, set `pd-ssd` as the value.

New in version 2014.7.0.

### ip_forwarding

GCE instances can be enabled to use IP Forwarding. When set to `True`, this options allows the instance to send/receive non-matching src/dst packets. Default is `False`.

New in version 2015.8.1.

### Profile with scopes

Scopes can be specified by setting the optional `ex_service_accounts` key in your cloud profile. The following example enables the bigquery scope.

```
my-gce-profile:
 image: centos-6
  ssh_username: salt
  size: f1-micro
  location: us-central1-a
  network: default
  tags: '["one", "two", "three"]'
  metadata: '{"one": "1", "2": "two",
             "sshKeys": ""}'
  use_persistent_disk: True
  delete_boot_pd: False
  deploy: False
  make_master: False
  provider: gce-config
  ex_service_accounts:
    - scopes:
      - bigquery
```

Email can also be specified as an (optional) parameter.

```
my-gce-profile:
...snip
  ex_service_accounts:
    - scopes:
      - bigquery
      email: default
```

There can be multiple entries for scopes since `ex-service_accounts` accepts a list of dictionaries. For more information refer to the libcloud documentation on specifying service account scopes.

### SSH Remote Access

GCE instances do not allow remote access to the root user by default. Instead, another user must be used to run the deploy script using sudo. Append something like this to `/etc/salt/cloud.profiles` or `/etc/salt/cloud.profiles.d/*.conf`:

```
my-gce-profile:
    ...

    # SSH to GCE instances as gceuser
    ssh_username: gceuser

    # Use the local private SSH key file located here
    ssh_keyfile: /etc/cloud/google_compute_engine
```

If you have not already used this SSH key to login to instances in this GCE project you will also need to add the public key to your projects metadata at https://cloud.google.com/console. You could also add it via the metadata setting too:

```
my-gce-profile:
    ...

    metadata: '{"one": "1", "2": "two",
                "sshKeys": "gceuser:ssh-rsa <Your SSH Public Key> gceuser@host"}'
```

### Single instance details

This action is a thin wrapper around `--full-query`, which displays details on a single instance only. In an environment with several machines, this will save a user from having to sort through all instance data, just to examine a single instance.

```
salt-cloud -a show_instance myinstance
```

### Destroy, persistent disks, and metadata

As noted in the provider configuration, it's possible to force the boot persistent disk to be deleted when you destroy the instance. The way that this has been implemented is to use the instance metadata to record the cloud profile used when creating the instance. When `destroy` is called, if the instance contains a `salt-cloud-profile` key, it's value is used to reference the matching profile to determine if `delete_boot_pd` is set to `True`.

Be aware that any GCE instances created with salt cloud will contain this custom `salt-cloud-profile` metadata entry.

### List various resources

It's also possible to list several GCE resources similar to what can be done with other providers. The following commands can be used to list GCE zones (locations), machine types (sizes), and images.

```
salt-cloud --list-locations gce
salt-cloud --list-sizes gce
salt-cloud --list-images gce
```

### Persistent Disk

The Compute Engine provider provides functions via salt-cloud to manage your Persistent Disks. You can create and destroy disks as well as attach and detach them from running instances.

### Create

When creating a disk, you can create an empty disk and specify its size (in GB), or specify either an `image' or `snapshot'.

```
salt-cloud -f create_disk gce disk_name=pd location=us-central1-b size=200
```

### Delete

Deleting a disk only requires the name of the disk to delete

```
salt-cloud -f delete_disk gce disk_name=old-backup
```

### Attach

Attaching a disk to an existing instance is really an `action' and requires both an instance name and disk name. It's possible to use this ation to create bootable persistent disks if necessary. Compute Engine also supports attaching a persistent disk in READ_ONLY mode to multiple instances at the same time (but then cannot be attached in READ_WRITE to any instance).

```
salt-cloud -a attach_disk myinstance disk_name=pd mode=READ_WRITE boot=yes
```

### Detach

Detaching a disk is also an action against an instance and only requires the name of the disk. Note that this does *not* safely sync and umount the disk from the instance. To ensure no data loss, you must first make sure the disk is unmounted from the instance.

```
salt-cloud -a detach_disk myinstance disk_name=pd
```

### Show disk

It's also possible to look up the details for an existing disk with either a function or an action.

```
salt-cloud -a show_disk myinstance disk_name=pd
salt-cloud -f show_disk gce disk_name=pd
```

### Create snapshot

You can take a snapshot of an existing disk's content. The snapshot can then in turn be used to create other persistent disks. Note that to prevent data corruption, it is strongly suggested that you unmount the disk prior to taking a snapshot. You must name the snapshot and provide the name of the disk.

```
salt-cloud -f create_snapshot gce name=backup-20140226 disk_name=pd
```

### Delete snapshot

You can delete a snapshot when it's no longer needed by specifying the name of the snapshot.

```
salt-cloud -f delete_snapshot gce name=backup-20140226
```

### Show snapshot

Use this function to look up information about the snapshot.

```
salt-cloud -f show_snapshot gce name=backup-20140226
```

### Networking

Compute Engine supports multiple private networks per project. Instances within a private network can easily communicate with each other by an internal DNS service that resolves instance names. Instances within a private network can also communicate with either directly without needing special routing or firewall rules even if they span different regions/zones.

Networks also support custom firewall rules. By default, traffic between instances on the same private network is open to all ports and protocols. Inbound SSH traffic (port 22) is also allowed but all other inbound traffic is blocked.

### Create network

New networks require a name and CIDR range. New instances can be created and added to this network by setting the network name during create. It is not possible to add/remove existing instances to a network.

```
salt-cloud -f create_network gce name=mynet cidr=10.10.10.0/24
```

### Destroy network

Destroy a network by specifying the name. Make sure that there are no instances associated with the network prior to deleting it or you'll have a bad day.

```
salt-cloud -f delete_network gce name=mynet
```

### Show network

Specify the network name to view information about the network.

```
salt-cloud -f show_network gce name=mynet
```

#### Create address

Create a new named static IP address in a region.

```
salt-cloud -f create_address gce name=my-fixed-ip region=us-central1
```

#### Delete address

Delete an existing named fixed IP address.

```
salt-cloud -f delete_address gce name=my-fixed-ip region=us-central1
```

#### Show address

View details on a named address.

```
salt-cloud -f show_address gce name=my-fixed-ip region=us-central1
```

#### Create firewall

You'll need to create custom firewall rules if you want to allow other traffic than what is described above. For instance, if you run a web service on your instances, you'll need to explicitly allow HTTP and/or SSL traffic. The firewall rule must have a name and it will use the `default' network unless otherwise specified with a `network' attribute. Firewalls also support instance tags for source/destination

```
salt-cloud -f create_fwrule gce name=web allow=tcp:80,tcp:443,icmp
```

#### Delete firewall

Deleting a firewall rule will prevent any previously allowed traffic for the named firewall rule.

```
salt-cloud -f delete_fwrule gce name=web
```

#### Show firewall

Use this function to review an existing firewall rule's information.

```
salt-cloud -f show_fwrule gce name=web
```

#### Load Balancer

Compute Engine possess a load-balancer feature for splitting traffic across multiple instances. Please reference the documentation for a more complete description.

The load-balancer functionality is slightly different than that described in Google's documentation. The concept of *TargetPool* and *ForwardingRule* are consolidated in salt-cloud/libcloud. HTTP Health Checks are optional.

#### HTTP Health Check

HTTP Health Checks can be used as a means to toggle load-balancing across instance members, or to detect if an HTTP site is functioning. A common use-case is to set up a health check URL and if you want to toggle traffic on/off to an instance, you can temporarily have it return a non-200 response. A non-200 response to the load-balancer's health check will keep the LB from sending any new traffic to the ``down'' instance. Once the instance's health check URL beings returning 200-responses, the LB will again start to send traffic to it. Review Compute Engine's documentation for allowable parameters. You can use the following salt-cloud functions to manage your HTTP health checks.

```
salt-cloud -f create_hc gce name=myhc path=/ port=80
salt-cloud -f delete_hc gce name=myhc
salt-cloud -f show_hc gce name=myhc
```

#### Load-balancer

When creating a new load-balancer, it requires a name, region, port range, and list of members. There are other optional parameters for protocol, and list of health checks. Deleting or showing details about the LB only requires the name.

```
salt-cloud -f create_lb gce name=lb region=... ports=80 members=w1,w2,w3
salt-cloud -f delete_lb gce name=lb
salt-cloud -f show_lb gce name=lb
```

You can also create a load balancer using a named fixed IP addressby specifying the name of the address. If the address does not exist yet it will be created.

```
salt-cloud -f create_lb gce name=my-lb region=us-central1 ports=234 members=s1,s2,s3
 ↪address=my-lb-ip
```

#### Attach and Detach LB

It is possible to attach or detach an instance from an existing load-balancer. Both the instance and load-balancer must exist before using these functions.

```
salt-cloud -f attach_lb gce name=lb member=w4
salt-cloud -f detach_lb gce name=lb member=oops
```

### 9.7.7 Getting Started With HP Cloud

HP Cloud is a major public cloud platform and uses the libcloud *openstack* driver. The current version of OpenStack that HP Cloud uses is Havana. When an instance is booted, it must have a floating IP added to it in order to connect to it and further below you will see an example that adds context to this statement.

#### Set up a cloud provider configuration file

To use the *openstack* driver for HP Cloud, set up the cloud provider configuration file as in the example shown below:

`/etc/salt/cloud.providers.d/hpcloud.conf`:

```
hpcloud-config:
  # Set the location of the salt-master
  #
  minion:
    master: saltmaster.example.com

  # Configure HP Cloud using the OpenStack plugin
  #
  identity_url: https://region-b.geo-1.identity.hpcloudsvc.com:35357/v2.0/tokens
  compute_name: Compute
  protocol: ipv4

  # Set the compute region:
  #
  compute_region: region-b.geo-1

  # Configure HP Cloud authentication credentials
  #
  user: myname
  tenant: myname-project1
  password: xxxxxxxxx

  # keys to allow connection to the instance launched
  #
  ssh_key_name: yourkey
  ssh_key_file: /path/to/key/yourkey.priv

  driver: openstack
```

The subsequent example that follows is using the openstack driver.

---

**Note**: Changed in version 2015.8.0.

The `provider` parameter in cloud provider definitions was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile definitions. Cloud provider definitions now use `driver` to refer to the Salt cloud module that provides the underlying functionality to connect to a cloud host, while cloud profiles continue to use `provider` to refer to provider configurations that you define.

---

#### Compute Region

Originally, HP Cloud, in its OpenStack Essex version (1.0), had 3 availability zones in one region, US West (region-a.geo-1), which each behaved each as a region.

This has since changed, and the current OpenStack Havana version of HP Cloud (1.1) now has simplified this and now has two regions to choose from:

```
region-a.geo-1 -> US West
region-b.geo-1 -> US East
```

#### Authentication

The `user` is the same user as is used to log into the HP Cloud management UI. The `tenant` can be found in the upper left under ``Project/Region/Scope''. It is often named the same as `user` albeit with a `-project1` appended.

The `password` is of course what you created your account with. The management UI also has other information such as being able to select US East or US West.

### Set up a cloud profile config file

The profile shown below is a know working profile for an Ubuntu instance. The profile configuration file is stored in the following location:

`/etc/salt/cloud.profiles.d/hp_ae1_ubuntu.conf`:

```
hp_ae1_ubuntu:
    provider: hp_ae1
    image: 9302692b-b787-4b52-a3a6-daebb79cb498
    ignore_cidr: 10.0.0.1/24
    networks:
      - floating: Ext-Net
    size: standard.small
    ssh_key_file: /root/keys/test.key
    ssh_key_name: test
    ssh_username: ubuntu
```

Some important things about the example above:

- The `image` parameter can use either the image name or image ID which you can obtain by running in the example below (this case US East):

```
# salt-cloud --list-images hp_ae1
```

- The parameter `ignore_cidr` specifies a range of addresses to ignore when trying to connect to the instance. In this case, it's the range of IP addresses used for an private IP of the instance.
- The parameter `networks` is very important to include. In previous versions of Salt Cloud, this is what made it possible for salt-cloud to be able to attach a floating IP to the instance in order to connect to the instance and set up the minion. The current version of salt-cloud doesn't require it, though having it is of no harm either. Newer versions of salt-cloud will use this, and without it, will attempt to find a list of floating IP addresses to use regardless.
- The `ssh_key_file` and `ssh_key_name` are the keys that will make it possible to connect to the instance to set up the minion
- The `ssh_username` parameter, in this case, being that the image used will be ubuntu, will make it possible to not only log in but install the minion

### Launch an instance

To instantiate a machine based on this profile (example):

```
# salt-cloud -p hp_ae1_ubuntu ubuntu_instance_1
```

After several minutes, this will create an instance named ubuntu_instance_1 running in HP Cloud in the US East region and will set up the minion and then return information about the instance once completed.

### Manage the instance

Once the instance has been created with salt-minion installed, connectivity to it can be verified with Salt:

```
# salt ubuntu_instance_1 ping
```

#### SSH to the instance

Additionally, the instance can be accessed via SSH using the floating IP assigned to it

```
# ssh ubuntu@<floating ip>
```

#### Using a private IP

Alternatively, in the cloud profile, using the private IP to log into the instance to set up the minion is another option, particularly if salt-cloud is running within the cloud on an instance that is on the same network with all the other instances (minions)

The example below is a modified version of the previous example. Note the use of `ssh_interface`:

```
hp_ae1_ubuntu:
    provider: hp_ae1
    image: 9302692b-b787-4b52-a3a6-daebb79cb498
    size: standard.small
    ssh_key_file: /root/keys/test.key
    ssh_key_name: test
    ssh_username: ubuntu
    ssh_interface: private_ips
```

With this setup, salt-cloud will use the private IP address to ssh into the instance and set up the salt-minion

### 9.7.8 Getting Started With Joyent

Joyent is a public cloud host that supports SmartOS, Linux, FreeBSD, and Windows.

#### Dependencies

This driver requires the Python `requests` library to be installed.

#### Configuration

The Joyent cloud requires three configuration parameters. The user name and password that are used to log into the Joyent system, and the location of the private ssh key associated with the Joyent account. The ssh key is needed to send the provisioning commands up to the freshly created virtual machine.

```
# Note: This example is for /etc/salt/cloud.providers or any file in the
# /etc/salt/cloud.providers.d/ directory.

my-joyent-config:
  driver: joyent
  user: fred
  password: saltybacon
  private_key: /root/mykey.pem
  keyname: mykey
```

**Note:** Changed in version 2015.8.0.

The `provider` parameter in cloud provider definitions was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile definitions. Cloud provider definitions now use `driver` to refer to the Salt cloud module that provides the underlying functionality to connect to a cloud host, while cloud profiles continue to use `provider` to refer to provider configurations that you define.

### Profiles

#### Cloud Profiles

Set up an initial profile at `/etc/salt/cloud.profiles` or in the `/etc/salt/cloud.profiles.d/` directory:

```
joyent_512
  provider: my-joyent-config
  size: g4-highcpu-512M
  image: ubuntu-16.04
```

Sizes can be obtained using the `--list-sizes` option for the `salt-cloud` command:

```
# salt-cloud --list-sizes my-joyent-config
my-joyent-config:
    ----------
    joyent:
        ----------
        g4-highcpu-512M:
            ----------
            default:
                False
            description:
                Compute Optimized 512M RAM - 1 vCPU - 10 GB Disk
            disk:
                10240
            group:
                Compute Optimized
            id:
                14aea8fc-d0f8-11e5-bfe4-a7458dbc6c99
            lwps:
                4000
            memory:
                512
            name:
                g4-highcpu-512M
            swap:
                2048
            vcpus:
                0
            version:
                1.0.3
...SNIP...
```

Images can be obtained using the `--list-images` option for the `salt-cloud` command:

```
# salt-cloud --list-images my-joyent-config
my-joyent-config:
    ----------
    joyent:
        ----------
        base:
            ----------
            description:
                A 32-bit SmartOS image with just essential packages
                installed. Ideal for users who are comfortabl e with
                setting up their own environment and tools.
            files:
                |_
                  ----------
                  compression:
                      gzip
                  sha1:
                      b00a77408ddd9aeac85085b68b1cd22a07353956
                  size:
                      106918297
            homepage:
                http://wiki.joyent.com/jpc2/Base+Instance
            id:
                00aec452-6e81-11e4-8474-ebfec9a1a911
            name:
                base
            os:
                smartos
            owner:
                9dce1460-0c4c-4417-ab8b-25ca478c5a78
            public:
                True
            published_at:
                2014-11-17T17:41:46Z
            requirements:
                ----------
            state:
                active
            type:
                smartmachine
            version:
                14.3.0

...SNIP...
```

#### SmartDataCenter

This driver can also be used with the Joyent SmartDataCenter project. More details can be found at:

Using SDC requires that an api_host_suffix is set. The default value for this is *.api.joyentcloud.com*. All characters, including the leading ., should be included:

```
api_host_suffix: .api.myhostname.com
```

#### Miscellaneous Configuration

The following configuration items can be set in either `provider` or `profile` confuration files.

#### use_ssl

When set to `True` (the default), attach `https://` to any URL that does not already have `http://` or `https://` included at the beginning. The best practice is to leave the protocol out of the URL, and use this setting to manage it.

#### verify_ssl

When set to `True` (the default), the underlying web library will verify the SSL certificate. This should only be set to `False` for debugging.`

### 9.7.9 Getting Started With LXC

The LXC module is designed to install Salt in an LXC container on a controlled and possibly remote minion.

In other words, Salt will connect to a minion, then from that minion:

- Provision and configure a container for networking access
- Use those modules to deploy salt and re-attach to master.
  - *lxc runner*
  - *lxc module*
  - *seed*

#### Limitations

- You can only act on one minion and one provider at a time.
- Listing images must be targeted to a particular LXC provider (nothing will be outputted with `all`)

#### Operation

Salt's LXC support does use *lxc.init* via the *lxc.cloud_init_interface* and seeds the minion via *seed.mkconfig*.

You can provide to those lxc VMs a profile and a network profile like if you were directly using the minion module.

Order of operation:

- Create the LXC container on the desired minion (clone or template)
- Change LXC config options (if any need to be changed)
- Start container
- Change base passwords if any
- Change base DNS configuration if necessary
- Wait for LXC container to be up and ready for ssh

- Test SSH connection and bailout in error
- Upload deploy script and seeds, then re-attach the minion.

### Provider configuration

Here is a simple provider configuration:

```
# Note: This example goes in /etc/salt/cloud.providers or any file in the
# /etc/salt/cloud.providers.d/ directory.
devhost10-lxc:
  target: devhost10
  driver: lxc
```

---

**Note**: Changed in version 2015.8.0.

The `provider` parameter in cloud provider definitions was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile definitions. Cloud provider definitions now use `driver` to refer to the Salt cloud module that provides the underlying functionality to connect to a cloud host, while cloud profiles continue to use `provider` to refer to provider configurations that you define.

---

### Profile configuration

Please read tutorial-lxc before anything else. And specially tutorial-lxc-profiles.

Here are the options to configure your containers:

**target** Host minion id to install the lxc Container into

**lxc_profile** Name of the profile or inline options for the LXC vm creation/cloning, please see tutorial-lxc-profiles-container.

**network_profile** Name of the profile or inline options for the LXC vm network settings, please see tutorial-lxc-profiles-network.

**nic_opts** Totally optional. Per interface new-style configuration options mappings which will override any profile default option:

```
eth0: {'mac': '00:16:3e:01:29:40',
               'gateway': None, (default)
               'link': 'br0', (default)
               'gateway': None, (default)
               'netmask': '', (default)
               'ip': '22.1.4.25'}}
```

**password** password for root and sysadmin users

**dnsservers** List of DNS servers to use. This is optional.

**minion** minion configuration (see *Minion Configuration in Salt Cloud*)

**bootstrap_delay** specify the time to wait (in seconds) between container creation and salt bootstrap execution. It is useful to ensure that all essential services have started before the bootstrap script is executed. By default there's no wait time between container creation and bootstrap unless you are on systemd where we wait that the system is no more in starting state.

**bootstrap_shell** shell for bootstraping script (default: /bin/sh)

**script** defaults to salt-boostrap

**script_args** arguments which are given to the bootstrap script. the {0} placeholder will be replaced by the path which contains the minion config and key files, eg:

```
script_args="-c {0}"
```

Using profiles:

```
# Note: This example would go in /etc/salt/cloud.profiles or any file in the
# /etc/salt/cloud.profiles.d/ directory.
devhost10-lxc:
  provider: devhost10-lxc
  lxc_profile: foo
  network_profile: bar
  minion:
    master: 10.5.0.1
    master_port: 4506
```

Using inline profiles (eg to override the network bridge):

```
devhost11-lxc:
  provider: devhost10-lxc
  lxc_profile:
    clone_from: foo
  network_profile:
    etho:
      link: lxcbr0
  minion:
    master: 10.5.0.1
    master_port: 4506
```

Using a lxc template instead of a clone:

```
devhost11-lxc:
  provider: devhost10-lxc
  lxc_profile:
    template: ubuntu
    # options:
    #   release: trusty
  network_profile:
    etho:
      link: lxcbr0
  minion:
    master: 10.5.0.1
    master_port: 4506
```

Static ip:

```
# Note: This example would go in /etc/salt/cloud.profiles or any file in the
# /etc/salt/cloud.profiles.d/ directory.
devhost10-lxc:
  provider: devhost10-lxc
  nic_opts:
    eth0:
      ipv4: 10.0.3.9
  minion:
    master: 10.5.0.1
    master_port: 4506
```

DHCP:

```
# Note: This example would go in /etc/salt/cloud.profiles or any file in the
# /etc/salt/cloud.profiles.d/ directory.
devhost10-lxc:
  provider: devhost10-lxc
  minion:
    master: 10.5.0.1
    master_port: 4506
```

#### Driver Support

- Container creation
- Image listing (LXC templates)
- Running container information (IP addresses, etc.)

### 9.7.10 Getting Started With Linode

Linode is a public cloud host with a focus on Linux instances.

Starting with the 2015.8.0 release of Salt, the Linode driver uses Linode's native REST API. There are no external dependencies required to use the Linode driver, other than a Linode account.

#### Provider Configuration

Linode requires a single API key, but the default root password for new instances also needs to be set. The password needs to be eight characters and contain lowercase, uppercase, and numbers.

Set up the provider cloud configuration file at `/etc/salt/cloud.providers` or `/etc/salt/cloud.providers.d/*.conf`.

```
my-linode-config:
  apikey: 'asldkgfakl;sdfjsjaslfjaklsdjf;askldjfaaklsjdfhasldsadfghdkf'
  password: 'F00barbaz'
  driver: linode
```

---

**Note**: Changed in version 2015.8.0.

The `provider` parameter in cloud provider definitions was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile definitions. Cloud provider definitions now use `driver` to refer to the Salt cloud module that provides the underlying functionality to connect to a cloud host, while cloud profiles continue to use `provider` to refer to provider configurations that you define.

---

#### Profile Configuration

Linode profiles require a `provider`, `size`, `image`, and `location`. Set up an initial profile at `/etc/salt/cloud.profiles` or in the `/etc/salt/cloud.profiles.d/` directory:

```
linode_1024:
  provider: my-linode-config
  size: Linode 2048
  image: CentOS 7
  location: London, England, UK
```

The profile can be realized now with a salt command:

```
salt-cloud -p linode_1024 linode-instance
```

This will create an salt minion instance named `linode-instance` in Linode. If the command was executed on the salt-master, its Salt key will automatically be signed on the master.

Once the instance has been created with a salt-minion installed, connectivity to it can be verified with Salt:

```
salt linode-instance test.ping
```

### Listing Sizes

Sizes can be obtained using the `--list-sizes` option for the `salt-cloud` command:

```
# salt-cloud --list-sizes my-linode-config
my-linode-config:
    ----------
    linode:
        ----------
        Linode 1024:
            ----------
            AVAIL:
                ----------
                10:
                    500
                2:
                    500
                3:
                    500
                4:
                    500
                6:
                    500
                7:
                    500
                8:
                    500
                9:
                    500
            CORES:
                1
            DISK:
                24
            HOURLY:
                0.015
            LABEL:
                Linode 1024
...SNIP...
```

### Listing Images

Images can be obtained using the `--list-images` option for the `salt-cloud` command:

```
# salt-cloud --list-images my-linode-config
my-linode-config:
    ----------
    linode:
        ----------
        Arch Linux 2015.02:
            ----------
            CREATE_DT:
                2015-02-20 14:17:16.0
            DISTRIBUTIONID:
                138
            IS64BIT:
                1
            LABEL:
                Arch Linux 2015.02
            MINIMAGESIZE:
                800
            REQUIRESPVOPSKERNEL:
                1
...SNIP...
```

### Listing Locations

Locations can be obtained using the `--list-locations` option for the `salt-cloud` command:

```
# salt-cloud --list-locations my-linode-config
my-linode-config:
    ----------
    linode:
        ----------
        Atlanta, GA, USA:
            ----------
            ABBR:
                atlanta
            DATACENTERID:
                4
            LOCATION:
                Atlanta, GA, USA
...SNIP...
```

### Linode Specific Settings

There are several options outlined below that can be added to either the Linode provider of profile configuration files. Some options are mandatory and are properly labeled below but typically also include a hard-coded default.

#### image

Image is used to define what Operating System image should be used for the instance. Examples are `Ubuntu 14.04 LTS` and `CentOS 7`. This option should be specified in the profile config. Required.

#### location

Location is used to define which Linode data center the instance will reside in. Required.

#### size

Size is used to define the instance's ``plan type'' which includes memory, storage, and price. Required.

#### assign_private_ip

New in version 2016.3.0.

Assigns a private IP address to a Linode when set to True. Default is False.

#### private_ip

Deprecated in favor of *assign_private_ip* in Salt 2016.3.0.

#### ssh_interface

New in version 2016.3.0.

Specify whether to use a public or private IP for the deploy script. Valid options are:

- public_ips: The salt-master is hosted outside of Linode. Default.
- private_ips: The salt-master is also hosted within Linode.

If specifying `private_ips`, the Linodes must be hosted within the same data center and have the Network Helper enabled on your entire account. The instance that is running the Salt-Cloud provisioning command must also have a private IP assigned to it.

Newer accounts created on Linode have the Network Helper setting enabled by default, account-wide. Legacy accounts do not have this setting enabled by default. To enable the Network Helper on your Linode account, please see Linode's Network Helper documentation.

If you're running into problems, be sure to restart the instance that is running Salt Cloud after adding its own private IP address or enabling the Network Helper.

#### clonefrom

Setting the clonefrom option to a specified instance enables the new instance to be cloned from the named instance instead of being created from scratch. If using the clonefrom option, it is likely a good idea to also specify `script_args: -C` if a minion is already installed on the to-be-cloned instance. See the *Cloning* section below for more information.

#### Cloning

To clone a Linode, add a profile with a `clonefrom` key, and a `script_args: -C`. `clonefrom` should be the name of the Linode that is the source for the clone. `script_args: -C` passes a -C to the salt-bootstrap script, which only configures the minion and doesn't try to install a new copy of salt-minion. This way the minion gets

new keys and the keys get pre-seeded on the master, and the `/etc/salt/minion` file has the right minion `id:' declaration.

Cloning requires a post 2015-02-01 salt-bootstrap.

It is safest to clone a stopped machine. To stop a machine run

```
salt-cloud -a stop machine_to_clone
```

To create a new machine based on another machine, add an entry to your linode cloud profile that looks like this:

```
li-clone:
  provider: my-linode-config
  clonefrom: machine_to_clone
  script_args: -C -F
```

Then run salt-cloud as normal, specifying `-p li-clone`. The profile name can be anything; It doesn't have to be `li-clone`.

`clonefrom:` is the name of an existing machine in Linode from which to clone. `Script_args: -C -F` is necessary to avoid re-deploying Salt via salt-bootstrap. `-C` will just re-deploy keys so the new minion will not have a duplicate key or minion_id on the Master, and `-F` will force a rewrite of the Minion config file on the new Minion. If `-F` isn't provided, the new Minion will have the `machine_to_clone`s Minion ID, instead of its own Minion ID, which can cause problems.

---

**Note**: Pull Request #733 to the salt-bootstrap repo makes the `-F` argument non-necessary. Once that change is released into a stable version of the Bootstrap Script, the `-C` argument will be sufficient for the `script_args` setting.

---

If the `machine_to_clone` does not have Salt installed on it, refrain from using the `script_args: -C -F` altogether, because the new machine will need to have Salt installed.

### 9.7.11 Getting Started with OpenNebula

OpenNebula is an open-source solution for the comprehensive management of virtualized data centers to enable the mixed use of private, public, and hybrid IaaS clouds.

#### Dependencies

The driver requires Python's `lxml` library to be installed. It also requires an OpenNebula installation running version `4.12`.

#### Configuration

The following example illustrates some of the options that can be set. These parameters are discussed in more detail below.

```
# Note: This example is for /etc/salt/cloud.providers or any file in the
# /etc/salt/cloud.providers.d/ directory.

my-opennebula-provider:
  # Set up the location of the salt master
  #
  minion:
```

```
    master: saltmaster.example.com

  # Define xml_rpc setting which Salt-Cloud uses to connect to the OpenNebula API.
↪Required.
  #
  xml_rpc: http://localhost:2633/RPC2

  # Define the OpenNebula access credentials. This can be the main "oneadmin" user
↪that OpenNebula uses as the
  # OpenNebula main admin, or it can be a user defined in the OpenNebula instance.
↪Required.
  #
  user: oneadmin
  password: JHGhgsayu32jsa

  # Define the private key location that is used by OpenNebula to access new VMs. This
↪setting is required if
  # provisioning new VMs or accessing VMs previously created with the associated
↪public key.
  #
  private_key: /path/to/private/key

  driver: opennebula
```

### Access Credentials

The Salt Cloud driver for OpenNebula was written using OpenNebula's native XML RPC API. Every interaction with OpenNebula's API requires a `username` and `password` to make the connection from the machine running Salt Cloud to API running on the OpenNebula instance. Based on the access credentials passed in, OpenNebula filters the commands that the user can perform or the information for which the user can query. For example, the images that a user can view with a `--list-images` command are the images that the connected user and the connected user's groups can access.

### Key Pairs

Salt Cloud needs to be able to access a virtual machine in order to install the Salt Minion by using a public/private key pair. The virtual machine will need to be seeded with the public key, which is laid down by the OpenNebula template. Salt Cloud then uses the corresponding private key, provided by the `private_key` setting in the cloud provider file, to SSH into the new virtual machine.

To seed the virtual machine with the public key, the public key must be added to the OpenNebula template. If using the OpenNebula web interface, navigate to the template, then click `Update`. Click the `Context` tab. Under the `Network & SSH` section, click `Add SSH Contextualization` and paste the public key in the `Public Key` box. Don't forget to save your changes by clicking the green `Update` button.

---

**Note**: The key pair must not have a pass-phrase.

---

### Cloud Profiles

Set up an initial profile at either `/etc/salt/cloud.profiles` or the `/etc/salt/cloud.profiles.d/` directory.

```
my-opennebula-profile:
  provider: my-opennebula-provider
  image: Ubuntu-14.04
```

The profile can now be realized with a salt command:

```
salt-cloud -p my-opennebula-profile my-new-vm
```

This will create a new instance named `my-new-vm` in OpenNebula. The minion that is installed on this instance will have a minion id of `my-new-vm`. If the command was executed on the salt-master, its Salt key will automatically be signed on the master.

Once the instance has been created with salt-minion installed, connectivity to it can be verified with Salt:

```
salt my-new-vm test.ping
```

OpenNebula uses an image --> template --> virtual machine paradigm where the template draws on the image, or disk, and virtual machines are created from templates. Because of this, there is no need to define a `size` in the cloud profile. The size of the virtual machine is defined in the template.

#### Required Settings

The following settings are always required for OpenNebula:

```
my-opennebula-config:
  xml_rpc: http://localhost:26633/RPC2
  user: oneadmin
  password: JHGhgsayu32jsa
  driver: opennebula
```

#### Required Settings for VM Deployment

The settings defined in the *Required Settings* section are required for all interactions with OpenNebula. However, when deploying a virtual machine via Salt Cloud, an additional setting, `private_key`, is also required:

```
my-opennebula-config:
  private_key: /path/to/private/key
```

#### Listing Images

Images can be queried on OpenNebula by passing the `--list-images` argument to Salt Cloud:

```
salt-cloud --list-images opennebula
```

#### Listing Locations

In OpenNebula, locations are defined as `hosts`. Locations, or ``hosts'', can be querried on OpenNebula by passing the `--list-locations` argument to Salt Cloud:

```
salt-cloud --list-locations opennebula
```

#### Listing Sizes

Sizes are defined by templates in OpenNebula. As such, the `--list-sizes` call returns an empty dictionary since there are no sizes to return.

#### Additional OpenNebula API Functionality

The Salt Cloud driver for OpenNebula was written using OpenNebula's native XML RPC API. As such, many `--function` and `--action` calls were added to the OpenNebula driver to enhance support for an OpenNebula infrastructure with additional control from Salt Cloud. See the `OpenNebula function definitions` for more information.

### 9.7.12 Getting Started With OpenStack

OpenStack is one the most popular cloud projects. It's an open source project to build public and/or private clouds. You can use Salt Cloud to launch OpenStack instances.

#### Dependencies

- Libcloud >= 0.13.2

#### Configuration

- Using the new format, set up the cloud configuration at `/etc/salt/cloud.providers` or `/etc/salt/cloud.providers.d/openstack.conf`:

```
my-openstack-config:
  # Set the location of the salt-master
  #
  minion:
    master: saltmaster.example.com

  # Configure the OpenStack driver
  #
  identity_url: http://identity.youopenstack.com/v2.0/tokens
  compute_name: nova
  protocol: ipv4

  compute_region: RegionOne

  # Configure Openstack authentication credentials
  #
  user: myname
  password: 123456
  # tenant is the project name
  tenant: myproject

  driver: openstack

  # skip SSL certificate validation (default false)
  insecure: false
```

**Note:** Changed in version 2015.8.0.

The `provider` parameter in cloud provider definitions was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile definitions. Cloud provider definitions now use `driver` to refer to the Salt cloud module that provides the underlying functionality to connect to a cloud host, while cloud profiles continue to use `provider` to refer to provider configurations that you define.

### Using nova client to get information from OpenStack

One of the best ways to get information about OpenStack is using the novaclient python package (available in pypi as python-novaclient). The client configuration is a set of environment variables that you can get from the Dashboard. Log in and then go to Project -> Access & security -> API Access and download the ``OpenStack RC file''. Then:

```
source /path/to/your/rcfile
nova credentials
nova endpoints
```

In the `nova endpoints` output you can see the information about `compute_region` and `compute_name`.

### Compute Region

It depends on the OpenStack cluster that you are using. Please, have a look at the previous sections.

### Authentication

The `user` and `password` is the same user as is used to log into the OpenStack Dashboard.

### Profiles

Here is an example of a profile:

```
openstack_512:
  provider: my-openstack-config
  size: m1.tiny
  image: cirros-0.3.1-x86_64-uec
  ssh_key_file: /tmp/test.pem
  ssh_key_name: test
  ssh_interface: private_ips
```

The following list explains some of the important properties.

**size** can be one of the options listed in the output of `nova flavor-list`.

**image** can be one of the options listed in the output of `nova image-list`.

**ssh_key_file** The SSH private key that the salt-cloud uses to SSH into the VM after its first booted in order to execute a command or script. This private key's *public key* must be the openstack public key inserted into the authorized_key's file of the VM's root user account.

**ssh_key_name** The name of the openstack SSH public key that is inserted into the authorized_keys file of the VM's root user account. Prior to using this public key, you must use openstack commands or the horizon web UI to load that key into the tenant's account. Note that this openstack tenant must be the one you defined in the cloud provider.

**ssh_interface** This option allows you to create a VM without a public IP. If this option is omitted and the VM does not have a public IP, then the salt-cloud waits for a certain period of time and then destroys the VM. With the nova drive, private cloud networks can be defined here.

For more information concerning cloud profiles, see *here*.

#### change_password

If no ssh_key_file is provided, and the server already exists, change_password will use the api to change the root password of the server so that it can be bootstrapped.

```
change_password: True
```

#### userdata_file

Use *userdata_file* to specify the userdata file to upload for use with cloud-init if available.

```
userdata_file: /etc/salt/cloud-init/packages.yml
```

### 9.7.13 Getting Started With Parallels

Parallels Cloud Server is a product by Parallels that delivers a cloud hosting solution. The PARALLELS module for Salt Cloud enables you to manage instances hosted using PCS. Further information can be found at:

http://www.parallels.com/products/pcs/

- Using the old format, set up the cloud configuration at `/etc/salt/cloud`:

```
# Set up the location of the salt master
#
minion:
    master: saltmaster.example.com

# Set the PARALLELS access credentials (see below)
#
PARALLELS.user: myuser
PARALLELS.password: badpass

# Set the access URL for your PARALLELS host
#
PARALLELS.url: https://api.cloud.xmission.com:4465/paci/v1.0/
```

- Using the new format, set up the cloud configuration at `/etc/salt/cloud.providers` or `/etc/salt/cloud.providers.d/parallels.conf`:

```
my-parallels-config:
  # Set up the location of the salt master
  #
  minion:
    master: saltmaster.example.com

  # Set the PARALLELS access credentials (see below)
  #
  user: myuser
```

```
  password: badpass

  # Set the access URL for your PARALLELS provider
  #
  url: https://api.cloud.xmission.com:4465/paci/v1.0/
  driver: parallels
```

**Note**: Changed in version 2015.8.0.

The `provider` parameter in cloud provider definitions was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile definitions. Cloud provider definitions now use `driver` to refer to the Salt cloud module that provides the underlying functionality to connect to a cloud host, while cloud profiles continue to use `provider` to refer to provider configurations that you define.

### Access Credentials

The `user`, `password`, and `url` will be provided to you by your cloud host. These are all required in order for the PARALLELS driver to work.

### Cloud Profiles

Set up an initial profile at `/etc/salt/cloud.profiles` or `/etc/salt/cloud.profiles.d/parallels.conf`:

```
parallels-ubuntu:
    provider: my-parallels-config
    image: ubuntu-12.04-x86_64
```

The profile can be realized now with a salt command:

```
# salt-cloud -p parallels-ubuntu myubuntu
```

This will create an instance named `myubuntu` on the cloud host. The minion that is installed on this instance will have an `id` of `myubuntu`. If the command was executed on the salt-master, its Salt key will automatically be signed on the master.

Once the instance has been created with salt-minion installed, connectivity to it can be verified with Salt:

```
# salt myubuntu test.ping
```

### Required Settings

The following settings are always required for PARALLELS:

- Using the old cloud configuration format:

```
PARALLELS.user: myuser
PARALLELS.password: badpass
PARALLELS.url: https://api.cloud.xmission.com:4465/paci/v1.0/
```

- Using the new cloud configuration format:

```
my-parallels-config:
  user: myuser
  password: badpass
  url: https://api.cloud.xmission.com:4465/paci/v1.0/
  driver: parallels
```

#### Optional Settings

Unlike other cloud providers in Salt Cloud, Parallels does not utilize a `size` setting. This is because Parallels allows the end-user to specify a more detailed configuration for their instances than is allowed by many other cloud hosts. The following options are available to be used in a profile, with their default settings listed.

```
# Description of the instance. Defaults to the instance name.
desc: <instance_name>

# How many CPU cores, and how fast they are (in MHz)
cpu_number: 1
cpu_power: 1000

# How many megabytes of RAM
ram: 256

# Bandwidth available, in kbps
bandwidth: 100

# How many public IPs will be assigned to this instance
ip_num: 1

# Size of the instance disk (in GiB)
disk_size: 10

# Username and password
ssh_username: root
password: <value from PARALLELS.password>

# The name of the image, from ``salt-cloud --list-images parallels``
image: ubuntu-12.04-x86_64
```

### 9.7.14 Getting Started With ProfitBricks

ProfitBricks provides an enterprise-grade Infrastructure as a Service (IaaS) solution that can be managed through a browser-based ``Data Center Designer'' (DCD) tool or via an easy to use API. A unique feature of the ProfitBricks platform is that it allows you to define your own settings for cores, memory, and disk size without being tied to a particular instance size.

#### Dependencies

- profitbricks >= 2.3.0

### Configuration

- Using the new format, set up the cloud configuration at `/etc/salt/cloud.providers` or `/etc/salt/cloud.providers.d/profitbricks.conf`:

```
my-profitbricks-config:
  # Set the location of the salt-master
  #
  minion:
    master: saltmaster.example.com

  # Configure ProfitBricks authentication credentials
  #
  username: user@domain.com
  password: 123456
  # datacenter is the UUID of a pre-existing virtual data center.
  datacenter: 9e6709a0-6bf9-4bd6-8692-60349c70ce0e
  # Connect to public LAN ID 1.
  public_lan: 1
  ssh_public_key: /path/to/id_rsa.pub
  ssh_private_key: /path/to/id_rsa

  driver: profitbricks
```

---

**Note**: Changed in version 2015.8.0.

The `provider` parameter in cloud provider definitions was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile definitions. Cloud provider definitions now use `driver` to refer to the Salt cloud module that provides the underlying functionality to connect to a cloud host, while cloud profiles continue to use `provider` to refer to provider configurations that you define.

---

### Virtual Data Center

ProfitBricks uses the concept of Virtual Data Centers. These are logically separated from one another and allow you to have a self-contained environment for all servers, volumes, networking, snapshots, and so forth.

A list of existing virtual data centers can be retrieved with the following command:

```
salt-cloud -f list_datacenters my-profitbricks-config
```

### Authentication

The `username` and `password` are the same as those used to log into the ProfitBricks ``Data Center Designer''.

### Profiles

Here is an example of a profile:

```
profitbricks_production:
  provider: my-profitbricks-config
  size: Micro Instance
  image: 2f98b678-6e7e-11e5-b680-52540066fee9
  disk_size: 10
```

```
  cores: 2
  ram: 4096
  public_lan: 1
  private_lan: 2
  ssh_public_key: /path/to/id_rsa.pub
  ssh_private_key: /path/to/id_rsa
  ssh_interface: private_lan
```

The following list explains some of the important properties.

**size** Can be one of the options listed in the output of the following command:

```
salt-cloud --list-sizes my-profitbricks
```

**image** Can be one of the options listed in the output of the following command:

```
salt-cloud --list-images my-profitbricks
```

**disk_size** This option allows you to override the size of the disk as defined by the size. The disk size is set in gigabytes (GB).

**cores** This option allows you to override the number of CPU cores as defined by the size.

**ram** This option allows you to override the amount of RAM defined by the size. The value must be a multiple of 256, e.g. 256, 512, 768, 1024, and so forth.

**public_lan** This option will connect the instance to the specified public LAN. If no LAN exists, then a new public LAN will be created. The value accepts a LAN ID (integer).

**private_lan** This option will connect the instance to the specified private LAN. If no LAN exists, then a new private LAN will be created. The value accepts a LAN ID (integer).

**ssh_private_key** Full path to the SSH private key file.

**ssh_public_key** Full path to the SSH public key file.

**ssh_interface** This option will use the private LAN IP for node connections (such as as bootstrapping the node) instead of the public LAN IP. The value accepts `private_lan'.

**deploy** Set to False if Salt should not be installed on the node.

For more information concerning cloud profiles, see *here*.

### 9.7.15 Getting Started With Proxmox

Proxmox Virtual Environment is a complete server virtualization management solution, based on OpenVZ(in Proxmox up to 3.4)/LXC(from Proxmox 4.0 and up) and full virtualization with KVM. Further information can be found at:

http://www.proxmox.org/

#### Dependencies

- IPy >= 0.81
- requests >= 2.2.1

Please note: This module allows you to create OpenVZ/LXC containers and KVM VMs, but installing Salt on it will only be done on containers rather than a KVM virtual machine.

- Set up the cloud configuration at `/etc/salt/cloud.providers` or `/etc/salt/cloud.providers.d/proxmox.conf`:

```
my-proxmox-config:
  # Set up the location of the salt master
  #
  minion:
    master: saltmaster.example.com

  # Set the PROXMOX access credentials (see below)
  #
  user: myuser@pve
  password: badpass

  # Set the access URL for your PROXMOX host
  #
  url: your.proxmox.host
  driver: proxmox
```

---

**Note**: Changed in version 2015.8.0.

The `provider` parameter in cloud provider definitions was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile definitions. Cloud provider definitions now use `driver` to refer to the Salt cloud module that provides the underlying functionality to connect to a cloud host, while cloud profiles continue to use `provider` to refer to provider configurations that you define.

---

### Access Credentials

The `user`, `password`, and `url` will be provided to you by your cloud host. These are all required in order for the PROXMOX driver to work.

### Cloud Profiles

Set up an initial profile at `/etc/salt/cloud.profiles` or `/etc/salt/cloud.profiles.d/proxmox.conf`:

- Configure a profile to be used:

```
proxmox-ubuntu:
    provider: my-proxmox-config
    image: local:vztmpl/ubuntu-12.04-standard_12.04-1_amd64.tar.gz
    technology: lxc

    # host needs to be set to the configured name of the proxmox host
    # and not the ip address or FQDN of the server
    host: myvmhost
    ip_address: 192.168.100.155
    password: topsecret
```

The profile can be realized now with a salt command:

```
# salt-cloud -p proxmox-ubuntu myubuntu
```

This will create an instance named `myubuntu` on the cloud host. The minion that is installed on this instance will have a `hostname` of `myubuntu`. If the command was executed on the salt-master, its Salt key will automatically be signed on the master.

Once the instance has been created with salt-minion installed, connectivity to it can be verified with Salt:

```
# salt myubuntu test.ping
```

### Required Settings

The following settings are always required for PROXMOX:

- Using the new cloud configuration format:

```
my-proxmox-config:
  driver: proxmox
  user: saltcloud@pve
  password: xyzzy
  url: your.proxmox.host
```

### Optional Settings

Unlike other cloud providers in Salt Cloud, Proxmox does not utilize a `size` setting. This is because Proxmox allows the end-user to specify a more detailed configuration for their instances, than is allowed by many other cloud providers. The following options are available to be used in a profile, with their default settings listed.

```
# Description of the instance.
desc: <instance_name>

# How many CPU cores, and how fast they are (in MHz)
cpus: 1
cpuunits: 1000

# How many megabytes of RAM
memory: 256

# How much swap space in MB
swap: 256

# Whether to auto boot the vm after the host reboots
onboot: 1

# Size of the instance disk (in GiB)
disk: 10

# Host to create this vm on
host: myvmhost

# Nameservers. Defaults to host
nameserver: 8.8.8.8 8.8.4.4

# Username and password
ssh_username: root
password: <value from PROXMOX.password>

# The name of the image, from ``salt-cloud --list-images proxmox``
image: local:vztmpl/ubuntu-12.04-standard_12.04-1_amd64.tar.gz

# Whether or not to verify the SSL cert on the Proxmox host
verify_ssl: False
```

```
# Network interfaces, netX
net0: name=eth0,bridge=vmbr0,ip=dhcp
```

### QEMU

Some functionnalities works differently if you use `qemu' as technology. In order to create a new VM with qemu, you need to specificy some more information. You can also clone a qemu template which already is on your Proxmox server.

QEMU profile file (for a new VM):

```
proxmox-win7:
  # Image of the new VM
  image: image.iso # You can get all your available images using 'salt-cloud --list-
 ↪images provider_name' (Ex: 'salt-cloud --list-images my-proxmox-config')

  # Technology used to create the VM ('qemu', 'openvz'(on Proxmox <4.x) or 'lxc'(on
 ↪Proxmox 4.x+))
  technology: qemu

  # Proxmox node name
  host: node_name

  # Proxmox password
  password: your_password

  # Workaround https://github.com/saltstack/salt/issues/27821
  size: ''

  # RAM size (MB)
  memory: 2048

  # OS Type enum (other / wxp / w2k / w2k3 / w2k8 / wvista / win7 / win8 / l24 / l26 /
 ↪solaris)
  ostype: win7

  # Hard disk location
  sata0: <location>:<size>, format=<qcow2/vmdk/raw>, size=<size>GB #Example: local:
 ↪120,format=qcow2,size=120GB

  #CD/DVD Drive
  ide2: <content_location>,media=cdrom #Example: local:iso/name.iso,media=cdrom

  # Network Device
  net0:<model>,bridge=<bridge> #Example: e1000,bridge=vmbr0

  # Enable QEMU Guest Agent (0 / 1)
  agent: 1

  # VM name
  name: Test
```

More information about these parameters can be found on Proxmox API (http://pve.proxmox.com/pve2-api-doc/) under the `POST' method of nodes/{node}/qemu

QEMU profile file (for a clone):

```
proxmox-win7:
  # Enable Clone
  clone: 1

  # New VM description
  clone_description: 'description'

  # New VM name
  clone_name: 'name'

  # New VM format (qcow2 / raw / vmdk)
  clone_format: qcow2

  # Full clone (1) or Link clone (0)
  clone_full: 0

  # VMID of Template to clone
  clone_from: ID

  # Technology used to create the VM ('qemu' or 'lxc')
  technology: qemu

  # Proxmox node name
  host: node_name

  # Proxmox password
  password: your_password

  # Workaround https://github.com/saltstack/salt/issues/27821
  size: ''
```

More information can be found on Proxmox API under the `POST' method of /nodes/{node}/qemu/{vmid}/clone

---

**Note**: The Proxmox API offers a lot more options and parameters, which are not yet supported by this salt-cloud `overlay'. Feel free to add your contribution by forking the github repository and modifying the following file: salt/salt/cloud/clouds/proxmox.py An easy way to support more parameters for VM creation would be to add the names of the optional parameters in the `create_nodes(vm_)' function, under the `qemu' technology. But it requires you to dig into the code ...

---

### 9.7.16 Getting Started With Rackspace

Rackspace is a major public cloud platform which may be configured using either the *rackspace* or the *openstack* driver, depending on your needs.

Please note that the *rackspace* driver is intended only for 1st gen instances, aka, ``the old cloud'' at Rackspace. It is required for 1st gen instances, but will *not* work with OpenStack-based instances. Unless you explicitly have a reason to use it, it is highly recommended that you use the *openstack* driver instead.

#### Dependencies

- Libcloud >= 0.13.2

### Configuration

**To use the *openstack* driver (recommended), set up the cloud configuration at** `/etc/salt/cloud.providers` or `/etc/salt/cloud.providers.d/rackspace.conf`:

```
my-rackspace-config:
  # Set the location of the salt-master
  #
  minion:
    master: saltmaster.example.com

  # Configure Rackspace using the OpenStack plugin
  #
  identity_url: 'https://identity.api.rackspacecloud.com/v2.0/tokens'
  compute_name: cloudServersOpenStack
  protocol: ipv4

  # Set the compute region:
  #
  compute_region: DFW

  # Configure Rackspace authentication credentials
  #
  user: myname
  tenant: 123456
  apikey: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

  driver: openstack
```

**To use the *rackspace* driver, set up the cloud configuration at** `/etc/salt/cloud.providers` or `/etc/salt/cloud.providers.d/rackspace.conf`:

```
my-rackspace-config:
  driver: rackspace
  # The Rackspace login user
  user: fred
  # The Rackspace user's apikey
  apikey: 901d3f579h23c8v73q9
```

The settings that follow are for using Rackspace with the *openstack* driver, and will not work with the *rackspace* driver.

---

**Note**: Changed in version 2015.8.0.

The `provider` parameter in cloud provider definitions was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile definitions. Cloud provider definitions now use `driver` to refer to the Salt cloud module that provides the underlying functionality to connect to a cloud host, while cloud profiles continue to use `provider` to refer to provider configurations that you define.

---

### Compute Region

Rackspace currently has six compute regions which may be used:

```
DFW -> Dallas/Forth Worth
ORD -> Chicago
```

```
SYD -> Sydney
LON -> London
IAD -> Northern Virginia
HKG -> Hong Kong
```

Note: Currently the LON region is only available with a UK account, and UK accounts cannot access other regions

### Authentication

The `user` is the same user as is used to log into the Rackspace Control Panel. The `tenant` and `apikey` can be found in the API Keys area of the Control Panel. The `apikey` will be labeled as API Key (and may need to be generated), and `tenant` will be labeled as Cloud Account Number.

An initial profile can be configured in `/etc/salt/cloud.profiles` or `/etc/salt/cloud.profiles.d/rackspace.conf`:

```
openstack_512:
    provider: my-rackspace-config
    size: 512 MB Standard
    image: Ubuntu 12.04 LTS (Precise Pangolin)
```

To instantiate a machine based on this profile:

```
# salt-cloud -p openstack_512 myinstance
```

This will create a virtual machine at Rackspace with the name `myinstance`. This operation may take several minutes to complete, depending on the current load at the Rackspace data center.

Once the instance has been created with salt-minion installed, connectivity to it can be verified with Salt:

```
# salt myinstance test.ping
```

### RackConnect Environments

Rackspace offers a hybrid hosting configuration option called RackConnect that allows you to use a physical firewall appliance with your cloud servers. When this service is in use the public_ip assigned by nova will be replaced by a NAT ip on the firewall. For salt-cloud to work properly it must use the newly assigned ``access ip'' instead of the Nova assigned public ip. You can enable that capability by adding this to your profiles:

```
openstack_512:
    provider: my-openstack-config
    size: 512 MB Standard
    image: Ubuntu 12.04 LTS (Precise Pangolin)
    rackconnect: True
```

### Managed Cloud Environments

Rackspace offers a managed service level of hosting. As part of the managed service level you have the ability to choose from base of lamp installations on cloud server images. The post build process for both the base and the lamp installations used Chef to install things such as the cloud monitoring agent and the cloud backup agent. It also takes care of installing the lamp stack if selected. In order to prevent the post installation process from stomping over the bootstrapping you can add the below to your profiles.

```
openstack_512:
    provider: my-rackspace-config
    size: 512 MB Standard
    image: Ubuntu 12.04 LTS (Precise Pangolin)
    managedcloud: True
```

#### First and Next Generation Images

Rackspace provides two sets of virtual machine images, *first*, and *next* generation. As of `0.8.9` salt-cloud will default to using the *next* generation images. To force the use of first generation images, on the profile configuration please add:

```
FreeBSD-9.0-512:
  provider: my-rackspace-config
  size: 512 MB Standard
  image: FreeBSD 9.0
  force_first_gen: True
```

#### Private Subnets

By default salt-cloud will not add Rackspace private networks to new servers. To enable a private network to a server instantiated by salt cloud, add the following section to the provider file (typically `/etc/salt/cloud.providers.d/rackspace.conf`)

```
networks:
  - fixed:
    # This is the private network
    - private-network-id
    # This is Rackspace's "PublicNet"
    - 00000000-0000-0000-0000-000000000000
    # This is Rackspace's "ServiceNet"
    - 11111111-1111-1111-1111-111111111111
```

To get the Rackspace private network ID, go to Networking, Networks and hover over the private network name.

The order of the networks in the above code block does not map to the order of the ethernet devices on newly created servers. Public IP will always be first ( eth0 ) followed by servicenet ( eth1 ) and then private networks.

Enabling the private network per above gives the option of using the private subnet for all master-minion communication, including the bootstrap install of salt-minion. To enable the minion to use the private subnet, update the master: line in the minion: section of the providers file. To configure the master to only listen on the private subnet IP, update the interface: line in the /etc/salt/master file to be the private subnet IP of the salt master.

### 9.7.17 Getting Started With Saltify

The Saltify driver is a new, experimental driver for installing Salt on existing machines (virtual or bare metal).

#### Dependencies

The Saltify driver has no external dependencies.

### Configuration

Because the Saltify driver does not use an actual cloud provider host, it has a simple provider configuration. The only thing that is required to be set is the driver name, and any other potentially useful information, like the location of the salt-master:

```
# Note: This example is for /etc/salt/cloud.providers file or any file in
# the /etc/salt/cloud.providers.d/ directory.

my-saltify-config:
  minion:
    master: 111.222.333.444
  provider: saltify
```

### Profiles

Saltify requires a profile to be configured for each machine that needs Salt installed. The initial profile can be set up at `/etc/salt/cloud.profiles` or in the `/etc/salt/cloud.profiles.d/` directory. Each profile requires both an `ssh_host` and an `ssh_username` key parameter as well as either an `key_filename` or a `password`.

Profile configuration example:

```
# /etc/salt/cloud.profiles.d/saltify.conf

salt-this-machine:
  ssh_host: 12.34.56.78
  ssh_username: root
  key_filename: '/etc/salt/mysshkey.pem'
  provider: my-saltify-config
```

The machine can now be ``Salted'' with the following command:

```
salt-cloud -p salt-this-machine my-machine
```

This will install salt on the machine specified by the cloud profile, `salt-this-machine`, and will give the machine the minion id of `my-machine`. If the command was executed on the salt-master, its Salt key will automatically be signed on the master.

Once a salt-minion has been successfully installed on the instance, connectivity to it can be verified with Salt:

```
salt my-machine test.ping
```

### Using Map Files

The settings explained in the section above may also be set in a map file. An example of how to use the Saltify driver with a map file follows:

```
# /etc/salt/saltify-map

make_salty:
  - my-instance-0:
      ssh_host: 12.34.56.78
      ssh_username: root
      password: very-bad-password
```

```
  - my-instance-1:
      ssh_host: 44.33.22.11
      ssh_username: root
      password: another-bad-pass
```

Note: When using a cloud map with the Saltify driver, the name of the profile to use, in this case `make_salty`, must be defined in a profile config. For example:

```
# /etc/salt/cloud.profiles.d/saltify.conf

make_salty:
  provider: my-saltify-config
```

The machines listed in the map file can now be ``Salted'' by applying the following salt map command:

```
salt-cloud -m /etc/salt/saltify-map
```

This command will install salt on the machines specified in the map and will give each machine their minion id of `my-instance-0` and `my-instance-1`, respectively. If the command was executed on the salt-master, its Salt key will automatically be signed on the master.

Connectivity to the new ``Salted'' instances can now be verified with Salt:

```
salt 'my-instance-*' test.ping
```

### 9.7.18 Getting Started With Scaleway

Scaleway is the first IaaS host worldwide to offer an ARM based cloud. It's the ideal platform for horizontal scaling with BareMetal SSD servers. The solution provides on demand resources: it comes with on-demand SSD storage, movable IPs , images, security group and an Object Storage solution. https://scaleway.com

#### Configuration

Using Salt for Scaleway, requires an `access key` and an `API token`. `API tokens` are unique identifiers associated with your Scaleway account. To retrieve your `access key` and `API token`, log-in to the Scaleway control panel, open the pull-down menu on your account name and click on ``My Credentials'' link.

If you do not have API token you can create one by clicking the ``Create New Token'' button on the right corner.

```
# Note: This example is for /etc/salt/cloud.providers or any file in the
# /etc/salt/cloud.providers.d/ directory.

my-scaleway-config:
  access_key: 15cf404d-4560-41b1-9a0c-21c3d5c4ff1f
  token: a7347ec8-5de1-4024-a5e3-24b77d1ba91d
  driver: scaleway
```

---

**Note**: Changed in version 2015.8.0.

The `provider` parameter in cloud provider definitions was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile definitions. Cloud provider definitions now use `driver` to refer to the Salt cloud module that provides the underlying functionality to connect to a cloud host, while cloud profiles continue to use `provider` to refer to provider configurations that you define.

---

### Profiles

### Cloud Profiles

Set up an initial profile at /etc/salt/cloud.profiles or in the /etc/salt/cloud.profiles.d/ directory:

```
scalewa-ubuntu:
  provider: my-scaleway-config
  image: Ubuntu Trusty (14.04 LTS)
```

Images can be obtained using the `--list-images` option for the `salt-cloud` command:

```
#salt-cloud --list-images my-scaleway-config
my-scaleway-config:
  ----------
  scaleway:
      ----------
      069fd876-eb04-44ab-a9cd-47e2fa3e5309:
          ----------
          arch:
              arm
          creation_date:
              2015-03-12T09:35:45.764477+00:00
          default_bootscript:
              {u'kernel': {u'dtb': u'', u'title': u'Pimouss 3.2.34-30-std', u'id': u
 ↪'cfda4308-cd6f-4e51-9744-905fc0da370f', u'path': u'kernel/pimouss-uImage-3.2.34-30-
 ↪std'}, u'title': u'3.2.34-std #30 (stable)', u'id': u'c5af0215-2516-4316-befc-
 ↪5da1cfad609c', u'initrd': {u'path': u'initrd/c1-uInitrd', u'id': u'1be14b1b-e24c-
 ↪48e5-b0b6-7ba452e42b92', u'title': u'C1 initrd'}, u'bootcmdargs': {u'id': u
 ↪'d22c4dde-e5a4-47ad-abb9-d23b54d542ff', u'value': u'ip=dhcp boot=local root=/dev/
 ↪nbd0 USE_XNBD=1 nbd.max_parts=8'}, u'organization': u'11111111-1111-4111-8111-
 ↪111111111111', u'public': True}
          extra_volumes:
              []
          id:
              069fd876-eb04-44ab-a9cd-47e2fa3e5309
          modification_date:
              2015-04-24T12:02:16.820256+00:00
          name:
              Ubuntu Vivid (15.04)
          organization:
              a283af0b-d13e-42e1-a43f-855ffbf281ab
          public:
              True
          root_volume:
              {u'name': u'distrib-ubuntu-vivid-2015-03-12_10:32-snapshot', u'id': u
 ↪'a6d02e63-8dee-4bce-b627-b21730f35a05', u'volume_type': u'l_ssd', u'size':
 ↪50000000000L}
...
```

Execute a query and return all information about the nodes running on configured cloud providers using the `-Q` option for the `salt-cloud` command:

```
# salt-cloud -F
[INFO    ] salt-cloud starting
[INFO    ] Starting new HTTPS connection (1): api.scaleway.com
my-scaleway-config:
  ----------
```

```
  scaleway:
      ----------
      salt-manager:
          ----------
          creation_date:
              2015-06-03T08:17:38.818068+00:00
          hostname:
              salt-manager
...
```

**Note**: Additional documentation about Scaleway can be found at https://www.scaleway.com/docs.

### 9.7.19 Getting Started With SoftLayer

SoftLayer is a public cloud host, and baremetal hardware hosting service.

#### Dependencies

The SoftLayer driver for Salt Cloud requires the softlayer package, which is available at PyPI:

https://pypi.python.org/pypi/SoftLayer

This package can be installed using `pip` or `easy_install`:

```
# pip install softlayer
# easy_install softlayer
```

#### Configuration

Set up the cloud config at `/etc/salt/cloud.providers`:

```
# Note: These examples are for /etc/salt/cloud.providers

  my-softlayer:
    # Set up the location of the salt master
    minion:
      master: saltmaster.example.com

    # Set the SoftLayer access credentials (see below)
    user: MYUSER1138
    apikey: 'e3b68aa711e6deadc62d5b76355674beef7cc3116062ddbacafe5f7e465bfdc9'

    driver: softlayer


  my-softlayer-hw:
    # Set up the location of the salt master
    minion:
      master: saltmaster.example.com

    # Set the SoftLayer access credentials (see below)
    user: MYUSER1138
    apikey: 'e3b68aa711e6deadc62d5b76355674beef7cc3116062ddbacafe5f7e465bfdc9'
```

```
    driver: softlayer_hw
```

**Note**: Changed in version 2015.8.0.

The `provider` parameter in cloud provider definitions was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile definitions. Cloud provider definitions now use `driver` to refer to the Salt cloud module that provides the underlying functionality to connect to a cloud host, while cloud profiles continue to use `provider` to refer to provider configurations that you define.

#### Access Credentials

The `user` setting is the same user as is used to log into the SoftLayer Administration area. The `apikey` setting is found inside the Admin area after logging in:

- Hover over the `Account` menu item.
- Click the `Users` link.
- Find the `API Key` column and click `View`.

### Profiles

#### Cloud Profiles

Set up an initial profile at `/etc/salt/cloud.profiles`:

```
base_softlayer_ubuntu:
  provider: my-softlayer
  image: UBUNTU_LATEST
  cpu_number: 1
  ram: 1024
  disk_size: 100
  local_disk: True
  hourly_billing: True
  domain: example.com
  location: sjc01
  # Optional
  max_net_speed: 1000
  private_vlan: 396
  private_network: True
  private_ssh: True
  # May be used _instead_of_ image
  global_identifier: 320d8be5-46c0-dead-cafe-13e3c51
```

Most of the above items are required; optional items are specified below.

#### image

Images to build an instance can be found using the `--list-images` option:

```
# salt-cloud --list-images my-softlayer
```

The setting used will be labeled as `template`.

#### cpu_number

This is the number of CPU cores that will be used for this instance. This number may be dependent upon the image that is used. For instance:

```
Red Hat Enterprise Linux 6 - Minimal Install (64 bit) (1 - 4 Core):
    ----------
    name:
        Red Hat Enterprise Linux 6 - Minimal Install (64 bit) (1 - 4 Core)
    template:
        REDHAT_6_64
Red Hat Enterprise Linux 6 - Minimal Install (64 bit) (5 - 100 Core):
    ----------
    name:
        Red Hat Enterprise Linux 6 - Minimal Install (64 bit) (5 - 100 Core)
    template:
        REDHAT_6_64
```

Note that the template (meaning, the *image* option) for both of these is the same, but the names suggests how many CPU cores are supported.

#### ram

This is the amount of memory, in megabytes, that will be allocated to this instance.

#### disk_size

The amount of disk space that will be allocated to this image, in gigabytes.

```
base_softlayer_ubuntu:
  disk_size: 100
```

#### Using Multiple Disks

New in version 2015.8.1.

SoftLayer allows up to 5 disks to be specified for a virtual machine upon creation. Multiple disks can be specified either as a list or a comma-delimited string. The first `disk_size` specified in the string or list will be the first disk size assigned to the VM.

List Example: .. code-block:: yaml

    **base_softlayer_ubuntu**: disk_size: [`100', `20', `20']

String Example: .. code-block:: yaml

    **base_softlayer_ubuntu**: disk_size: `100, 20, 20'

#### local_disk

When true the disks for the computing instance will be provisioned on the host which it runs, otherwise SAN disks will be provisioned.

#### hourly_billing

When true the computing instance will be billed on hourly usage, otherwise it will be billed on a monthly basis.

#### domain

The domain name that will be used in the FQDN (Fully Qualified Domain Name) for this instance. The *domain* setting will be used in conjunction with the instance name to form the FQDN.

#### use_fqdn

If set to True, the Minion will be identified by the FQDN (Fully Qualified Domain Name) which is a result of combining the `domain` configuration value and the Minion name specified either via the CLI or a map file rather than only using the short host name, or Minion ID. Default is False.

New in version 2016.3.0.

For example, if the value of `domain` is `example.com` and a new VM was created via the CLI with `salt-cloud -p base_softlayer_ubuntu my-vm`, the resulting Minion ID would be `my-vm.example.com`.

---

**Note**: When enabling the `use_fqdn` setting, the Minion ID will be the FQDN and will interact with salt commands with the FQDN instead of the short hostname. However, due to the way the SoftLayer API is constructed, some Salt Cloud functions such as listing nodes or destroying VMs will only list the short hostname of the VM instead of the FQDN.

---

Example output displaying the SoftLayer hostname quirk mentioned in the note above (note the Minion ID is `my-vm.example.com`, but the VM to be destroyed is listed with its short hostname, `my-vm`):

```
# salt-key -L
Accepted Keys:
my-vm.example.com
Denied Keys:
Unaccepted Keys:
Rejected Keys:
#
#
# salt my-vm.example.com test.ping
my-vm.example.com:
    True
#
#
# salt-cloud -d my-vm.example.com
[INFO    ] salt-cloud starting
[INFO    ] POST https://api.softlayer.com/xmlrpc/v3.1/SoftLayer_Account
The following virtual machines are set to be destroyed:
  softlayer-config:
    softlayer:
```

```
      my-vm

Proceed? [N/y] y
... proceeding
[INFO    ] Destroying in non-parallel mode.
[INFO    ] POST https://api.softlayer.com/xmlrpc/v3.1/SoftLayer_Account
[INFO    ] POST https://api.softlayer.com/xmlrpc/v3.1/SoftLayer_Virtual_Guest
softlayer-config:
    ----------
    softlayer:
        ----------
        my-vm:
            True
```

#### location

Images to build an instance can be found using the *--list-locations* option:

```
# salt-cloud --list-location my-softlayer
```

#### max_net_speed

Specifies the connection speed for the instance's network components. This setting is optional. By default, this is set to 10.

#### post_uri

Specifies the uri location of the script to be downloaded and run after the instance is provisioned.

New in version 2015.8.1.

Example: .. code-block:: yaml

**base_softlayer_ubuntu**: post_uri: `https://SOMESERVERIP:8000/myscript.sh`

#### public_vlan

If it is necessary for an instance to be created within a specific frontend VLAN, the ID for that VLAN can be specified in either the provider or profile configuration.

This ID can be queried using the *list_vlans* function, as described below. This setting is optional.

#### private_vlan

If it is necessary for an instance to be created within a specific backend VLAN, the ID for that VLAN can be specified in either the provider or profile configuration.

This ID can be queried using the *list_vlans* function, as described below. This setting is optional.

#### private_network

If a server is to only be used internally, meaning it does not have a public VLAN associated with it, this value would be set to True. This setting is optional. The default is False.

#### private_ssh

Whether to run the deploy script on the server using the public IP address or the private IP address. If set to True, Salt Cloud will attempt to SSH into the new server using the private IP address. The default is False. This settiong is optional.

#### global_identifier

When creating an instance using a custom template, this option is set to the corresponding value obtained using the *list_custom_images* function. This option will not be used if an *image* is set, and if an *image* is not set, it is required.

The profile can be realized now with a salt command:

```
# salt-cloud -p base_softlayer_ubuntu myserver
```

Using the above configuration, this will create *myserver.example.com*.

Once the instance has been created with salt-minion installed, connectivity to it can be verified with Salt:

```
# salt 'myserver.example.com' test.ping
```

### Cloud Profiles

Set up an initial profile at `/etc/salt/cloud.profiles`:

```
base_softlayer_hw_centos:
  provider: my-softlayer-hw
  # CentOS 6.0 - Minimal Install (64 bit)
  image: 13963
  # 2 x 2.0 GHz Core Bare Metal Instance - 2 GB Ram
  size: 1921
  # 500GB SATA II
  hdd: 1267
  # San Jose 01
  location: 168642
  domain: example.com
  # Optional
  vlan: 396
  port_speed: 273
  banwidth: 248
```

Most of the above items are required; optional items are specified below.

#### image

Images to build an instance can be found using the *--list-images* option:

```
# salt-cloud --list-images my-softlayer-hw
```

A list of *id`s and names will be provided. The `name* will describe the operating system and architecture. The *id* will be the setting to be used in the profile.

#### size

Sizes to build an instance can be found using the *--list-sizes* option:

```
# salt-cloud --list-sizes my-softlayer-hw
```

A list of *id`s and names will be provided. The `name* will describe the speed and quantity of CPU cores, and the amount of memory that the hardware will contain. The *id* will be the setting to be used in the profile.

#### hdd

There is currently only one size of hard disk drive (HDD) that is available for hardware instances on SoftLayer:

```
1267: 500GB SATA II
```

The *hdd* setting in the profile should be 1267. Other sizes may be added in the future.

#### location

Locations to build an instance can be found using the *--list-images* option:

```
# salt-cloud --list-locations my-softlayer-hw
```

A list of IDs and names will be provided. The *location* will describe the location in human terms. The *id* will be the setting to be used in the profile.

#### domain

The domain name that will be used in the FQDN (Fully Qualified Domain Name) for this instance. The *domain* setting will be used in conjunction with the instance name to form the FQDN.

#### vlan

If it is necessary for an instance to be created within a specific VLAN, the ID for that VLAN can be specified in either the provider or profile configuration.

This ID can be queried using the *list_vlans* function, as described below.

#### port_speed

Specifies the speed for the instance's network port. This setting refers to an ID within the SoftLayer API, which sets the port speed. This setting is optional. The default is 273, or, 100 Mbps Public & Private Networks. The following settings are available:

- 273: 100 Mbps Public & Private Networks
- 274: 1 Gbps Public & Private Networks
- 21509: 10 Mbps Dual Public & Private Networks (up to 20 Mbps)
- 21513: 100 Mbps Dual Public & Private Networks (up to 200 Mbps)
- 2314: 1 Gbps Dual Public & Private Networks (up to 2 Gbps)
- 272: 10 Mbps Public & Private Networks

#### bandwidth

Specifies the network bandwidth available for the instance. This setting refers to an ID within the SoftLayer API, which sets the bandwidth. This setting is optional. The default is 248, or, 5000 GB Bandwidth. The following settings are available:

- 248: 5000 GB Bandwidth
- 129: 6000 GB Bandwidth
- 130: 8000 GB Bandwidth
- 131: 10000 GB Bandwidth
- 36: Unlimited Bandwidth (10 Mbps Uplink)
- 125: Unlimited Bandwidth (100 Mbps Uplink)

### Actions

The following actions are currently supported by the SoftLayer Salt Cloud driver.

#### show_instance

This action is a thin wrapper around *--full-query*, which displays details on a single instance only. In an environment with several machines, this will save a user from having to sort through all instance data, just to examine a single instance.

```
$ salt-cloud -a show_instance myinstance
```

### Functions

The following functions are currently supported by the SoftLayer Salt Cloud driver.

#### list_vlans

This function lists all VLANs associated with the account, and all known data from the SoftLayer API concerning those VLANs.

```
$ salt-cloud -f list_vlans my-softlayer
$ salt-cloud -f list_vlans my-softlayer-hw
```

The *id* returned in this list is necessary for the *vlan* option when creating an instance.

### list_custom_images

This function lists any custom templates associated with the account, that can be used to create a new instance.

```
$ salt-cloud -f list_custom_images my-softlayer
```

The *globalIdentifier* returned in this list is necessary for the *global_identifier* option when creating an image using a custom template.

### Optional Products for SoftLayer HW

The softlayer_hw driver supports the ability to add optional products, which are supported by SoftLayer's API. These products each have an ID associated with them, that can be passed into Salt Cloud with the *optional_products* option:

```
softlayer_hw_test:
  provider: my-softlayer-hw
  # CentOS 6.0 - Minimal Install (64 bit)
  image: 13963
  # 2 x 2.0 GHz Core Bare Metal Instance - 2 GB Ram
  size: 1921
  # 500GB SATA II
  hdd: 1267
  # San Jose 01
  location: 168642
  domain: example.com
  optional_products:
    # MySQL for Linux
    - id: 28
    # Business Continuance Insurance
    - id: 104
```

These values can be manually obtained by looking at the source of an order page on the SoftLayer web interface. For convenience, many of these values are listed here:

### Public Secondary IP Addresses

- 22: 4 Public IP Addresses
- 23: 8 Public IP Addresses

### Primary IPv6 Addresses

- 17129: 1 IPv6 Address

### Public Static IPv6 Addresses

- 1481: /64 Block Static Public IPv6 Addresses

### OS-Specific Addon

- 17139: XenServer Advanced for XenServer 6.x

- 17141: XenServer Enterprise for XenServer 6.x
- 2334: XenServer Advanced for XenServer 5.6
- 2335: XenServer Enterprise for XenServer 5.6
- 13915: Microsoft WebMatrix
- 21276: VMware vCenter 5.1 Standard

### Control Panel Software

- 121: cPanel/WHM with Fantastico and RVskin
- 20778: Parallels Plesk Panel 11 (Linux) 100 Domain w/ Power Pack
- 20786: Parallels Plesk Panel 11 (Windows) 100 Domain w/ Power Pack
- 20787: Parallels Plesk Panel 11 (Linux) Unlimited Domain w/ Power Pack
- 20792: Parallels Plesk Panel 11 (Windows) Unlimited Domain w/ Power Pack
- 2340: Parallels Plesk Panel 10 (Linux) 100 Domain w/ Power Pack
- 2339: Parallels Plesk Panel 10 (Linux) Unlimited Domain w/ Power Pack
- 13704: Parallels Plesk Panel 10 (Windows) Unlimited Domain w/ Power Pack

### Database Software

- 29: MySQL 5.0 for Windows
- 28: MySQL for Linux
- 21501: Riak 1.x
- 20893: MongoDB
- 30: Microsoft SQL Server 2005 Express
- 92: Microsoft SQL Server 2005 Workgroup
- 90: Microsoft SQL Server 2005 Standard
- 94: Microsoft SQL Server 2005 Enterprise
- 1330: Microsoft SQL Server 2008 Express
- 1340: Microsoft SQL Server 2008 Web
- 1337: Microsoft SQL Server 2008 Workgroup
- 1334: Microsoft SQL Server 2008 Standard
- 1331: Microsoft SQL Server 2008 Enterprise
- 2179: Microsoft SQL Server 2008 Express R2
- 2173: Microsoft SQL Server 2008 Web R2
- 2183: Microsoft SQL Server 2008 Workgroup R2
- 2180: Microsoft SQL Server 2008 Standard R2
- 2176: Microsoft SQL Server 2008 Enterprise R2

#### Anti-Virus & Spyware Protection

- 594: McAfee VirusScan Anti-Virus - Windows
- 414: McAfee Total Protection - Windows

#### Insurance

- 104: Business Continuance Insurance

#### Monitoring

- 55: Host Ping
- 56: Host Ping and TCP Service Monitoring

#### Notification

- 57: Email and Ticket

#### Advanced Monitoring

- 2302: Monitoring Package - Basic
- 2303: Monitoring Package - Advanced
- 2304: Monitoring Package - Premium Application

#### Response

- 58: Automated Notification
- 59: Automated Reboot from Monitoring
- 60: 24x7x365 NOC Monitoring, Notification, and Response

#### Intrusion Detection & Protection

- 413: McAfee Host Intrusion Protection w/Reporting

#### Hardware & Software Firewalls

- 411: APF Software Firewall for Linux
- 894: Microsoft Windows Firewall
- 410: 10Mbps Hardware Firewall
- 409: 100Mbps Hardware Firewall
- 408: 1000Mbps Hardware Firewall

### 9.7.20 Getting Started with VEXXHOST

VEXXHOST is a cloud computing host which provides Canadian cloud computing services which are based in Monteral and use the libcloud OpenStack driver. VEXXHOST currently runs the Havana release of OpenStack. When provisioning new instances, they automatically get a public IP and private IP address. Therefore, you do not need to assign a floating IP to access your instance after it's booted.

#### Cloud Provider Configuration

To use the *openstack* driver for the VEXXHOST public cloud, you will need to set up the cloud provider configuration file as in the example below:

`/etc/salt/cloud.providers.d/vexxhost.conf`: In order to use the VEXXHOST public cloud, you will need to setup a cloud provider configuration file as in the example below which uses the OpenStack driver.

```
my-vexxhost-config:
  # Set the location of the salt-master
  #
  minion:
    master: saltmaster.example.com

  # Configure VEXXHOST using the OpenStack plugin
  #
  identity_url: http://auth.api.thenebulacloud.com:5000/v2.0/tokens
  compute_name: nova

  # Set the compute region:
  #
  compute_region: na-yul-nhs1

  # Configure VEXXHOST authentication credentials
  #
  user: your-tenant-id
  password: your-api-key
  tenant: your-tenant-name

  # keys to allow connection to the instance launched
  #
  ssh_key_name: yourkey
  ssh_key_file: /path/to/key/yourkey.priv

  driver: openstack
```

**Note**: Changed in version 2015.8.0.

The `provider` parameter in cloud provider definitions was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile definitions. Cloud provider definitions now use `driver` to refer to the Salt cloud module that provides the underlying functionality to connect to a cloud host, while cloud profiles continue to use `provider` to refer to provider configurations that you define.

#### Authentication

All of the authentication fields that you need can be found by logging into your VEXXHOST customer center. Once you've logged in, you will need to click on ``CloudConsole'' and then click on ``API Credentials''.

#### Cloud Profile Configuration

In order to get the correct image UUID and the instance type to use in the cloud profile, you can run the following command respectively:

```
# salt-cloud --list-images=vexxhost-config
# salt-cloud --list-sizes=vexxhost-config
```

Once you have that, you can go ahead and create a new cloud profile. This profile will build an Ubuntu 12.04 LTS *nb.2G* instance.

`/etc/salt/cloud.profiles.d/vh_ubuntu1204_2G.conf`:

```
vh_ubuntu1204_2G:
  provider: my-vexxhost-config
  image: 4051139f-750d-4d72-8ef0-074f2ccc7e5a
  size: nb.2G
```

#### Provision an instance

To create an instance based on the sample profile that we created above, you can run the following *salt-cloud* command.

```
# salt-cloud -p vh_ubuntu1204_2G vh_instance1
```

Typically, instances are provisioned in under 30 seconds on the VEXXHOST public cloud. After the instance provisions, it will be set up a minion and then return all the instance information once it's complete.

Once the instance has been setup, you can test connectivity to it by running the following command:

```
# salt vh_instance1 test.ping
```

You can now continue to provision new instances and they will all automatically be set up as minions of the master you've defined in the configuration file.

### 9.7.21 Getting Started With VMware

New in version 2015.5.4.

**Author**: Nitin Madhok <nmadhok@clemson.edu>

The VMware cloud module allows you to manage VMware ESX, ESXi, and vCenter.

#### Dependencies

The vmware module for Salt Cloud requires the `pyVmomi` package, which is available at PyPI:

https://pypi.python.org/pypi/pyvmomi

This package can be installed using *pip* or *easy_install*:

```
pip install pyvmomi
easy_install pyvmomi
```

**Note:** Version 6.0 of pyVmomi has some problems with SSL error handling on certain versions of Python. If using version 6.0 of pyVmomi, the machine that you are running the proxy minion process from must have either Python 2.7.9 or newer This is due to an upstream dependency in pyVmomi 6.0 that is not supported in Python version 2.6 to 2.7.8. If the version of Python running the salt-cloud command is not in the supported range, you will need to install an earlier version of pyVmomi. See Issue #29537 for more information.

**Note:** pyVmomi doesn't expose the ability to specify the locale when connecting to VMware. This causes parsing issues when connecting to an instance of VMware running under a non-English locale. Until this feature is added upstream Issue #38402 contains a workaround.

### Configuration

The VMware cloud module needs the vCenter or ESX/ESXi URL, username and password to be set up in the cloud configuration at `/etc/salt/cloud.providers` or `/etc/salt/cloud.providers.d/vmware.conf`:

```
my-vmware-config:
  driver: vmware
  user: 'DOMAIN\user'
  password: 'verybadpass'
  url: '10.20.30.40'

vcenter01:
  driver: vmware
  user: 'DOMAIN\user'
  password: 'verybadpass'
  url: 'vcenter01.domain.com'
  protocol: 'https'
  port: 443

vcenter02:
  driver: vmware
  user: 'DOMAIN\user'
  password: 'verybadpass'
  url: 'vcenter02.domain.com'
  protocol: 'http'
  port: 80

esx01:
  driver: vmware
  user: 'admin'
  password: 'verybadpass'
  url: 'esx01.domain.com'
```

**Note:** Optionally, `protocol` and `port` can be specified if the vCenter server is not using the defaults. Default is `protocol: https` and `port: 443`.

**Note:** Changed in version 2015.8.0.

The `provider` parameter in cloud provider configuration was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile configuration. Cloud provider configuration

now uses `driver` to refer to the salt-cloud driver that provides the underlying functionality to connect to a cloud provider, while cloud profile configuration continues to use `provider` to refer to the cloud provider configuration that you define.

### Profiles

Set up an initial profile at `/etc/salt/cloud.profiles` or `/etc/salt/cloud.profiles.d/vmware.conf`:

```
vmware-centos6.5:
  provider: vcenter01
  clonefrom: test-vm

  ## Optional arguments
  num_cpus: 4
  memory: 8GB
  devices:
    cd:
      CD/DVD drive 1:
        device_type: datastore_iso_file
        iso_path: "[nap004-1] vmimages/tools-isoimages/linux.iso"
      CD/DVD drive 2:
        device_type: client_device
        mode: atapi
        controller: IDE 2
      CD/DVD drive 3:
        device_type: client_device
        mode: passthrough
        controller: IDE 3
    disk:
      Hard disk 1:
        size: 30
      Hard disk 2:
        size: 20
        controller: SCSI controller 2
      Hard disk 3:
        size: 5
        controller: SCSI controller 3
    network:
      Network adapter 1:
        name: 10.20.30-400-Test
        switch_type: standard
        ip: 10.20.30.123
        gateway: [10.20.30.110]
        subnet_mask: 255.255.255.128
        domain: example.com
      Network adapter 2:
        name: 10.30.40-500-Dev-DHCP
        adapter_type: e1000
        switch_type: distributed
      Network adapter 3:
        name: 10.40.50-600-Prod
        adapter_type: vmxnet3
        switch_type: distributed
        ip: 10.40.50.123
        gateway: [10.40.50.110]
        subnet_mask: 255.255.255.128
```

```
        domain: example.com
    scsi:
      SCSI controller 1:
        type: lsilogic
      SCSI controller 2:
        type: lsilogic_sas
        bus_sharing: virtual
      SCSI controller 3:
        type: paravirtual
        bus_sharing: physical
    ide:
      IDE 2
      IDE 3

  domain: example.com
  dns_servers:
    - 123.127.255.240
    - 123.127.255.241
    - 123.127.255.242

  resourcepool: Resources
  cluster: Prod

  datastore: HUGE-DATASTORE-Cluster
  folder: Development
  datacenter: DC1
  host: c4212n-002.domain.com
  template: False
  power_on: True
  extra_config:
    mem.hotadd: 'yes'
    guestinfo.foo: bar
    guestinfo.domain: foobar.com
    guestinfo.customVariable: customValue

  deploy: True
  customization: True
  private_key: /root/.ssh/mykey.pem
  ssh_username: cloud-user
  password: veryVeryBadPassword
  minion:
    master: 123.127.193.105

  file_map:
    /path/to/local/custom/script: /path/to/remote/script
    /path/to/local/file: /path/to/remote/file
    /srv/salt/yum/epel.repo: /etc/yum.repos.d/epel.repo

  hardware_version: 10
  image: centos64Guest
```

**provider** Enter the name that was specified when the cloud provider config was created.

**clonefrom** Enter the name of the VM/template to clone from. If not specified, the VM will be created without cloning.

**num_cpus** Enter the number of vCPUS that you want the VM/template to have. If not specified, the current VM/template's vCPU count is used.

**memory** Enter the memory size (in MB or GB) that you want the VM/template to have. If not specified, the current VM/template's memory size is used. Example `memory: 8GB` or `memory: 8192MB`.

**devices** Enter the device specifications here. Currently, the following devices can be created or reconfigured:

**cd** Enter the CD/DVD drive specification here. If the CD/DVD drive doesn't exist, it will be created with the specified configuration. If the CD/DVD drive already exists, it will be reconfigured with the specifications. The following options can be specified per CD/DVD drive:

**device_type** Specify how the CD/DVD drive should be used. Currently supported types are `client_device` and `datastore_iso_file`. Default is `device_type: client_device`

**iso_path** Enter the path to the iso file present on the datastore only if `device_type: datastore_iso_file`. The syntax to specify this is `iso_path: "[datastoreName] vmimages/tools-isoimages/linux.iso"`. This field is ignored if `device_type: client_device`

**mode** Enter the mode of connection only if `device_type: client_device`. Currently supported modes are `passthrough` and `atapi`. This field is ignored if `device_type: datastore_iso_file`. Default is `mode: passthrough`

**controller** Specify the IDE controller label to which this drive should be attached. This should be specified only when creating both the specified IDE controller as well as the CD/DVD drive at the same time.

**disk** Enter the disk specification here. If the hard disk doesn't exist, it will be created with the provided size. If the hard disk already exists, it will be expanded if the provided size is greater than the current size of the disk.

**size** Enter the size of disk in GB

**thin_provision** Specifies whether the disk should be thin provisioned or not. Default is `thin_provision: False`. .. versionadded:: 2016.3.0

**controller** Specify the SCSI controller label to which this disk should be attached. This should be specified only when creating both the specified SCSI controller as well as the hard disk at the same time.

**network** Enter the network adapter specification here. If the network adapter doesn't exist, a new network adapter will be created with the specified network name, type and other configuration. If the network adapter already exists, it will be reconfigured with the specifications. The following additional options can be specified per network adapter (See example above):

**name** Enter the network name you want the network adapter to be mapped to.

**adapter_type** Enter the network adapter type you want to create. Currently supported types are `vmxnet`, `vmxnet2`, `vmxnet3`, `e1000` and `e1000e`. If no type is specified, by default `vmxnet3` will be used.

**switch_type** Enter the type of switch to use. This decides whether to use a standard switch network or a distributed virtual portgroup. Currently supported types are `standard` for standard portgroups and `distributed` for distributed virtual portgroups.

**ip** Enter the static IP you want the network adapter to be mapped to. If the network specified is DHCP enabled, you do not have to specify this.

**gateway** Enter the gateway for the network as a list. If the network specified is DHCP enabled, you do not have to specify this.

**subnet_mask** Enter the subnet mask for the network. If the network specified is DHCP enabled, you do not have to specify this.

**domain** Enter the domain to be used with the network adapter. If the network specified is DHCP enabled, you do not have to specify this.

**scsi** Enter the SCSI controller specification here. If the SCSI controller doesn't exist, a new SCSI controller will be created of the specified type. If the SCSI controller already exists, it will be reconfigured with the specifications. The following additional options can be specified per SCSI controller:

**type** Enter the SCSI controller type you want to create. Currently supported types are `lsilogic`, `lsilogic_sas` and `paravirtual`. Type must be specified when creating a new SCSI controller.

**bus_sharing** Specify this if sharing of virtual disks between virtual machines is desired. The following can be specified:

**virtual** Virtual disks can be shared between virtual machines on the same server.

**physical** Virtual disks can be shared between virtual machines on any server.

**no** Virtual disks cannot be shared between virtual machines.

**ide** Enter the IDE controller specification here. If the IDE controller doesn't exist, a new IDE controller will be created. If the IDE controller already exists, no further changes to it will me made.

**`domain`** Enter the global domain name to be used for DNS. If not specified and if the VM name is a FQDN, `domain` is set to the domain from the VM name. Default is `local`.

**`dns_servers`** Enter the list of DNS servers to use in order of priority.

**`resourcepool`** Enter the name of the resourcepool to which the new virtual machine should be attached. This determines what compute resources will be available to the clone.

---

**Note:**

- For a clone operation from a virtual machine, it will use the same resourcepool as the original virtual machine unless specified.
- For a clone operation from a template to a virtual machine, specifying either this or cluster is required. If both are specified, the resourcepool value will be used.
- For a clone operation to a template, this argument is ignored.

---

**`cluster`** Enter the name of the cluster whose resource pool the new virtual machine should be attached to.

---

**Note:**

- For a clone operation from a virtual machine, it will use the same cluster's resourcepool as the original virtual machine unless specified.
- For a clone operation from a template to a virtual machine, specifying either this or resourcepool is required. If both are specified, the resourcepool value will be used.
- For a clone operation to a template, this argument is ignored.

---

**`datastore`** Enter the name of the datastore or the datastore cluster where the virtual machine should be located on physical storage. If not specified, the current datastore is used.

---

**Note:**

- If you specify a datastore cluster name, DRS Storage recommendation is automatically applied.
- If you specify a datastore name, DRS Storage recommendation is disabled.

**folder** Enter the name of the folder that will contain the new virtual machine.

Note:

- For a clone operation from a VM/template, the new VM/template will be added to the same folder that the original VM/template belongs to unless specified.
- If both folder and datacenter are specified, the folder value will be used.

**datacenter** Enter the name of the datacenter that will contain the new virtual machine.

Note:

- For a clone operation from a VM/template, the new VM/template will be added to the same folder that the original VM/template belongs to unless specified.
- If both folder and datacenter are specified, the folder value will be used.

**host** Enter the name of the target host where the virtual machine should be registered.

If not specified:

Note:

- If resource pool is not specified, current host is used.
- If resource pool is specified, and the target pool represents a stand-alone host, the host is used.
- If resource pool is specified, and the target pool represents a DRS-enabled cluster, a host selected by DRS is used.
- If resource pool is specified and the target pool represents a cluster without DRS enabled, an InvalidArgument exception be thrown.

**template** Specifies whether the new virtual machine should be marked as a template or not. Default is `template: False`.

**power_on** Specifies whether the new virtual machine should be powered on or not. If `template: True` is set, this field is ignored. Default is `power_on: True`.

**extra_config** Specifies the additional configuration information for the virtual machine. This describes a set of modifications to the additional options. If the key is already present, it will be reset with the new value provided. Otherwise, a new option is added. Keys with empty values will be removed.

**deploy** Specifies if salt should be installed on the newly created VM. Default is `True` so salt will be installed using the bootstrap script. If `template: True` or `power_on: False` is set, this field is ignored and salt will not be installed.

**customization** Specify whether the new virtual machine should be customized or not. If `customization: False` is set, the new virtual machine will not be customized. Default is `customization: True`.

**private_key** Specify the path to the private key to use to be able to ssh to the VM.

**ssh_username** Specify the username to use in order to ssh to the VM. Default is `root`

**password** Specify a password to use in order to ssh to the VM. If `private_key` is specified, you do not need to specify this.

**minion** Specify custom minion configuration you want the salt minion to have. A good example would be to specify the `master` as the IP/DNS name of the master.

**file_map** Specify file/files you want to copy to the VM before the bootstrap script is run and salt is installed. A good example of using this would be if you need to put custom repo files on the server in case your server will be in a private network and cannot reach external networks.

**hardware_version** Specify the virtual hardware version for the vm/template that is supported by the host.

**image** Specify the guest id of the VM. For a full list of supported values see the VMware vSphere documentation:

http://pubs.vmware.com/vsphere-60/topic/com.vmware.wssdk.apiref.doc/vim.vm.GuestOsDescriptor.GuestOsIdentifier.html

---

**Note**: For a clone operation, this argument is ignored.

---

### Cloning a VM

Cloning VMs/templates is the easiest and the preferred way to work with VMs using the VMware driver.

---

**Note**: Cloning operations are unsupported on standalone ESXi hosts, a vCenter server will be required.

---

Example of a minimal profile:

```
my-minimal-clone:
  provider: vcenter01
  clonefrom: 'test-vm'
```

When cloning a VM, all the profile configuration parameters are optional and the configuration gets inherited from the clone.

Example to add/resize a disk:

```
my-disk-example:
  provider: vcenter01
  clonefrom: 'test-vm'

  devices:
    disk:
      Hard disk 1:
        size: 30
```

Depending on the configuration of the VM that is getting cloned, the disk in the resulting clone will differ.

---

**Note**:

- If the VM has no disk named `Hard disk 1' an empty disk with the specified size will be added to the clone.
- If the VM has a disk named `Hard disk 1' and the size specified is larger than the original disk, an empty disk with the specified size will be added to the clone.
- If the VM has a disk named `Hard disk 1' and the size specified is smaller than the original disk, an empty disk with the original size will be added to the clone.

---

Example to reconfigure the memory and number of vCPUs:

```
my-disk-example:
  provider: vcenter01
  clonefrom: 'test-vm'

  memory: 16GB
  num_cpus: 8
```

### Cloning a Template

Cloning a template works similar to cloning a VM except for the fact that a resource pool or cluster must be specified additionally in the profile.

Example of a minimal profile:

```
my-template-clone:
 provider: vcenter01
 clonefrom: 'test-template'
 cluster: 'Prod'
```

### Cloning from a Snapshot

New in version 2016.3.5.

Cloning from a snapshot requires that one of the supported options be set in the cloud profile.

Supported options are `createNewChildDiskBacking`, `moveChildMostDiskBacking`, `moveAllDiskBackingsAndAllowSharing` and `moveAllDiskBackingsAndDisallowSharing`.

Example of a minimal profile:

```
my-template-clone:
  provider: vcenter01
  clonefrom: 'salt_vm'
  snapshot:
    disk_move_type: createNewChildDiskBacking
    # these types are also supported
    # disk_move_type: moveChildMostDiskBacking
    # disk_move_type: moveAllDiskBackingsAndAllowSharing
    # disk_move_type: moveAllDiskBackingsAndDisallowSharing
```

### Creating a VM

New in version 2016.3.0.

Creating a VM from scratch means that more configuration has to be specified in the profile because there is no place to inherit configuration from.

---

**Note**: Unlike most cloud drivers that use prepared images, creating VMs using VMware cloud driver needs an installation method that requires no human interaction. For Example: preseeded ISO, kickstart URL or network PXE boot.

---

Example of a minimal profile:

```
my-minimal-profile:
  provider: esx01
  datastore: esx01-datastore
  resourcepool: Resources
  folder: vm
```

**Note**: The example above contains the minimum required configuration needed to create a VM from scratch. The resulting VM will only have 1 VCPU, 32MB of RAM and will not have any storage or networking.

Example of a complete profile:

```
my-complete-example:
  provider: esx01
  datastore: esx01-datastore
  resourcepool: Resources
  folder: vm

  num_cpus: 2
  memory: 8GB

  image: debian7_64Guest

  devices:
    scsi:
      SCSI controller 0:
        type: lsilogic_sas
    ide:
      IDE 0: {}
      IDE 1: {}
    disk:
      Hard disk 0:
        controller: 'SCSI controller 0'
        size: 20
        mode: 'independent_nonpersistent'
    cd:
      CD/DVD drive 0:
        controller: 'IDE 0'
        device_type: datastore_iso_file
        iso_path: '[esx01-datastore] debian-8-with-preseed.iso'
    network:
      Network adapter 0:
        name: 'VM Network'
        swith_type: standard
```

**Note**: Depending on VMware ESX/ESXi version, an exact match for `image` might not be available. In such cases, the closest match to another `image` should be used. In the example above, a Debian 8 VM is created using the image `debian7_64Guest` which is for a Debian 7 guest.

### Specifying disk backing mode

New in version 2016.3.5.

Disk backing mode can now be specified when cloning a VM. This option can be set in the cloud profile as shown in example below:

```
my-vm:
  provider: esx01
  datastore: esx01-datastore
  resourcepool: Resources
  folder: vm


  devices:
    disk:
      Hard disk 1:
        mode: 'independent_nonpersistent'
        size: 42

      Hard disk 2:
        mode: 'independent_nonpersistent'
```

### 9.7.22 Getting Started With vSphere

**Note**: Deprecated since version 2016.11.0: The `vsphere` cloud driver has been deprecated in favor of the `vmware` cloud driver and will be removed in Salt 2016.11.0. Please refer to *Getting started with VMware* instead to get started with the configuration.

VMware vSphere is a management platform for virtual infrastructure and cloud computing.

#### Dependencies

The vSphere module for Salt Cloud requires the PySphere package, which is available at PyPI:

https://pypi.python.org/pypi/pysphere

This package can be installed using *pip* or *easy_install*:

```
# pip install pysphere
# easy_install pysphere
```

#### Configuration

Set up the cloud config at `/etc/salt/cloud.providers` or in the `/etc/salt/cloud.providers.d/` directory:

```
my-vsphere-config:
  driver: vsphere
  # Set the vSphere access credentials
  user: marco
  password: polo
  # Set the URL of your vSphere server
  url: 'vsphere.example.com'
```

**Note**: Changed in version 2015.8.0.

The `provider` parameter in cloud provider definitions was renamed to `driver`. This change was made to avoid confusion with the `provider` parameter that is used in cloud profile definitions. Cloud provider definitions now use `driver` to refer to the Salt cloud module that provides the underlying functionality to connect to a cloud host, while cloud profiles continue to use `provider` to refer to provider configurations that you define.

### Profiles

### Cloud Profiles

vSphere uses a Managed Object Reference to identify objects located in vCenter. The MOR ID's are used when configuring a vSphere cloud profile. Use the following reference when locating the MOR's for the cloud profile.

http://kb.vmware.com/selfservice/microsites/search.do?cmd=displayKC&docType=kc&externalId=1017126&sliceId=1&docTypeID=DT_KB_1_1&dialogID=520386078&stateId=1%200%20520388386

Set up an initial profile at `/etc/salt/cloud.profiles` or in the `/etc/salt/cloud.profiles.d` directory:

```
vsphere-centos:
  provider: my-vsphere-config
  image: centos
  # Optional
  datastore: datastore-15
  resourcepool: resgroup-8
  folder: salt-cloud
  host: host-9
  template: False
```

#### provider

Enter the name that was specified when the cloud provider profile was created.

#### image

Images available to build an instance can be found using the *--list-images* option:

```
# salt-cloud --list-images my-vsphere-config
```

#### datastore

The MOR of the datastore where the virtual machine should be located. If not specified, the current datastore is used.

#### resourcepool

The MOR of the resourcepool to be used for the new vm. If not set, it will use the same resourcepool as the original vm.

#### folder

Name of the folder that will contain the new VM. If not set, the VM will be added to the folder the original VM belongs to.

#### host

The MOR of the host where the vm should be registered.

**If not specified**:

- if resourcepool is not specified, the current host is used.
- if resourcepool is specified, and the target pool represents a stand-alone host, the host is used.
- if resourcepool is specified, and the target pool represents a DRS-enabled cluster, a host selected by DRS is used.
- if resourcepool is specified, and the target pool represents a cluster without DRS enabled, an InvalidArgument exception will be thrown.

#### template

Specifies whether or not the new virtual machine should be marked as a template. Default is False.

## 9.8 Miscellaneous Options

### 9.8.1 Miscellaneous Salt Cloud Options

This page describes various miscellaneous options available in Salt Cloud

#### Deploy Script Arguments

Custom deploy scripts are unlikely to need custom arguments to be passed to them, but salt-bootstrap has been extended quite a bit, and this may be necessary. script_args can be specified in either the profile or the map file, to pass arguments to the deploy script:

```
ec2-amazon:
  provider: my-ec2-config
  image: ami-1624987f
  size: t1.micro
  ssh_username: ec2-user
  script: bootstrap-salt
  script_args: -c /tmp/
```

This has also been tested to work with pipes, if needed:

```
script_args: | head
```

### Selecting the File Transport

By default, Salt Cloud uses SFTP to transfer files to Linux hosts. However, if SFTP is not available, or specific SCP functionality is needed, Salt Cloud can be configured to use SCP instead.

```
file_transport: sftp
file_transport: scp
```

### Sync After Install

Salt allows users to create custom modules, grains, and states which can be synchronised to minions to extend Salt with further functionality.

This option will inform Salt Cloud to synchronise your custom modules, grains, states or all these to the minion just after it has been created. For this to happen, the following line needs to be added to the main cloud configuration file:

```
sync_after_install: all
```

The available options for this setting are:

```
modules
grains
states
all
```

### Setting Up New Salt Masters

It has become increasingly common for users to set up multi-hierarchal infrastructures using Salt Cloud. This sometimes involves setting up an instance to be a master in addition to a minion. With that in mind, you can now lay down master configuration on a machine by specifying master options in the profile or map file.

```
make_master: True
```

This will cause Salt Cloud to generate master keys for the instance, and tell salt-bootstrap to install the salt-master package, in addition to the salt-minion package.

The default master configuration is usually appropriate for most users, and will not be changed unless specific master configuration has been added to the profile or map:

```
master:
  user: root
  interface: 0.0.0.0
```

### Setting Up a Salt Syndic with Salt Cloud

In addition to *setting up new Salt Masters*, syndic`s can also be provisioned using Salt Cloud. In order to set up a Salt Syndic via Salt Cloud, a Salt Master needs to be installed on the new machine and a master configuration file needs to be set up using the ``make_master` setting. This setting can be defined either in a profile config file or in a map file:

```
make_master: True
```

To install the Salt Syndic, the only other specification that needs to be configured is the `syndic_master` key to specify the location of the master that the syndic will be reporting to. This modification needs to be placed in the `master` setting, which can be configured either in the profile, provider, or `/etc/salt/cloud` config file:

```
master:
  syndic_master: 123.456.789  # may be either an IP address or a hostname
```

Many other Salt Syndic configuration settings and specifications can be passed through to the new syndic machine via the `master` configuration setting. See the *Salt Syndic* documentation for more information.

### SSH Port

By default ssh port is set to port 22. If you want to use a custom port in provider, profile, or map blocks use ssh_port option.

New in version 2015.5.0.

```
ssh_port: 2222
```

### SSH Port

By default ssh port is set to port 22. If you want to use a custom port in provider, profile, or map blocks use ssh_port option.

```
ssh_port: 2222
```

### Delete SSH Keys

When Salt Cloud deploys an instance, the SSH pub key for the instance is added to the known_hosts file for the user that ran the salt-cloud command. When an instance is deployed, a cloud host generally recycles the IP address for the instance. When Salt Cloud attempts to deploy an instance using a recycled IP address that has previously been accessed from the same machine, the old key in the known_hosts file will cause a conflict.

In order to mitigate this issue, Salt Cloud can be configured to remove old keys from the known_hosts file when destroying the node. In order to do this, the following line needs to be added to the main cloud configuration file:

```
delete_sshkeys: True
```

### Keeping /tmp/ Files

When Salt Cloud deploys an instance, it uploads temporary files to /tmp/ for salt-bootstrap to put in place. After the script has run, they are deleted. To keep these files around (mostly for debugging purposes), the --keep-tmp option can be added:

```
salt-cloud -p myprofile mymachine --keep-tmp
```

For those wondering why /tmp/ was used instead of /root/, this had to be done for images which require the use of sudo, and therefore do not allow remote root logins, even for file transfers (which makes /root/ unavailable).

### Hide Output From Minion Install

By default Salt Cloud will stream the output from the minion deploy script directly to STDOUT. Although this can been very useful, in certain cases you may wish to switch this off. The following config option is there to enable or disable this output:

```
display_ssh_output: False
```

### Connection Timeout

There are several stages when deploying Salt where Salt Cloud needs to wait for something to happen. The VM getting it's IP address, the VM's SSH port is available, etc.

If you find that the Salt Cloud defaults are not enough and your deployment fails because Salt Cloud did not wait log enough, there are some settings you can tweak.

---

**Note**

All settings should be provided in lowercase All values should be provided in seconds

---

You can tweak these settings globally, per cloud provider, or event per profile definition.

#### wait_for_ip_timeout

The amount of time Salt Cloud should wait for a VM to start and get an IP back from the cloud host. Default: varies by cloud provider ( between 5 and 25 minutes)

#### wait_for_ip_interval

The amount of time Salt Cloud should sleep while querying for the VM's IP. Default: varies by cloud provider ( between .5 and 10 seconds)

#### ssh_connect_timeout

The amount of time Salt Cloud should wait for a successful SSH connection to the VM. Default: varies by cloud provider (between 5 and 15 minutes)

#### wait_for_passwd_timeout

The amount of time until an ssh connection can be established via password or ssh key. Default: varies by cloud provider (mostly 15 seconds)

#### wait_for_passwd_maxtries

The number of attempts to connect to the VM until we abandon. Default: 15 attempts

#### wait_for_fun_timeout

Some cloud drivers check for an available IP or a successful SSH connection using a function, namely, SoftLayer, and SoftLayer-HW. So, the amount of time Salt Cloud should retry such functions before failing. Default: 15 minutes.

#### wait_for_spot_timeout

The amount of time Salt Cloud should wait before an EC2 Spot instance is available. This setting is only available for the EC2 cloud driver. Default: 10 minutes

### Salt Cloud Cache

Salt Cloud can maintain a cache of node data, for supported providers. The following options manage this functionality.

#### update_cachedir

On supported cloud providers, whether or not to maintain a cache of nodes returned from a --full-query. The data will be stored in `msgpack` format under `<SALT_CACHEDIR>/cloud/active/<DRIVER>/<PROVIDER>/<NODE_NAME>.p`. This setting can be True or False.

#### diff_cache_events

When the cloud cachedir is being managed, if differences are encountered between the data that is returned live from the cloud host and the data in the cache, fire events which describe the changes. This setting can be True or False.

Some of these events will contain data which describe a node. Because some of the fields returned may contain sensitive data, the `cache_event_strip_fields` configuration option exists to strip those fields from the event return.

```
cache_event_strip_fields:
  - password
  - priv_key
```

The following are events that can be fired based on this data.

#### salt/cloud/minionid/cache_node_new

A new node was found on the cloud host which was not listed in the cloud cachedir. A dict describing the new node will be contained in the event.

#### salt/cloud/minionid/cache_node_missing

A node that was previously listed in the cloud cachedir is no longer available on the cloud host.

#### salt/cloud/minionid/cache_node_diff

One or more pieces of data in the cloud cachedir has changed on the cloud host. A dict containing both the old and the new data will be contained in the event.

### SSH Known Hosts

Normally when bootstrapping a VM, salt-cloud will ignore the SSH host key. This is because it does not know what the host key is before starting (because it doesn't exist yet). If strict host key checking is turned on without the key in the `known_hosts` file, then the host will never be available, and cannot be bootstrapped.

If a provider is able to determine the host key before trying to bootstrap it, that provider's driver can add it to the `known_hosts` file, and then turn on strict host key checking. This can be set up in the main cloud configuration file (normally `/etc/salt/cloud`) or in the provider-specific configuration file:

```
known_hosts_file: /path/to/.ssh/known_hosts
```

If this is not set, it will default to `/dev/null`, and strict host key checking will be turned off.

It is highly recommended that this option is *not* set, unless the user has verified that the provider supports this functionality, and that the image being used is capable of providing the necessary information. At this time, only the EC2 driver supports this functionality.

### SSH Agent

New in version 2015.5.0.

If the ssh key is not stored on the server salt-cloud is being run on, set ssh_agent, and salt-cloud will use the forwarded ssh-agent to authenticate.

```
ssh_agent: True
```

### File Map Upload

New in version 2014.7.0.

The `file_map` option allows an arbitrary group of files to be uploaded to the target system before running the deploy script. This functionality requires a provider uses salt.utils.cloud.bootstrap(), which is currently limited to the ec2, gce, openstack and nova drivers.

The `file_map` can be configured globally in `/etc/salt/cloud`, or in any cloud provider or profile file. For example, to upload an extra package or a custom deploy script, a cloud profile using `file_map` might look like:

```
ubuntu14:
  provider: ec2-config
  image: ami-98aa1cf0
  size: t1.micro
  ssh_username: root
  securitygroup: default
  file_map:
    /local/path/to/custom/script: /remote/path/to/use/custom/script
    /local/path/to/package: /remote/path/to/store/package
```

## 9.9 Troubleshooting Steps

### 9.9.1 Troubleshooting Salt Cloud

This page describes various steps for troubleshooting problems that may arise while using Salt Cloud.

#### Virtual Machines Are Created, But Do Not Respond

Are TCP ports 4505 and 4506 open on the master? This is easy to overlook on new masters. Information on how to open firewall ports on various platforms can be found *here*.

#### Generic Troubleshooting Steps

This section describes a set of instructions that are useful to a large number of situations, and are likely to solve most issues that arise.

---

**Version Compatibility**

One of the most common issues that Salt Cloud users run into is import errors. These are often caused by version compatibility issues with Salt.

Salt 0.16.x works with Salt Cloud 0.8.9 or greater.

Salt 0.17.x requires Salt Cloud 0.8.11.

Releases after 0.17.x (0.18 or greater) should not encounter issues as Salt Cloud has been merged into Salt itself.

---

#### Debug Mode

Frequently, running Salt Cloud in debug mode will reveal information about a deployment which would otherwise not be obvious:

```
salt-cloud -p myprofile myinstance -l debug
```

Keep in mind that a number of messages will appear that look at first like errors, but are in fact intended to give developers factual information to assist in debugging. A number of messages that appear will be for cloud providers that you do not have configured; in these cases, the message usually is intended to confirm that they are not configured.

#### Salt Bootstrap

By default, Salt Cloud uses the Salt Bootstrap script to provision instances:

This script is packaged with Salt Cloud, but may be updated without updating the Salt package:

```
salt-cloud -u
```

#### The Bootstrap Log

If the default deploy script was used, there should be a file in the `/tmp/` directory called `bootstrap-salt.log`. This file contains the full output from the deployment, including any errors that may have occurred.

### Keeping Temp Files

Salt Cloud uploads minion-specific files to instances once they are available via SSH, and then executes a deploy script to put them into the correct place and install Salt. The `--keep-tmp` option will instruct Salt Cloud not to remove those files when finished with them, so that the user may inspect them for problems:

```
salt-cloud -p myprofile myinstance --keep-tmp
```

By default, Salt Cloud will create a directory on the target instance called `/tmp/.saltcloud/`. This directory should be owned by the user that is to execute the deploy script, and should have permissions of `0700`.

Most cloud hosts are configured to use `root` as the default initial user for deployment, and as such, this directory and all files in it should be owned by the `root` user.

The `/tmp/.saltcloud/` directory should the following files:

- A `deploy.sh` script. This script should have permissions of `0755`.
- A `.pem` and `.pub` key named after the minion. The `.pem` file should have permissions of `0600`. Ensure that the `.pem` and `.pub` files have been properly copied to the `/etc/salt/pki/minion/` directory.
- A file called `minion`. This file should have been copied to the `/etc/salt/` directory.
- Optionally, a file called `grains`. This file, if present, should have been copied to the `/etc/salt/` directory.

### Unprivileged Primary Users

Some cloud hosts, most notably EC2, are configured with a different primary user. Some common examples are `ec2-user`, `ubuntu`, `fedora`, and `bitnami`. In these cases, the `/tmp/.saltcloud/` directory and all files in it should be owned by this user.

Some cloud hosts, such as EC2, are configured to not require these users to provide a password when using the `sudo` command. Because it is more secure to require `sudo` users to provide a password, other hosts are configured that way.

If this instance is required to provide a password, it needs to be configured in Salt Cloud. A password for sudo to use may be added to either the provider configuration or the profile configuration:

```
sudo_password: mypassword
```

### `/tmp/` is Mounted as `noexec`

It is more secure to mount the `/tmp/` directory with a `noexec` option. This is uncommon on most cloud hosts, but very common in private environments. To see if the `/tmp/` directory is mounted this way, run the following command:

```
mount | grep tmp
```

The if the output of this command includes a line that looks like this, then the `/tmp/` directory is mounted as `noexec`:

```
tmpfs on /tmp type tmpfs (rw,noexec)
```

If this is the case, then the `deploy_command` will need to be changed in order to run the deploy script through the `sh` command, rather than trying to execute it directly. This may be specified in either the provider or the profile config:

```
deploy_command: sh /tmp/.saltcloud/deploy.sh
```

Please note that by default, Salt Cloud will place its files in a directory called `/tmp/.saltcloud/`. This may be also be changed in the provider or profile configuration:

```
tmp_dir: /tmp/.saltcloud/
```

If this directory is changed, then the `deploy_command` need to be changed in order to reflect the `tmp_dir` configuration.

#### Executing the Deploy Script Manually

If all of the files needed for deployment were successfully uploaded to the correct locations, and contain the correct permissions and ownerships, the deploy script may be executed manually in order to check for other issues:

```
cd /tmp/.saltcloud/
./deploy.sh
```

## 9.10 Extending Salt Cloud

### 9.10.1 Writing Cloud Driver Modules

Salt Cloud runs on a module system similar to the main Salt project. The modules inside saltcloud exist in the `salt/cloud/clouds` directory of the salt source.

There are two basic types of cloud modules. If a cloud host is supported by libcloud, then using it is the fastest route to getting a module written. The Apache Libcloud project is located at:

http://libcloud.apache.org/

Not every cloud host is supported by libcloud. Additionally, not every feature in a supported cloud host is necessarily supported by libcloud. In either of these cases, a module can be created which does not rely on libcloud.

#### All Driver Modules

The following functions are required by all driver modules, whether or not they are based on libcloud.

#### The __virtual__() Function

This function determines whether or not to make this cloud module available upon execution. Most often, it uses `get_configured_provider()` to determine if the necessary configuration has been set up. It may also check for necessary imports, to decide whether to load the module. In most cases, it will return a `True` or `False` value. If the name of the driver used does not match the filename, then that name should be returned instead of `True`. An example of this may be seen in the Azure module:

https://github.com/saltstack/salt/tree/develop/salt/cloud/clouds/msazure.py

### The get_configured_provider() Function

This function uses `config.is_provider_configured()` to determine wither all required information for this driver has been configured. The last value in the list of required settings should be followed by a comma.

### Libcloud Based Modules

Writing a cloud module based on libcloud has two major advantages. First of all, much of the work has already been done by the libcloud project. Second, most of the functions necessary to Salt have already been added to the Salt Cloud project.

### The create() Function

The most important function that does need to be manually written is the `create()` function. This is what is used to request a virtual machine to be created by the cloud host, wait for it to become available, and then (optionally) log in and install Salt on it.

A good example to follow for writing a cloud driver module based on libcloud is the module provided for Linode:

https://github.com/saltstack/salt/tree/develop/salt/cloud/clouds/linode.py

The basic flow of a `create()` function is as follows:

- Send a request to the cloud host to create a virtual machine.
- Wait for the virtual machine to become available.
- Generate kwargs to be used to deploy Salt.
- Log into the virtual machine and deploy Salt.
- Return a data structure that describes the newly-created virtual machine.

At various points throughout this function, events may be fired on the Salt event bus. Four of these events, which are described below, are required. Other events may be added by the user, where appropriate.

When the `create()` function is called, it is passed a data structure called `vm_`. This dict contains a composite of information describing the virtual machine to be created. A dict called `__opts__` is also provided by Salt, which contains the options used to run Salt Cloud, as well as a set of configuration and environment variables.

The first thing the `create()` function must do is fire an event stating that it has started the create process. This event is tagged `salt/cloud/<vm name>/creating`. The payload contains the names of the VM, profile, and provider.

A set of kwargs is then usually created, to describe the parameters required by the cloud host to request the virtual machine.

An event is then fired to state that a virtual machine is about to be requested. It is tagged as `salt/cloud/<vm name>/requesting`. The payload contains most or all of the parameters that will be sent to the cloud host. Any private information (such as passwords) should not be sent in the event.

After a request is made, a set of deploy kwargs will be generated. These will be used to install Salt on the target machine. Windows options are supported at this point, and should be generated, even if the cloud host does not currently support Windows. This will save time in the future if the host does eventually decide to support Windows.

An event is then fired to state that the deploy process is about to begin. This event is tagged `salt/cloud/<vm name>/deploying`. The payload for the event will contain a set of deploy kwargs, useful for debugging purposed. Any private data, including passwords and keys (including public keys) should be stripped from the deploy kwargs before the event is fired.

If any Windows options have been passed in, the `salt.utils.cloud.deploy_windows()` function will be called. Otherwise, it will be assumed that the target is a Linux or Unix machine, and the `salt.utils.cloud.deploy_script()` will be called.

Both of these functions will wait for the target machine to become available, then the necessary port to log in, then a successful login that can be used to install Salt. Minion configuration and keys will then be uploaded to a temporary directory on the target by the appropriate function. On a Windows target, the Windows Minion Installer will be run in silent mode. On a Linux/Unix target, a deploy script (`bootstrap-salt.sh`, by default) will be run, which will auto-detect the operating system, and install Salt using its native package manager. These do not need to be handled by the developer in the cloud module.

The `salt.utils.cloud.validate_windows_cred()` function has been extended to take the number of retries and retry_delay parameters in case a specific cloud host has a delay between providing the Windows credentials and the credentials being available for use. In their `create()` function, or as a a sub-function called during the creation process, developers should use the `win_deploy_auth_retries` and `win_deploy_auth_retry_delay` parameters from the provider configuration to allow the end-user the ability to customize the number of tries and delay between tries for their particular host.

After the appropriate deploy function completes, a final event is fired which describes the virtual machine that has just been created. This event is tagged `salt/cloud/<vm name>/created`. The payload contains the names of the VM, profile, and provider.

Finally, a dict (queried from the provider) which describes the new virtual machine is returned to the user. Because this data is not fired on the event bus it can, and should, return any passwords that were returned by the cloud host. In some cases (for example, Rackspace), this is the only time that the password can be queried by the user; post-creation queries may not contain password information (depending upon the host).

### The libcloudfuncs Functions

A number of other functions are required for all cloud hosts. However, with libcloud-based modules, these are all provided for free by the libcloudfuncs library. The following two lines set up the imports:

```
from salt.cloud.libcloudfuncs import *   # pylint: disable=W0614,W0401
from salt.utils import namespaced_function
```

And then a series of declarations will make the necessary functions available within the cloud module.

```
get_size = namespaced_function(get_size, globals())
get_image = namespaced_function(get_image, globals())
avail_locations = namespaced_function(avail_locations, globals())
avail_images = namespaced_function(avail_images, globals())
avail_sizes = namespaced_function(avail_sizes, globals())
script = namespaced_function(script, globals())
destroy = namespaced_function(destroy, globals())
list_nodes = namespaced_function(list_nodes, globals())
list_nodes_full = namespaced_function(list_nodes_full, globals())
list_nodes_select = namespaced_function(list_nodes_select, globals())
show_instance = namespaced_function(show_instance, globals())
```

If necessary, these functions may be replaced by removing the appropriate declaration line, and then adding the function as normal.

These functions are required for all cloud modules, and are described in detail in the next section.

### Non-Libcloud Based Modules

In some cases, using libcloud is not an option. This may be because libcloud has not yet included the necessary driver itself, or it may be that the driver that is included with libcloud does not contain all of the necessary features required by the developer. When this is the case, some or all of the functions in `libcloudfuncs` may be replaced. If they are all replaced, the libcloud imports should be absent from the Salt Cloud module.

A good example of a non-libcloud driver is the DigitalOcean driver:

https://github.com/saltstack/salt/tree/develop/salt/cloud/clouds/digital_ocean.py

### The `create()` Function

The `create()` function must be created as described in the libcloud-based module documentation.

### The get_size() Function

This function is only necessary for libcloud-based modules, and does not need to exist otherwise.

### The get_image() Function

This function is only necessary for libcloud-based modules, and does not need to exist otherwise.

### The avail_locations() Function

This function returns a list of locations available, if the cloud host uses multiple data centers. It is not necessary if the cloud host uses only one data center. It is normally called using the `--list-locations` option.

```
salt-cloud --list-locations my-cloud-provider
```

### The avail_images() Function

This function returns a list of images available for this cloud provider. There are not currently any known cloud providers that do not provide this functionality, though they may refer to images by a different name (for example, ``templates''). It is normally called using the `--list-images` option.

```
salt-cloud --list-images my-cloud-provider
```

### The avail_sizes() Function

This function returns a list of sizes available for this cloud provider. Generally, this refers to a combination of RAM, CPU, and/or disk space. This functionality may not be present on some cloud providers. For example, the Parallels module breaks down RAM, CPU, and disk space into separate options, whereas in other providers, these options are baked into the image. It is normally called using the `--list-sizes` option.

```
salt-cloud --list-sizes my-cloud-provider
```

### The script() Function

This function builds the deploy script to be used on the remote machine. It is likely to be moved into the `salt.utils.cloud` library in the near future, as it is very generic and can usually be copied wholesale from another module. An excellent example is in the Azure driver.

### The destroy() Function

This function irreversibly destroys a virtual machine on the cloud provider. Before doing so, it should fire an event on the Salt event bus. The tag for this event is `salt/cloud/<vm name>/destroying`. Once the virtual machine has been destroyed, another event is fired. The tag for that event is `salt/cloud/<vm name>/destroyed`.

This function is normally called with the `-d` options:

```
salt-cloud -d myinstance
```

### The list_nodes() Function

This function returns a list of nodes available on this cloud provider, using the following fields:

- id (str)
- image (str)
- size (str)
- state (str)
- private_ips (list)
- public_ips (list)

No other fields should be returned in this function, and all of these fields should be returned, even if empty. The private_ips and public_ips fields should always be of a list type, even if empty, and the other fields should always be of a str type. This function is normally called with the `-Q` option:

```
salt-cloud -Q
```

### The list_nodes_full() Function

All information available about all nodes should be returned in this function. The fields in the list_nodes() function should also be returned, even if they would not normally be provided by the cloud provider. This is because some functions both within Salt and 3rd party will break if an expected field is not present. This function is normally called with the `-F` option:

```
salt-cloud -F
```

### The list_nodes_select() Function

This function returns only the fields specified in the `query.selection` option in `/etc/salt/cloud`. Because this function is so generic, all of the heavy lifting has been moved into the `salt.utils.cloud` library.

A function to call `list_nodes_select()` still needs to be present. In general, the following code can be used as-is:

```
def list_nodes_select(call=None):
    '''
    Return a list of the VMs that are on the provider, with select fields
    '''
    return salt.utils.cloud.list_nodes_select(
        list_nodes_full('function'), __opts__['query.selection'], call,
    )
```

However, depending on the cloud provider, additional variables may be required. For instance, some modules use a `conn` object, or may need to pass other options into `list_nodes_full()`. In this case, be sure to update the function appropriately:

```
def list_nodes_select(conn=None, call=None):
    '''
    Return a list of the VMs that are on the provider, with select fields
    '''
    if not conn:
        conn = get_conn()   # pylint: disable=E0602

    return salt.utils.cloud.list_nodes_select(
        list_nodes_full(conn, 'function'),
        __opts__['query.selection'],
        call,
    )
```

This function is normally called with the `-S` option:

```
salt-cloud -S
```

#### The show_instance() Function

This function is used to display all of the information about a single node that is available from the cloud provider. The simplest way to provide this is usually to call `list_nodes_full()`, and return just the data for the requested node. It is normally called as an action:

```
salt-cloud -a show_instance myinstance
```

#### Actions and Functions

Extra functionality may be added to a cloud provider in the form of an `--action` or a `--function`. Actions are performed against a cloud instance/virtual machine, and functions are performed against a cloud provider.

#### Actions

Actions are calls that are performed against a specific instance or virtual machine. The `show_instance` action should be available in all cloud modules. Actions are normally called with the `-a` option:

```
salt-cloud -a show_instance myinstance
```

Actions must accept a `name` as a first argument, may optionally support any number of kwargs as appropriate, and must accept an argument of `call`, with a default of `None`.

Before performing any other work, an action should normally verify that it has been called correctly. It may then perform the desired feature, and return useful information to the user. A basic action looks like:

```
def show_instance(name, call=None):
'''
Show the details from EC2 concerning an AMI
'''
if call != 'action':
    raise SaltCloudSystemExit(
        'The show_instance action must be called with -a or --action.'
    )

return _get_node(name)
```

Please note that generic kwargs, if used, are passed through to actions as `kwargs` and not `**kwargs`. An example of this is seen in the Functions section.

#### Functions

Functions are called that are performed against a specific cloud provider. An optional function that is often useful is `show_image`, which describes an image in detail. Functions are normally called with the `-f` option:

```
salt-cloud -f show_image my-cloud-provider image='Ubuntu 13.10 64-bit'
```

A function may accept any number of kwargs as appropriate, and must accept an argument of `call` with a default of `None`.

Before performing any other work, a function should normally verify that it has been called correctly. It may then perform the desired feature, and return useful information to the user. A basic function looks like:

```
def show_image(kwargs, call=None):
    '''
    Show the details from EC2 concerning an AMI
    '''
    if call != 'function':
        raise SaltCloudSystemExit(
            'The show_image action must be called with -f or --function.'
        )

    params = {'ImageId.1': kwargs['image'],
              'Action': 'DescribeImages'}
    result = query(params)
    log.info(result)

    return result
```

Take note that generic kwargs are passed through to functions as `kwargs` and not `**kwargs`.

### 9.10.2 Cloud deployment scripts

Salt Cloud works primarily by executing a script on the virtual machines as soon as they become available. The script that is executed is referenced in the cloud profile as the `script`. In older versions, this was the `os` argument. This was changed in 0.8.2.

A number of legacy scripts exist in the deploy directory in the saltcloud source tree. The preferred method is currently to use the salt-bootstrap script. A stable version is included with each release tarball starting with 0.8.4. The most

updated version can be found at:

https://github.com/saltstack/salt-bootstrap

Note that, somewhat counter-intuitively, this script is referenced as `bootstrap-salt` in the configuration.

You can specify a deploy script in the cloud configuration file (`/etc/salt/cloud` by default):

```
script: bootstrap-salt
```

Or in a provider:

```
my-provider:
  # snip...
  script: bootstrap-salt
```

Or in a profile:

```
my-profile:
  provider: my-provider
  # snip...
  script: bootstrap-salt
```

If you do not specify a script argument in your cloud configuration file, provider configuration or profile configuration, the ``bootstrap-salt'' script will be used by default.

### Other Generic Deploy Scripts

If you want to be assured of always using the latest Salt Bootstrap script, there are a few generic templates available in the deploy directory of your saltcloud source tree:

```
curl-bootstrap
curl-bootstrap-git
python-bootstrap
wget-bootstrap
wget-bootstrap-git
```

These are example scripts which were designed to be customized, adapted, and refit to meet your needs. One important use of them is to pass options to the salt-bootstrap script, such as updating to specific git tags.

### Custom Deploy Scripts

If the Salt Bootstrap script does not meet your needs, you may write your own. The script should be written in shell and is a Jinja template. Deploy scripts need to execute a number of functions to do a complete salt setup. These functions include:

1. Install the salt minion. If this can be done via system packages this method is HIGHLY preferred.
2. Add the salt minion keys before the minion is started for the first time. The minion keys are available as strings that can be copied into place in the Jinja template under the dict named ``vm''.
3. Start the salt-minion daemon and enable it at startup time.
4. Set up the minion configuration file from the ``minion'' data available in the Jinja template.

A good, well commented example of this process is the Fedora deployment script:

https://github.com/saltstack/salt-cloud/blob/master/saltcloud/deploy/Fedora.sh

A number of legacy deploy scripts are included with the release tarball. None of them are as functional or complete as Salt Bootstrap, and are still included for academic purposes.

Custom deploy scripts are picked up from `/etc/salt/cloud.deploy.d` by default, but you can change the location of deploy scripts with the cloud configuration `deploy_scripts_search_path`. Additionally, if your deploy script has the extension `.sh`, you can leave out the extension in your configuration.

For example, if your custom deploy script is located in `/etc/salt/cloud.deploy.d/my_deploy.sh`, you could specify it in a cloud profile like this:

```
my-profile:
  provider: my-provider
  # snip...
  script: my_deploy
```

You're also free to use the full path to the script if you like. Using full paths, your script doesn't have to live inside `/etc/salt/cloud.deploy.d` or whatever you've configured with `deploy_scripts_search_path`.

### Post-Deploy Commands

Once a minion has been deployed, it has the option to run a salt command. Normally, this would be the `state.apply`, which would finish provisioning the VM. Another common option (for testing) is to use *`test.ping`*. This is configured in the main cloud config file:

```
start_action: state.apply
```

This is currently considered to be experimental functionality, and may not work well with all cloud hosts. If you experience problems with Salt Cloud hanging after Salt is deployed, consider using Startup States instead:

http://docs.saltstack.com/ref/states/startup.html

### Skipping the Deploy Script

For whatever reason, you may want to skip the deploy script altogether. This results in a VM being spun up much faster, with absolutely no configuration. This can be set from the command line:

```
salt-cloud --no-deploy -p micro_aws my_instance
```

Or it can be set from the main cloud config file:

```
deploy: False
```

Or it can be set from the provider's configuration:

```
RACKSPACE.user: example_user
RACKSPACE.apikey: 123984bjjas87034
RACKSPACE.deploy: False
```

Or even on the VM's profile settings:

```
ubuntu_aws:
  provider: my-ec2-config
  image: ami-7e2da54e
  size: t1.micro
  deploy: False
```

The default for deploy is True.

In the profile, you may also set the script option to `None`:

```
script: None
```

This is the slowest option, since it still uploads the None deploy script and executes it.

### Updating Salt Bootstrap

Salt Bootstrap can be updated automatically with `salt-cloud`:

```
salt-cloud -u
salt-cloud --update-bootstrap
```

Bear in mind that this updates to the latest **stable** version from:

https://bootstrap.saltstack.com/stable/bootstrap-salt.sh

To update Salt Bootstrap script to the **develop** version, run the following command on the Salt minion host with `salt-cloud` installed:

```
salt-call config.gather_bootstrap_script 'https://bootstrap.saltstack.com/develop/
↪bootstrap-salt.sh'
```

Or just download the file manually:

```
curl -L 'https://bootstrap.saltstack.com/develop' > /etc/salt/cloud.deploy.d/bootstrap-
↪salt.sh
```

### Keeping /tmp/ Files

When Salt Cloud deploys an instance, it uploads temporary files to /tmp/ for salt-bootstrap to put in place. After the script has run, they are deleted. To keep these files around (mostly for debugging purposes), the --keep-tmp option can be added:

```
salt-cloud -p myprofile mymachine --keep-tmp
```

For those wondering why /tmp/ was used instead of /root/, this had to be done for images which require the use of sudo, and therefore do not allow remote root logins, even for file transfers (which makes /root/ unavailable).

### Deploy Script Arguments

Custom deploy scripts are unlikely to need custom arguments to be passed to them, but salt-bootstrap has been extended quite a bit, and this may be necessary. script_args can be specified in either the profile or the map file, to pass arguments to the deploy script:

```
aws-amazon:
  provider: my-ec2-config
  image: ami-1624987f
  size: t1.micro
  ssh_username: ec2-user
  script: bootstrap-salt
  script_args: -c /tmp/
```

This has also been tested to work with pipes, if needed:

```
script_args: | head
```

## 9.11 Using Salt Cloud from Salt

### 9.11.1 Using the Salt Modules for Cloud

In addition to the `salt-cloud` command, Salt Cloud can be called from Salt, in a variety of different ways. Most users will be interested in either the execution module or the state module, but it is also possible to call Salt Cloud as a runner.

Because the actual work will be performed on a remote minion, the normal Salt Cloud configuration must exist on any target minion that needs to execute a Salt Cloud command. Because Salt Cloud now supports breaking out configuration into individual files, the configuration is easily managed using Salt's own `file.managed` state function. For example, the following directories allow this configuration to be managed easily:

```
/etc/salt/cloud.providers.d/
/etc/salt/cloud.profiles.d/
```

#### Minion Keys

Keep in mind that when creating minions, Salt Cloud will create public and private minion keys, upload them to the minion, and place the public key on the machine that created the minion. It will *not* attempt to place any public minion keys on the master, unless the minion which was used to create the instance is also the Salt Master. This is because granting arbitrary minions access to modify keys on the master is a serious security risk, and must be avoided.

#### Execution Module

The `cloud` module is available to use from the command line. At the moment, almost every standard Salt Cloud feature is available to use. The following commands are available:

#### list_images

This command is designed to show images that are available to be used to create an instance using Salt Cloud. In general they are used in the creation of profiles, but may also be used to create an instance directly (see below). Listing images requires a provider to be configured, and specified:

```
salt myminion cloud.list_images my-cloud-provider
```

#### list_sizes

This command is designed to show sizes that are available to be used to create an instance using Salt Cloud. In general they are used in the creation of profiles, but may also be used to create an instance directly (see below). This command is not available for all cloud providers; see the provider-specific documentation for details. Listing sizes requires a provider to be configured, and specified:

```
salt myminion cloud.list_sizes my-cloud-provider
```

### list_locations

This command is designed to show locations that are available to be used to create an instance using Salt Cloud. In general they are used in the creation of profiles, but may also be used to create an instance directly (see below). This command is not available for all cloud providers; see the provider-specific documentation for details. Listing locations requires a provider to be configured, and specified:

```
salt myminion cloud.list_locations my-cloud-provider
```

### query

This command is used to query all configured cloud providers, and display all instances associated with those accounts. By default, it will run a standard query, returning the following fields:

**id** The name or ID of the instance, as used by the cloud provider.

**image** The disk image that was used to create this instance.

**private_ips** Any public IP addresses currently assigned to this instance.

**public_ips** Any private IP addresses currently assigned to this instance.

**size** The size of the instance; can refer to RAM, CPU(s), disk space, etc., depending on the cloud provider.

**state** The running state of the instance; for example, `running`, `stopped`, `pending`, etc. This state is dependent upon the provider.

This command may also be used to perform a full query or a select query, as described below. The following usages are available:

```
salt myminion cloud.query
salt myminion cloud.query list_nodes
salt myminion cloud.query list_nodes_full
```

### full_query

This command behaves like the `query` command, but lists all information concerning each instance as provided by the cloud provider, in addition to the fields returned by the `query` command.

```
salt myminion cloud.full_query
```

### select_query

This command behaves like the `query` command, but only returned select fields as defined in the `/etc/salt/cloud` configuration file. A sample configuration for this section of the file might look like:

```
query.selection:
  - id
  - key_name
```

This configuration would only return the `id` and `key_name` fields, for those cloud providers that support those two fields. This would be called using the following command:

```
salt myminion cloud.select_query
```

### profile

This command is used to create an instance using a profile that is configured on the target minion. Please note that the profile must be configured before this command can be used with it.

```
salt myminion cloud.profile ec2-centos64-x64 my-new-instance
```

Please note that the execution module does *not* run in parallel mode. Using multiple minions to create instances can effectively perform parallel instance creation.

### create

This command is similar to the `profile` command, in that it is used to create a new instance. However, it does not require a profile to be pre-configured. Instead, all of the options that are normally configured in a profile are passed directly to Salt Cloud to create the instance:

```
salt myminion cloud.create my-ec2-config my-new-instance \
    image=ami-1624987f size='t1.micro' ssh_username=ec2-user \
    securitygroup=default delvol_on_destroy=True
```

Please note that the execution module does *not* run in parallel mode. Using multiple minions to create instances can effectively perform parallel instance creation.

### destroy

This command is used to destroy an instance or instances. This command will search all configured providers and remove any instance(s) which matches the name(s) passed in here. The results of this command are *non-reversable* and should be used with caution.

```
salt myminion cloud.destroy myinstance
salt myminion cloud.destroy myinstance1,myinstance2
```

### action

This command implements both the `action` and the `function` commands used in the standard `salt-cloud` command. If one of the standard `action` commands is used, an instance name must be provided. If one of the standard `function` commands is used, a provider configuration must be named.

```
salt myminion cloud.action start instance=myinstance
salt myminion cloud.action show_image provider=my-ec2-config \
    image=ami-1624987f
```

The actions available are largely dependent upon the module for the specific cloud provider. The following actions are available for all cloud providers:

**`list_nodes`** This is a direct call to the `query` function as described above, but is only performed against a single cloud provider. A provider configuration must be included.

**list_nodes_select** This is a direct call to the `full_query` function as described above, but is only performed against a single cloud provider. A provider configuration must be included.

**list_nodes_select** This is a direct call to the `select_query` function as described above, but is only performed against a single cloud provider. A provider configuration must be included.

**show_instance** This is a thin wrapper around `list_nodes`, which returns the full information about a single instance. An instance name must be provided.

### State Module

A subset of the execution module is available through the `cloud` state module. Not all functions are currently included, because there is currently insufficient code for them to perform statefully. For example, a command to create an instance may be issued with a series of options, but those options cannot currently be statefully managed. Additional states to manage these options will be released at a later time.

#### cloud.present

This state will ensure that an instance is present inside a particular cloud provider. Any option that is normally specified in the `cloud.create` execution module and function may be declared here, but only the actual presence of the instance will be managed statefully.

```
my-instance-name:
  cloud.present:
    - provider: my-ec2-config
    - image: ami-1624987f
    - size: 't1.micro'
    - ssh_username: ec2-user
    - securitygroup: default
    - delvol_on_destroy: True
```

#### cloud.profile

This state will ensure that an instance is present inside a particular cloud provider. This function calls the `cloud.profile` execution module and function, but as with `cloud.present`, only the actual presence of the instance will be managed statefully.

```
my-instance-name:
  cloud.profile:
    - profile: ec2-centos64-x64
```

#### cloud.absent

This state will ensure that an instance (identified by name) does not exist in any of the cloud providers configured on the target minion. Please note that this state is *non-reversable* and may be considered especially destructive when issued as a cloud state.

```
my-instance-name:
  cloud.absent
```

#### Runner Module

The `cloud` runner module is executed on the master, and performs actions using the configuration and Salt modules on the master itself. This means that any public minion keys will also be properly accepted by the master.

Using the functions in the runner module is no different than using those in the execution module, outside of the behavior described in the above paragraph. The following functions are available inside the runner:

- list_images
- list_sizes
- list_locations
- query
- full_query
- select_query
- profile
- destroy
- action

Outside of the standard usage of `salt-run` itself, commands are executed as usual:

```
salt-run cloud.profile ec2-centos64-x86_64 my-instance-name
```

#### CloudClient

The execution, state, and runner modules ultimately all use the CloudClient library that ships with Salt. To use the CloudClient library locally (either on the master or a minion), create a client object and issue a command against it:

```
import salt.cloud
import pprint
client = salt.cloud.CloudClient('/etc/salt/cloud')
nodes = client.query()
pprint.pprint(nodes)
```

#### Reactor

Examples of using the reactor with Salt Cloud are available in the ec2-autoscale-reactor and salt-cloud-reactor formulas.

## 9.12 Feature Comparison

### 9.12.1 Feature Matrix

A number of features are available in most cloud hosts, but not all are available everywhere. This may be because the feature isn't supported by the cloud host itself, or it may only be that the feature has not yet been added to Salt Cloud. In a handful of cases, it is because the feature does not make sense for a particular cloud provider (Saltify, for instance).

This matrix shows which features are available in which cloud hosts, as far as Salt Cloud is concerned. This is not a comprehensive list of all features available in all cloud hosts, and should not be used to make business decisions

concerning choosing a cloud host. In most cases, adding support for a feature to Salt Cloud requires only a little effort.

### Legacy Drivers

Both AWS and Rackspace are listed as ``Legacy''. This is because those drivers have been replaced by other drivers, which are generally the preferred method for working with those hosts.

The EC2 driver should be used instead of the AWS driver, when possible. The OpenStack driver should be used instead of the Rackspace driver, unless the user is dealing with instances in ``the old cloud'' in Rackspace.

### Note for Developers

When adding new features to a particular cloud host, please make sure to add the feature to this table. Additionally, if you notice a feature that is not properly listed here, pull requests to fix them is appreciated.

### Standard Features

These are features that are available for almost every cloud host.

| | AWS (Legacy) | CloudStack | Digital Ocean | EC2 | GoGrid | JoyEnt | Linode | OpenStack | Parallels | Rackspace (Legacy) | Saltify | Softlayer | Softlayer Hardware | Aliyun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Query | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | Yes | Yes | Yes |
| Full Query | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | Yes | Yes | Yes |
| Selective Query | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | Yes | Yes | Yes |
| List Sizes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | Yes | Yes | Yes |
| List Images | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | Yes | Yes | Yes |
| List Locations | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | Yes | Yes | Yes |
| create | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| destroy | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | Yes | Yes | Yes |

### Actions

These are features that are performed on a specific instance, and require an instance name to be passed in. For example:

```
# salt-cloud -a attach_volume ami.example.com
```

| Actions | AWS (Legacy) | CloudStack | Digital Ocean | EC2 | GoGrid | JoyEnt | Linode | OpenStack | Parallels | Rackspace (Legacy) | Saltify | Softlayer | Softlayer Hardware | Aliyun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| attach_volume | | | | Yes | | | | | | | | | | |
| create_attach_volumes | Yes | | | Yes | | | | | | | | | | |
| del_tags | Yes | | | Yes | | | | | | | | | | |
| delvol_on_destroy | | | | Yes | | | | | | | | | | |
| detach_volume | | | | Yes | | | | | | | | | | |
| disable_term_protect | Yes | | | Yes | | | | | | | | | | |
| enable_term_protect | Yes | | | Yes | | | | | | | | | | |
| get_tags | Yes | | | Yes | | | | | | | | | | |
| keep_vol_on_destroy | | | | Yes | | | | | | | | | | |
| list_keypairs | | | Yes | | | | | | | | | | | |
| rename | Yes | | | Yes | | | | | | | | | | |
| set_tags | Yes | | | Yes | | | | | | | | | | |
| show_delvol_on_destroy | | | | Yes | | | | | | | | | | |
| show_instance | | | Yes | Yes | | | Yes | | Yes | | | Yes | Yes | Yes |
| show_term_protect | | | | Yes | | | | | | | | | | |
| start | Yes | | | Yes | | Yes | Yes | | Yes | | | | | Yes |
| stop | Yes | | | Yes | | Yes | Yes | | Yes | | | | | Yes |
| take_action | | | | | | Yes | | | | | | | | |

### Functions

These are features that are performed against a specific cloud provider, and require the name of the provider to be passed in. For example:

```
# salt-cloud -f list_images my_digitalocean
```

| Functions | AWS (Legacy) | CloudStack | Digital Ocean | EC2 | GoGrid | JoyEnt | Linode | OpenStack | Para |
|---|---|---|---|---|---|---|---|---|---|
| block_device_mappings | Yes | | | | | | | | |
| create_keypair | | | | Yes | | | | | |
| create_volume | | | | Yes | | | | | |
| delete_key | | | | | | Yes | | | |
| delete_keypair | | | | Yes | | | | | |
| delete_volume | | | | Yes | | | | | |
| get_image | | | Yes | | | Yes | | | Yes |
| get_ip | | Yes | | | | | | | |
| get_key | | Yes | | | | | | | |
| get_keyid | | | Yes | | | | | | |
| get_keypair | | Yes | | | | | | | |
| get_networkid | | Yes | | | | | | | |
| get_node | | | | | | Yes | | | |
| get_password | | Yes | | | | | | | |

Table 9.1 -- continued from previous page

| Functions | AWS (Legacy) | CloudStack | Digital Ocean | EC2 | GoGrid | JoyEnt | Linode | OpenStack | Para |
|---|---|---|---|---|---|---|---|---|---|
| get_size | | | Yes | | | Yes | | | |
| get_spot_config | | | | Yes | | | | | |
| get_subnetid | | | | Yes | | | | | |
| iam_profile | Yes | | | Yes | | | | | |
| import_key | | | | | | Yes | | | |
| key_list | | | | | | Yes | | | |
| keyname | Yes | | | Yes | | | | | |
| list_availability_zones | | | | Yes | | | | | |
| list_custom_images | | | | | | | | | |
| list_keys | | | | | | Yes | | | |
| list_nodes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| list_nodes_full | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| list_nodes_select | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| list_vlans | | | | | | | | | |
| rackconnect | | | | | | | | Yes | |
| reboot | | | | Yes | | Yes | | | |
| reformat_node | | | | | | Yes | | | |
| securitygroup | Yes | | | Yes | | | | | |
| securitygroupid | | | | Yes | | | | | |
| show_image | | | | Yes | | | | | Yes |
| show_key | | | | | | Yes | | | |
| show_keypair | | | Yes | Yes | | | | | |
| show_volume | | | | Yes | | | | | |

## 9.13 Tutorials

### 9.13.1 Salt Cloud Quickstart

Salt Cloud is built-in to Salt, and the easiest way to run Salt Cloud is directly from your Salt Master.

Note that if you installed Salt via Salt Bootstrap, it may not have automatically installed salt-cloud for you. Use your distribution's package manager to install the `salt-cloud` package from the same repo that you used to install Salt. These repos will automatically be setup by Salt Bootstrap.

If there is no salt-cloud package, install with `pip install salt-cloud`.

This quickstart walks you through the basic steps of setting up a cloud host and defining some virtual machines to create.

---

**Note:** Salt Cloud has its own process and does not rely on the Salt Master, so it can be installed on a standalone minion instead of your Salt Master.

---

#### Define a Provider

The first step is to add the credentials for your cloud host. Credentials and other settings provided by the cloud host are stored in provider configuration files. Provider configurations contain the details needed to connect to a cloud host such as EC2, GCE, Rackspace, etc., and any global options that you want set on your cloud minions (such as the location of your Salt Master).

On your Salt Master, browse to `/etc/salt/cloud.providers.d/` and create a file called `<provider>.conf`, replacing `<provider>` with `ec2`, `softlayer`, and so on. The name helps you identify the contents, and is not important as long as the file ends in `.conf`.

Next, browse to the *Provider specifics* and add any required settings for your cloud host to this file. Here is an example for Amazon EC2:

```
my-ec2:
  driver: ec2
  # Set the EC2 access credentials (see below)
  #
  id: 'HJGRYCILJLKJYG'
  key: 'kdjgfsgm;woormgl/aserigjksjdhasdfgn'
  # Make sure this key is owned by root with permissions 0400.
  #
  private_key: /etc/salt/my_test_key.pem
  keyname: my_test_key
  securitygroup: default
  # Optional: Set up the location of the Salt Master
  #
  minion:
    master: saltmaster.example.com
```

The required configuration varies between cloud hosts so make sure you read the provider specifics.

### List Cloud Provider Options

You can now query the cloud provider you configured for available locations, images, and sizes. This information is used when you set up VM profiles.

```
salt-cloud --list-locations <provider_name>  # my-ec2 in the previous example
salt-cloud --list-images <provider_name>
salt-cloud --list-sizes <provider_name>
```

Replace `<provider_name>` with the name of the provider configuration you defined.

### Create VM Profiles

On your Salt Master, browse to `/etc/salt/cloud.profiles.d/` and create a file called `<profile>.conf`, replacing `<profile>` with `ec2`, `softlayer`, and so on. The file must end in `.conf`.

You can now add any custom profiles you'd like to define to this file. Here are a few examples:

```
micro_ec2:
  provider: my-ec2
  image: ami-d514f291
  size: t1.micro

medium_ec2:
  provider: my-ec2
  image: ami-d514f291
  size: m3.medium

large_ec2:
  provider: my-ec2
  image: ami-d514f291
  size: m3.large
```

Notice that the `provider` in our profile matches the provider name that we defined? That is how Salt Cloud knows how to connect to to a cloud host to create a VM with these attributes.

#### Create VMs

VMs are created by calling `salt-cloud` with the following options:

```
salt-cloud -p <profile> <name1> <name2> ...
```

For example:

```
salt-cloud -p micro_ec2 minion1 minion2
```

#### Destroy VMs

Add a `-d` and the minion name you provided to destroy:

```
salt-cloud -d minion1 minion2
```

#### Query VMs

You can view details about the VMs you've created using `--query`:

```
salt-cloud --query
```

#### Cloud Map

Now that you know how to create and destoy individual VMs, next you should learn how to use a cloud map to create a number of VMs at once.

Cloud maps let you define a map of your infrastructure and quickly provision any number of VMs. On subsequent runs, any VMs that do not exist are created, and VMs that are already configured are left unmodified.

See *Cloud Map File*.

### 9.13.2 Using Salt Cloud with the Event Reactor

One of the most powerful features of the Salt framework is the Event Reactor. As the Reactor was in development, Salt Cloud was regularly updated to take advantage of the Reactor upon completion. As such, various aspects of both the creation and destruction of instances with Salt Cloud fire events to the Salt Master, which can be used by the Event Reactor.

#### Event Structure

As of this writing, all events in Salt Cloud have a tag, which includes the ID of the instance being managed, and a payload which describes the task that is currently being handled. A Salt Cloud tag looks like:

```
salt/cloud/<minion_id>/<task>
```

For instance, the first event fired when creating an instance named `web1` would look like:

```
salt/cloud/web1/creating
```

Assuming this instance is using the `ec2-centos` profile, which is in turn using the `ec2-config` provider, the payload for this tag would look like:

```
{'name': 'web1',
 'profile': 'ec2-centos',
 'provider': 'ec2-config:ec2'}
```

### Available Events

When an instance is created in Salt Cloud, whether by map, profile, or directly through an API, a minimum of five events are normally fired. More may be available, depending upon the cloud provider being used. Some of the common events are described below.

#### salt/cloud/<minion_id>/creating

This event states simply that the process to create an instance has begun. At this point in time, no actual work has begun. The payload for this event includes:

name profile provider

#### salt/cloud/<minion_id>/requesting

Salt Cloud is about to make a request to the cloud provider to create an instance. At this point, all of the variables required to make the request have been gathered, and the payload of the event will reflect those variables which do not normally pose a security risk. What is returned here is dependent upon the cloud provider. Some common variables are:

name image size location

#### salt/cloud/<minion_id>/querying

The instance has been successfully requested, but the necessary information to log into the instance (such as IP address) is not yet available. This event marks the beginning of the process to wait for this information.

The payload for this event normally only includes the `instance_id`.

#### salt/cloud/<minion_id>/waiting_for_ssh

The information required to log into the instance has been retrieved, but the instance is not necessarily ready to be accessed. Following this event, Salt Cloud will wait for the IP address to respond to a ping, then wait for the specified port (usually 22) to respond to a connection, and on Linux systems, for SSH to become available. Salt Cloud will attempt to issue the `date` command on the remote system, as a means to check for availability. If no `ssh_username` has been specified, a list of usernames (starting with `root`) will be attempted. If one or more usernames was configured for `ssh_username`, they will be added to the beginning of the list, in order.

The payload for this event normally only includes the `ip_address`.

#### salt/cloud/<minion_id>/deploying

The necessary port has been detected as available, and now Salt Cloud can log into the instance, upload any files used for deployment, and run the deploy script. Once the script has completed, Salt Cloud will log back into the instance and remove any remaining files.

A number of variables are used to deploy instances, and the majority of these will be available in the payload. Any keys, passwords or other sensitive data will be scraped from the payload. Most of the variables returned will be related to the profile or provider config, and any default values that could have been changed in the profile or provider, but weren't.

#### salt/cloud/<minion_id>/created

The deploy sequence has completed, and the instance is now available, Salted, and ready for use. This event is the final task for Salt Cloud, before returning instance information to the user and exiting.

The payload for this event contains little more than the initial `creating` event. This event is required in all cloud providers.

### Configuring the Event Reactor

The Event Reactor is built into the Salt Master process, and as such is configured via the master configuration file. Normally this will be a YAML file located at `/etc/salt/master`. Additionally, master configuration items can be stored, in YAML format, inside the `/etc/salt/master.d/` directory.

These configuration items may be stored in either location; however, they may only be stored in one location. For organizational and security purposes, it may be best to create a single configuration file, which contains only Event Reactor configuration, at `/etc/salt/master.d/reactor`.

The Event Reactor uses a top-level configuration item called `reactor`. This block contains a list of tags to be watched for, each of which also includes a list of `sls` files. For instance:

```
reactor:
  - 'salt/minion/*/start':
    - '/srv/reactor/custom-reactor.sls'
  - 'salt/cloud/*/created':
    - '/srv/reactor/cloud-alert.sls'
  - 'salt/cloud/*/destroyed':
    - '/srv/reactor/cloud-destroy-alert.sls'
```

The above configuration configures reactors for three different tags: one which is fired when a minion process has started and is available to receive commands, one which is fired when a cloud instance has been created, and one which is fired when a cloud instance is destroyed.

Note that each tag contains a wildcard (`*`) in it. For each of these tags, this will normally refer to a `minion_id`. This is not required of event tags, but is very common.

### Reactor SLS Files

Reactor `sls` files should be placed in the `/srv/reactor/` directory for consistency between environments, but this is not currently enforced by Salt.

Reactor `sls` files follow a similar format to other `sls` files in Salt. By default they are written in YAML and can be templated using Jinja, but since they are processed through Salt's rendering system, any available renderer (JSON, Mako, Cheetah, etc.) can be used.

As with other `sls` files, each stanza will start with a declaration ID, followed by the function to run, and then any arguments for that function. For example:

```
# /srv/reactor/cloud-alert.sls
new_instance_alert:
  cmd.pagerduty.create_event:
    - tgt: alertserver
    - kwarg:
        description: "New instance: {{ data['name'] }}"
        details: "New cloud instance created on {{ data['provider'] }}"
        service_key: 1626dead5ecafe46231e968eb1be29c4
        profile: my-pagerduty-account
```

When the Event Reactor receives an event notifying it that a new instance has been created, this `sls` will create a new incident in PagerDuty, using the configured PagerDuty account.

The declaration ID in this example is `new_instance_alert`. The function called is `cmd.pagerduty.create_event`. The `cmd` portion of this function specifies that an execution module and function will be called, in this case, the `pagerduty.create_event` function.

Because an execution module is specified, a target (`tgt`) must be specified on which to call the function. In this case, a minion called `alertserver` has been used. Any arguments passed through to the function are declared in the `kwarg` block.

#### Example: Reactor-Based Highstate

When Salt Cloud creates an instance, by default it will install the Salt Minion onto the instance, along with any specified minion configuration, and automatically accept that minion's keys on the master. One of the configuration options that can be specified is `startup_states`, which is commonly set to `highstate`. This will tell the minion to immediately apply a *highstate*, as soon as it is able to do so.

This can present a problem with some system images on some cloud hosts. For instance, Salt Cloud can be configured to log in as either the `root` user, or a user with `sudo` access. While some hosts commonly use images that lock out remote `root` access and require a user with `sudo` privileges to log in (notably EC2, with their `ec2-user` login), most cloud hosts fall back to `root` as the default login on all images, including for operating systems (such as Ubuntu) which normally disallow remote `root` login.

For users of these operating systems, it is understandable that a *highstate* would include configuration to block remote `root` logins again. However, Salt Cloud may not have finished cleaning up its deployment files by the time the minion process has started, and kicked off a *highstate* run. Users have reported errors from Salt Cloud getting locked out while trying to clean up after itself.

The goal of a startup state may be achieved using the Event Reactor. Because a minion fires an event when it is able to receive commands, this event can effectively be used inside the reactor system instead. The following will point the reactor system to the right `sls` file:

```
reactor:
  - 'salt/cloud/*/created':
    - '/srv/reactor/startup_highstate.sls'
```

And the following `sls` file will start a *highstate* run on the target minion:

```
# /srv/reactor/startup_highstate.sls
reactor_highstate:
  cmd.state.apply:
    - tgt: {{ data['name'] }}
```

Because this event will not be fired until Salt Cloud has cleaned up after itself, the *highstate* run will not step on salt-cloud's toes. And because every file on the minion is configurable, including `/etc/salt/minion`, the `startup_states` can still be configured for future minion restarts, if desired.

CHAPTER 10

# Salt Proxy Minion

Proxy minions are a developing Salt feature that enables controlling devices that, for whatever reason, cannot run a standard salt-minion. Examples include network gear that has an API but runs a proprietary OS, devices with limited CPU or memory, or devices that could run a minion, but for security reasons, will not.

*Proxy minions are not an ``out of the box'' feature.* Because there are an infinite number of controllable devices, you will most likely have to write the interface yourself. Fortunately, this is only as difficult as the actual interface to the proxied device. Devices that have an existing Python module (PyUSB for example) would be relatively simple to interface. Code to control a device that has an HTML REST-based interface should be easy. Code to control your typical housecat would be excellent source material for a PhD thesis.

Salt proxy-minions provide the `plumbing' that allows device enumeration and discovery, control, status, remote execution, and state management.

See the *Proxy Minion Walkthrough* for an end-to-end demonstration of a working REST-based proxy minion.

See the *Proxy Minion SSH Walkthrough* for an end-to-end demonstration of a working SSH proxy minion.

See *Proxyminion States* to configure and run `salt-proxy` on a remote minion. Specify all your master side proxy (pillar) configuration and use this state to remotely configure proxies on one or more minions.

See *Proxyminion Beacon* to help with easy configuration and management of `salt-proxy` processes.

## 10.1 New in 2016.3

The deprecated config option `enumerate_proxy_minions` has been removed.

As mentioned in earlier documentation, the `add_proxymodule_to_opts` configuration variable defaults to `False` in this release. This means if you have proxymodules or other code looking in `__opts__['proxymodule']` you will need to set this variable in your `/etc/salt/proxy` file, or modify your code to use the *__proxy__* injected variable.

The `__proxyenabled__` directive now only applies to grains and proxy modules themselves. Standard execution modules and state modules are not prevented from loading for proxy minions.

Enhancements in grains processing have made the `__proxyenabled__` directive somewhat redundant in dynamic grains code. It is still required, but best practices for the `__virtual__` function in grains files have changed. It is now recommended that the `__virtual__` functions check to make sure they are being loaded for the correct proxytype, example below:

```
def __virtual__():
    '''
    Only work on proxy
```

```
    '''
    try:
        if salt.utils.is_proxy() and \
           __opts__['proxy']['proxytype'] == 'ssh_sample':
            return __virtualname__
    except KeyError:
        pass

    return False
```

The try/except block above exists because grains are processed very early in the proxy minion startup process, sometimes earlier than the proxy key in the `__opts__` dictionary is populated.

Grains are loaded so early in startup that no dunder dictionaries are present, so `__proxy__`, `__salt__`, etc. are not available. Custom grains located in `/srv/salt/_grains` and in the salt install grains directory can now take a single argument, `proxy`, that is identical to `__proxy__`. This enables patterns like

```
def get_ip(proxy):
    '''
    Ask the remote device what IP it has
    '''
    return {'ip':proxy['proxymodulename.get_ip']()}
```

Then the grain `ip` will contain the result of calling the `get_ip()` function in the proxymodule called `proxymodulename`.

Proxy modules now benefit from including a function called `initialized()`. This function should return `True` if the proxy's `init()` function has been successfully called. This is needed to make grains processing easier.

Finally, if there is a function called `grains` in the proxymodule, it will be executed on proxy-minion startup and its contents will be merged with the rest of the proxy's grains. Since older proxy-minions might have used other methods to call such a function and add its results to grains, this is config-gated by a new proxy configuration option called `proxy_merge_grains_in_module`. This defaults to `False` in this release. It will default to True in the release after next. The next release is codenamed **Carbon**, the following is **Nitrogen**.

## 10.2 New in 2015.8.2

*BREAKING CHANGE*: Adding the *proxymodule* variable to __opts__ is deprecated. The *proxymodule* variable has been moved a new globally-injected variable called *__proxy__*. A related configuration option called *add_proxymodule_to_opts* has been added and defaults to *True*. In the next major release, 2016.3.0, this variable will default to False.

In the meantime, proxies that functioned under 2015.8.0 and .1 should continue to work under 2015.8.2. You should rework your proxy code to use *__proxy__* as soon as possible.

The *rest_sample* example proxy minion has been updated to use *__proxy__*.

This change was made because proxymodules are a LazyLoader object, but LazyLoaders cannot be serialized. *__opts__* gets serialized, and so things like *saltutil.sync_all* and *state.highstate* would throw exceptions.

Support has been added to Salt's loader allowing custom proxymodules to be placed in `salt://_proxy`. Proxy minions that need these modules will need to be restarted to pick up any changes. A corresponding utility function, `saltutil.sync_proxymodules`, has been added to sync these modules to minions.

In addition, a salt.utils helper function called *is_proxy()* was added to make it easier to tell when the running minion is a proxy minion.

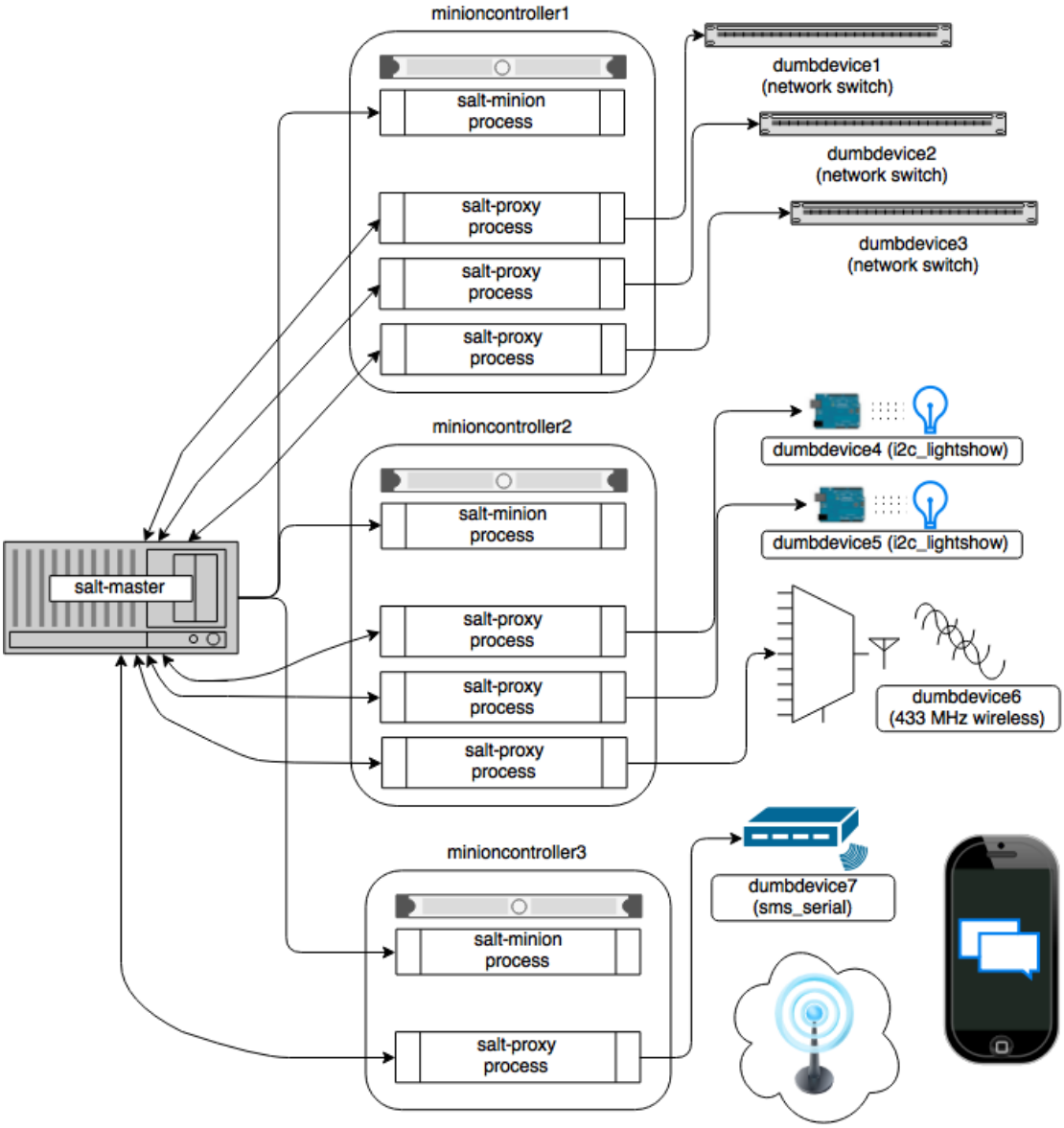
## 10.3 New in 2015.8

Starting with the 2015.8 release of Salt, proxy processes are no longer forked off from a controlling minion. Instead, they have their own script `salt-proxy` which takes mostly the same arguments that the standard Salt minion does with the addition of `--proxyid`. This is the id that the salt-proxy will use to identify itself to the master. Proxy configurations are still best kept in Pillar and their format has not changed.

This change allows for better process control and logging. Proxy processes can now be listed with standard process management utilities (`ps` from the command line). Also, a full Salt minion is no longer required (though it is still strongly recommended) on machines hosting proxies.

## 10.4 Getting Started

The following diagram may be helpful in understanding the structure of a Salt installation that includes proxy-minions:




The key thing to remember is the left-most section of the diagram. Salt's nature is to have a minion connect to a master, then the master may control the minion. However, for proxy minions, the target device cannot run a minion.

After the proxy minion is started and initiates its connection to the `dumb' device, it connects back to the salt-master and for all intents and purposes looks like just another minion to the Salt master.

To create support for a proxied device one needs to create four things:

1. The *proxy_connection_module* (located in salt/proxy).
2. The *grains support code* (located in salt/grains).
3. Salt modules specific to the controlled device.
4. *Salt states* specific to the controlled device.

### 10.4.1 Configuration parameters

Proxy minions require no configuration parameters in /etc/salt/master.

Salt's Pillar system is ideally suited for configuring proxy-minions. Proxies can either be designated via a pillar file in pillar_roots, or through an external pillar. External pillars afford the opportunity for interfacing with a configuration management system, database, or other knowledgeable system that that may already contain all the details of proxy targets. To use static files in pillar_roots, pattern your files after the following examples, which are based on the diagram above:

/srv/pillar/top.sls

```
base:
  dumbdevice1:
    - dumbdevice1
  dumbdevice2:
    - dumbdevice2
  dumbdevice3:
    - dumbdevice3
  dumbdevice4:
    - dumbdevice4
  dumbdevice5:
    - dumbdevice5
  dumbdevice6:
    - dumbdevice6
  dumbdevice7:
    - dumbdevice7
```

/srv/pillar/dumbdevice1.sls

```
proxy:
  proxytype: networkswitch
  host: 172.23.23.5
  username: root
  passwd: letmein
```

/srv/pillar/dumbdevice2.sls

```
proxy:
  proxytype: networkswitch
  host: 172.23.23.6
  username: root
  passwd: letmein
```

/srv/pillar/dumbdevice3.sls

```
proxy:
  proxytype: networkswitch
  host: 172.23.23.7
  username: root
  passwd: letmein
```

/srv/pillar/dumbdevice4.sls

```
proxy:
  proxytype: i2c_lightshow
  i2c_address: 1
```

/srv/pillar/dumbdevice5.sls

```
proxy:
  proxytype: i2c_lightshow
  i2c_address: 2
```

/srv/pillar/dumbdevice6.sls

```
proxy:
  proxytype: 433mhz_wireless
```

/srv/pillar/dumbdevice7.sls

```
proxy:
  proxytype: sms_serial
  deventry: /dev/tty04
```

Note the contents of each minioncontroller key may differ widely based on the type of device that the proxy-minion is managing.

In the above example

- dumbdevices 1, 2, and 3 are network switches that have a management interface available at a particular IP address.
- dumbdevices 4 and 5 are very low-level devices controlled over an i2c bus. In this case the devices are physically connected to machine `minioncontroller2', and are addressable on the i2c bus at their respective i2c addresses.
- dumbdevice6 is a 433 MHz wireless transmitter, also physically connected to minioncontroller2
- dumbdevice7 is an SMS gateway connected to machine minioncontroller3 via a serial port.

Because of the way pillar works, each of the salt-proxy processes that fork off the proxy minions will only see the keys specific to the proxies it will be handling.

Also, in general, proxy-minions are lightweight, so the machines that run them could conceivably control a large number of devices. To run more than one proxy from a single machine, simply start an additional proxy process with `--proxyid` set to the id to which you want the proxy to bind. It is possible for the proxy services to be spread across many machines if necessary, or intentionally run on machines that need to control devices because of some physical interface (e.g. i2c and serial above). Another reason to divide proxy services might be security. In more secure environments only certain machines may have a network path to certain devices.

### 10.4.2 Proxymodules

A proxy module encapsulates all the code necessary to interface with a device. Proxymodules are located inside the salt.proxy module, or can be placed in the `_proxy` directory in your file_roots (default is `/srv/salt/_proxy`. At a minimum a proxymodule object must implement the following functions:

`__virtual__()`: This function performs the same duty that it does for other types of Salt modules. Logic goes here to determine if the module can be loaded, checking for the presence of Python modules on which the proxy depends. Returning `False` will prevent the module from loading.

`init(opts)`: Perform any initialization that the device needs. This is a good place to bring up a persistent connection to a device, or authenticate to create a persistent authorization token.

`initialized()`: Returns True if `init()` was successfully called.

`shutdown()`: Code to cleanly shut down or close a connection to a controlled device goes here. This function must exist, but can contain only the keyword `pass` if there is no shutdown logic required.

`ping()`: While not required, it is highly recommended that this function also be defined in the proxymodule. The code for `ping` should contact the controlled device and make sure it is really available.

`grains()`: Rather than including grains in /srv/salt/_grains or in the standard install directories for grains, grains can be computed and returned by this function. This function will be called automatically if `proxy_merge_grains_in_module` is set to `True` in /etc/salt/proxy. This variable defaults to `False` in 2016.3 but will default to `True` in the release code-named *Nitrogen*.

Pre 2015.8 the proxymodule also must have an `id()` function. 2015.8 and following don't use this function because the proxy's id is required on the command line.

Here is an example proxymodule used to interface to a *very* simple REST server. Code for the server is in the salt-contrib GitHub repository

This proxymodule enables ``service'' enumeration, starting, stopping, restarting, and status; ``package'' installation, and a ping.

```
# -*- coding: utf-8 -*-
'''
This is a simple proxy-minion designed to connect to and communicate with
the bottle-based web service contained in https://github.com/saltstack/salt-contrib/
 ↪tree/master/proxyminion_rest_example
'''
from __future__ import absolute_import

# Import python libs
import logging
import salt.utils.http

HAS_REST_EXAMPLE = True

# This must be present or the Salt loader won't load this module
__proxyenabled__ = ['rest_sample']


# Variables are scoped to this module so we can have persistent data
# across calls to fns in here.
GRAINS_CACHE = {}
DETAILS = {}

# Want logging!
log = logging.getLogger(__file__)


# This does nothing, it's here just as an example and to provide a log
# entry when the module is loaded.
def __virtual__():
    '''
    Only return if all the modules are available
    '''
    log.debug('rest_sample proxy __virtual__() called...')
    return True


# Every proxy module needs an 'init', though you can
# just put DETAILS['initialized'] = True here if nothing
# else needs to be done.

def init(opts):
    log.debug('rest_sample proxy init() called...')
    DETAILS['initialized'] = True
```

```
    # Save the REST URL
    DETAILS['url'] = opts['proxy']['url']

    # Make sure the REST URL ends with a '/'
    if not DETAILS['url'].endswith('/'):
        DETAILS['url'] += '/'


def initialized():
    '''
    Since grains are loaded in many different places and some of those
    places occur before the proxy can be initialized, return whether
    our init() function has been called
    '''
    return DETAILS.get('initialized', False)


def grains():
    '''
    Get the grains from the proxied device
    '''
    if not DETAILS.get('grains_cache', {}):
        r = salt.utils.http.query(DETAILS['url']+'info', decode_type='json',
↪decode=True)
        DETAILS['grains_cache'] = r['dict']
    return DETAILS['grains_cache']


def grains_refresh():
    '''
    Refresh the grains from the proxied device
    '''
    DETAILS['grains_cache'] = None
    return grains()


def fns():
    return {'details': 'This key is here because a function in '
                       'grains/rest_sample.py called fns() here in the proxymodule.'}


def service_start(name):
    '''
    Start a "service" on the REST server
    '''
    r = salt.utils.http.query(DETAILS['url']+'service/start/'+name, decode_type='json
↪', decode=True)
    return r['dict']


def service_stop(name):
    '''
    Stop a "service" on the REST server
    '''
    r = salt.utils.http.query(DETAILS['url']+'service/stop/'+name, decode_type='json',
↪decode=True)
    return r['dict']
```

```
def service_restart(name):
    '''
    Restart a "service" on the REST server
    '''
    r = salt.utils.http.query(DETAILS['url']+'service/restart/'+name, decode_type='json
 ↪', decode=True)
    return r['dict']


def service_list():
    '''
    List "services" on the REST server
    '''
    r = salt.utils.http.query(DETAILS['url']+'service/list', decode_type='json',
 ↪decode=True)
    return r['dict']


def service_status(name):
    '''
    Check if a service is running on the REST server
    '''
    r = salt.utils.http.query(DETAILS['url']+'service/status/'+name, decode_type='json
 ↪', decode=True)
    return r['dict']


def package_list():
    '''
    List "packages" installed on the REST server
    '''
    r = salt.utils.http.query(DETAILS['url']+'package/list', decode_type='json',
 ↪decode=True)
    return r['dict']


def package_install(name, **kwargs):
    '''
    Install a "package" on the REST server
    '''
    cmd = DETAILS['url']+'package/install/'+name
    if kwargs.get('version', False):
        cmd += '/'+kwargs['version']
    else:
        cmd += '/1.0'
    r = salt.utils.http.query(cmd, decode_type='json', decode=True)
    return r['dict']


def fix_outage():
    r = salt.utils.http.query(DETAILS['url']+'fix_outage')
    return r


def uptodate(name):

    '''
```

```
    Call the REST endpoint to see if the packages on the "server" are up to date.
    '''
    r = salt.utils.http.query(DETAILS['url']+'package/remove/'+name, decode_type='json
↪', decode=True)
    return r['dict']


def package_remove(name):

    '''
    Remove a "package" on the REST server
    '''
    r = salt.utils.http.query(DETAILS['url']+'package/remove/'+name, decode_type='json
↪', decode=True)
    return r['dict']


def package_status(name):
    '''
    Check the installation status of a package on the REST server
    '''
    r = salt.utils.http.query(DETAILS['url']+'package/status/'+name, decode_type='json
↪', decode=True)
    return r['dict']


def ping():
    '''
    Is the REST server up?
    '''
    r = salt.utils.http.query(DETAILS['url']+'ping', decode_type='json', decode=True)
    try:
        return r['dict'].get('ret', False)
    except Exception:
        return False


def shutdown(opts):
    '''
    For this proxy shutdown is a no-op
    '''
    log.debug('rest_sample proxy shutdown() called...')
```

Grains are data about minions. Most proxied devices will have a paltry amount of data as compared to a typical Linux server. By default, a proxy minion will have several grains taken from the host. Salt core code requires values for `kernel`, `os`, and `os_family`--all of these are forced to be `proxy` for proxy-minions.

To add others to your proxy minion for a particular device, create a file in salt/grains named [proxytype].py and place inside it the different functions that need to be run to collect the data you are interested in. Here's an example. Note the function below called `proxy_functions`. It demonstrates how a grains function can take a single argument, which will be set to the value of `__proxy__`. Dunder variables are not yet injected into Salt processes at the time grains are loaded, so this enables us to get a handle to the proxymodule so we can cross-call the functions therein used to commmunicate with the controlled device.

Note that as of 2016.3, grains values can also be calculated in a function called `grains()` in the proxymodule itself. This might be useful if a proxymodule author wants to keep all the code for the proxy interface in the same place instead of splitting it between the proxy and grains directories.

This function will only be called automatically if the configuration variable `proxy_merge_grains_in_module` is set to True in the proxy configuration file (default `/etc/salt/proxy`). This variable will default to True in the release code-named *Nitrogen*.

## 10.5 The __proxyenabled__ directive

In previous versions of Salt the `__proxyenabled__` directive controlled loading of all Salt modules for proxies (e.g. grains, execution modules, state modules). From 2016.3 on, the only modules that respect `__proxyenabled__` are grains and proxy modules. These modules need to be told which proxy they work with.

`__proxyenabled__` is a list, and can contain a single `*' to indicate a grains module works with all proxies.

Example from `salt/grains/rest_sample.py`:

```
# -*- coding: utf-8 -*-
'''
Generate baseline proxy minion grains
'''
from __future__ import absolute_import
import salt.utils

__proxyenabled__ = ['rest_sample']

__virtualname__ = 'rest_sample'

def __virtual__():
    try:
        if salt.utils.is_proxy() and __opts__['proxy']['proxytype'] == 'rest_sample':
            return __virtualname__
    except KeyError:
        pass

    return False
```

### 10.5.1 Salt Proxy Minion End-to-End Example

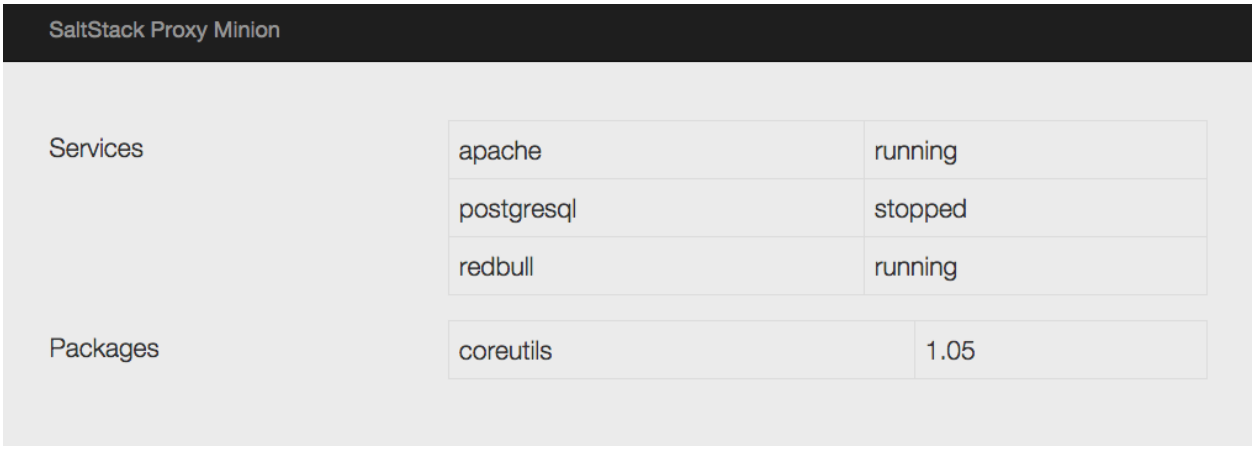
The following is walkthrough that documents how to run a sample REST service and configure one or more proxy minions to talk to and control it.

1. Ideally, create a Python virtualenv in which to run the REST service. This is not strictly required, but without a virtualenv you will need to install `bottle` via pip globally on your system
2. Clone https://github.com/saltstack/salt-contrib and copy the contents of the directory `proxyminion_rest_example` somewhere on a machine that is reachable from the machine on which you want to run the salt-proxy. This machine needs Python 2.7 or later.
3. Install bottle version 0.12.8 via pip or easy_install

```
pip install bottle==0.12.8
```

4. Run `python rest.py --help` for usage
5. Start the REST API on an appropriate port and IP.
6. Load the REST service's status page in your browser by going to the IP/port combination (e.g. http://127.0.0.1:8000)

7. You should see a page entitled ``Salt Proxy Minion'' with two sections, one for ``services'' and one for ``packages'' and you should see a log entry in the terminal where you started the REST process indicating that the index page was retrieved.




Now, configure your salt-proxy.

1. Edit `/etc/salt/proxy` and add an entry for your master's location

```
master: localhost
```

2. On your salt-master, ensure that pillar is configured properly. Select an ID for your proxy (in this example we will name the proxy with the letter `p' followed by the port the proxy is answering on). In your pillar topfile, place an entry for your proxy:

```
base:
  'p8000':
    - p8000
```

This says that Salt's pillar should load some values for the proxy `p8000` from the file /srv/pillar/p8000.sls (if you have not changed your default pillar_roots)

3. In the pillar root for your base environment, create this file:

```
p8000.sls
---------

proxy:
  proxytype: rest_sample
  url: http://<IP your REST listens on>:port
```

In other words, if your REST service is listening on port 8000 on 127.0.0.1 the `url' key above should say `url: http://127.0.0.1:8000`

4. Make sure your salt-master is running.

5. Start the salt-proxy in debug mode

```
salt-proxy --proxyid=p8000 -l debug
```

6. Accept your proxy's key on your salt-master

```
salt-key -y -a p8000
The following keys are going to be accepted:
Unaccepted Keys:
```

```
p8000
Key for minion p8000 accepted.
```

7. Now you should be able to ping your proxy. When you ping, you should see a log entry in the terminal where the REST service is running.

```
salt p8000 test.ping
```

8. The REST service implements a degenerately simple pkg and service provider as well as a small set of grains. To ``install'' a package, use a standard `pkg.install`. If you pass `==' and a verrsion number after the package name then the service will parse that and accept that as the package's version.
9. Try running `salt p8000 grains.items` to see what grains are available. You can target proxies via grains if you like.
10. You can also start and stop the available services (apache, redbull, and postgresql with `service.start`, etc.
11. States can be written to target the proxy. Feel free to experiment with them.

## 10.6 SSH Proxymodules

See above for a general introduction to writing proxy modules. All of the guidelines that apply to REST are the same for SSH. This sections specifically talks about the SSH proxy module and explains the working of the example proxy module `ssh_sample`.

Here is a simple example proxymodule used to interface to a device over SSH. Code for the SSH shell is in the salt-contrib GitHub repository

This proxymodule enables ``package'' installation.

```
# -*- coding: utf-8 -*-
'''
This is a simple proxy-minion designed to connect to and communicate with
a server that exposes functionality via SSH.
This can be used as an option when the device does not provide
an api over HTTP and doesn't have the python stack to run a minion.
'''
from __future__ import absolute_import

# Import python libs
import json
import logging

# Import Salt's libs
from salt.utils.vt_helper import SSHConnection
from salt.utils.vt import TerminalException

# This must be present or the Salt loader won't load this module
__proxyenabled__ = ['ssh_sample']

DETAILS = {}

# Want logging!
log = logging.getLogger(__file__)


# This does nothing, it's here just as an example and to provide a log
```

```
# entry when the module is loaded.
def __virtual__():
    '''
    Only return if all the modules are available
    '''
    log.info('ssh_sample proxy __virtual__() called...')

    return True


def init(opts):
    '''
    Required.
    Can be used to initialize the server connection.
    '''
    try:
        DETAILS['server'] = SSHConnection(host=__opts__['proxy']['host'],
                                          username=__opts__['proxy']['username'],
                                          password=__opts__['proxy']['password'])
        # connected to the SSH server
        out, err = DETAILS['server'].sendline('help')

    except TerminalException as e:
        log.error(e)
        return False


def shutdown(opts):
    '''
    Disconnect
    '''
    DETAILS['server'].close_connection()


def parse(out):
    '''
    Extract json from out.

    Parameter
        out: Type string. The data returned by the
        ssh command.
    '''
    jsonret = []
    in_json = False
    for ln_ in out.split('\n'):
        if '{' in ln_:
            in_json = True
        if in_json:
            jsonret.append(ln_)
        if '}' in ln_:
            in_json = False
    return json.loads('\n'.join(jsonret))


def package_list():
    '''
    List "packages" by executing a command via ssh
    This function is called in response to the salt command
```

```
    ..code-block::bash
        salt target_minion pkg.list_pkgs

    '''
    # Send the command to execute
    out, err = DETAILS['server'].sendline('pkg_list')

    # "scrape" the output and return the right fields as a dict
    return parse(out)


def package_install(name, **kwargs):
    '''
    Install a "package" on the REST server
    '''
    cmd = 'pkg_install ' + name
    if 'version' in kwargs:
        cmd += '/'+kwargs['version']
    else:
        cmd += '/1.0'

    # Send the command to execute
    out, err = DETAILS['server'].sendline(cmd)

    # "scrape" the output and return the right fields as a dict
    return parse(out)


def package_remove(name):
    '''
    Remove a "package" on the REST server
    '''
    cmd = 'pkg_remove ' + name

    # Send the command to execute
    out, err = DETAILS['server'].sendline(cmd)

    # "scrape" the output and return the right fields as a dict
    return parse(out)
```

### 10.6.1 Connection Setup

The `init()` method is responsible for connection setup. It uses the `host`, `username` and `password` config variables defined in the pillar data. The `prompt` kwarg can be passed to `SSHConnection` if your SSH server's prompt differs from the example's prompt `(Cmd)`. Instantiating the `SSHConnection` class establishes an SSH connection to the ssh server (using Salt VT).

### 10.6.2 Command execution

The `package_*` methods use the SSH connection (established in `init()`) to send commands out to the SSH server. The `sendline()` method of `SSHConnection` class can be used to send commands out to the server. In the above example we send commands like `pkg_list` or `pkg_install`. You can send any SSH command via this utility.

### 10.6.3 Output parsing

Output returned by `sendline()` is a tuple of strings representing the stdout and the stderr respectively. In the toy example shown we simply scrape the output and convert it to a python dictionary, as shown in the `parse` method. You can tailor this method to match your parsing logic.

### 10.6.4 Connection teardown

The `shutdown` method is responsible for calling the `close_connection()` method of `SSHConnection` class. This ends the SSH connection to the server.

For more information please refer to class SSHConnection.

#### Salt Proxy Minion SSH End-to-End Example

The following is walkthrough that documents how to run a sample SSH service and configure one or more proxy minions to talk to and control it.

1. This walkthrough uses a custom SSH shell to provide an end to end example. Any other shells can be used too.
2. Setup the proxy command shell as shown https://github.com/saltstack/salt-contrib/tree/master/proxyminion_ssh_example

Now, configure your salt-proxy.

1. Edit `/etc/salt/proxy` and add an entry for your master's location

```
master: localhost
add_proxymodule_to_opts: False
multiprocessing: False
```

2. On your salt-master, ensure that pillar is configured properly. Select an ID for your proxy (in this example we will name the proxy with the letter `p' followed by the port the proxy is answering on). In your pillar topfile, place an entry for your proxy:

```
base:
  'p8000':
    - p8000
```

This says that Salt's pillar should load some values for the proxy `p8000` from the file /srv/pillar/p8000.sls (if you have not changed your default pillar_roots)

3. In the pillar root for your base environment, create this file:

```
p8000.sls
---------

proxy:
  proxytype: ssh_sample
  host: saltyVM
  username: salt
  password: badpass
```

4. Make sure your salt-master is running.
5. Start the salt-proxy in debug mode

```
salt-proxy --proxyid=p8000 -l debug
```

6. Accept your proxy's key on your salt-master

```
salt-key -y -a p8000
The following keys are going to be accepted:
Unaccepted Keys:
p8000
Key for minion p8000 accepted.
```

7. Now you should be able to run commands on your proxy.

```
salt p8000 pkg.list_pkgs
```

8. The SSH shell implements a degenerately simple pkg. To ``install'' a package, use a standard `pkg.install`. If you pass `==' and a verrsion number after the package name then the service will parse that and accept that as the package's version.

New in version 2015.8.3.

### Proxy Minion Beacon

The salt proxy beacon is meant to facilitate configuring multiple proxies on one or many minions. This should simplify configuring and managing multiple `salt-proxy` processes.

1. On your salt-master, ensure that pillar is configured properly. Select an ID for your proxy (in this example we will name the proxy `p8000'). In your pillar topfile, place an entry for your proxy:

```
base:
  'p8000':
    - p8000
```

This says that Salt's pillar should load some values for the proxy `p8000` from the file /srv/pillar/p8000.sls (if you have not changed your default pillar_roots)

2. In the pillar root for your base environment, create this file:

```
p8000.sls
---------

proxy:
  # set proxytype for your proxymodule
  proxytype: ssh_sample
  host: saltyVM
  username: salt
  password: badpass
```

This should complete the proxy setup for `p8000`

3. Configure the `salt_proxy` beacon

```
beacons:
  salt_proxy:
    - p8000: {}
```

Once this beacon is configured it will automatically start the `salt-proxy` process. If the `salt-proxy` process is terminated the beacon will re-start it.

4. Accept your proxy's key on your salt-master

```
salt-key -y -a p8000
The following keys are going to be accepted:
Unaccepted Keys:
p8000
Key for minion p8000 accepted.
```

5. Now you should be able to run commands on your proxy.

```
salt p8000 pkg.list_pkgs
```

New in version 2015.8.2.

### Proxy Minion States

Salt proxy state can be used to deploy, configure and run a `salt-proxy` instance on your minion. Configure proxy settings on the master side and the state configures and runs `salt-proxy` on the remote end.

1. On your salt-master, ensure that pillar is configured properly. Select an ID for your proxy (in this example we will name the proxy `p8000'). In your pillar topfile, place an entry for your proxy:

```
base:
  'p8000':
    - p8000
```

This says that Salt's pillar should load some values for the proxy `p8000` from the file /srv/pillar/p8000.sls (if you have not changed your default pillar_roots)

2. In the pillar root for your base environment, create this file:

```
p8000.sls
---------

proxy:
  # set proxytype for your proxymodule
  proxytype: ssh_sample
  host: saltyVM
  username: salt
  password: badpass
```

3. Create the following state in your state tree (let's name it salt_proxy.sls)

```
salt-proxy-configure:
  salt_proxy.configure_proxy:
    - proxyname: p8000
    - start: True # start the process if it isn't running
```

4. Make sure your salt-master and salt-minion are running.

5. Run the state salt_proxy on the minion where you want to run `salt-proxy`

Example using `state.sls` to configure and run `salt-proxy`

```
# salt device_minion state.sls salt_proxy
```

This starts salt-proxy on `device_minion`

6. Accept your proxy's key on your salt-master

```
salt-key -y -a p8000
The following keys are going to be accepted:
Unaccepted Keys:
p8000
Key for minion p8000 accepted.
```

7. Now you should be able to run commands on your proxy.

```
salt p8000 pkg.list_pkgs
```

### ESXi Proxy Minion

New in version 2015.8.4.

---

**Note**: This tutorial assumes basic knowledge of Salt. To get up to speed, check out the Salt Walkthrough.

This tutorial also assumes a basic understanding of Salt Proxy Minions. If you're unfamiliar with Salt's Proxy Minion system, please read the *Salt Proxy Minion* documentation and the *Salt Proxy Minion End-to-End Example* tutorial.

The third assumption that this tutorial makes is that you also have a basic understanding of ESXi hosts. You can learn more about ESXi hosts on VMware's various resources.

---

Salt's ESXi Proxy Minion allows a VMware ESXi host to be treated as an individual Salt Minion, without installing a Salt Minion on the ESXi host.

Since an ESXi host may not necessarily run on an OS capable of hosting a Python stack, the ESXi host can't run a regular Salt Minion directly. Therefore, Salt's Proxy Minion functionality enables you to designate another machine to host a proxy process that ``proxies'' communication from the Salt Master to the ESXi host. The master does not know or care that the ESXi target is not a ``real'' Salt Minion.

More in-depth conceptual reading on Proxy Minions can be found in the *Proxy Minion* section of Salt's documentation.

Salt's ESXi Proxy Minion was added in the 2015.8.4 release of Salt.

---

**Note**: Be aware that some functionality for the ESXi Proxy Minion may depend on the type of license attached the ESXi host(s).

For example, certain services are only available to manipulate service state or policies with a VMware vSphere Enterprise or Enterprise Plus license, while others are available with a Standard license. The `ntpd` service is restricted to an Enterprise Plus license, while `ssh` is available via the Standard license.

Please see the vSphere Comparison page for more information.

---

### Dependencies

Manipulation of the ESXi host via a Proxy Minion requires the machine running the Proxy Minion process to have the ESXCLI package (and all of it's dependencies) and the pyVmomi Python Library to be installed.

### ESXi Password

The ESXi Proxy Minion uses VMware's API to perform tasks on the host as if it was a regular Salt Minion. In order to access the API that is already running on the ESXi host, the ESXi host must have a username and password that is used to log into the host. The username is usually `root`. Before Salt can access the ESXi host via VMware's API, a default password *must* be set on the host.

### pyVmomi

The pyVmomi Python library must be installed on the machine that is running the proxy process. pyVmomi can be installed via pip:

```
pip install pyVmomi
```

---

**Note**: Version 6.0 of pyVmomi has some problems with SSL error handling on certain versions of Python. If using version 6.0 of pyVmomi, the machine that you are running the proxy minion process from must have either Python 2.6, Python 2.7.9, or newer. This is due to an upstream dependency in pyVmomi 6.0 that is not supported in Python version 2.7 to 2.7.8. If the version of Python running the proxy process is not in the supported range, you will need to install an earlier version of pyVmomi. See Issue #29537 for more information.

---

Based on the note above, to install an earlier version of pyVmomi than the version currently listed in PyPi, run the following:

```
pip install pyVmomi==5.5.0.2014.1.1
```

The 5.5.0.2014.1.1 is a known stable version that the original ESXi Proxy Minion was developed against.

### ESXCLI

Currently, about a third of the functions used for the ESXi Proxy Minion require the ESXCLI package be installed on the machine running the Proxy Minion process.

The ESXCLI package is also referred to as the VMware vSphere CLI, or vCLI. VMware provides vCLI package installation instructions for vSphere 5.5 and vSphere 6.0.

Once all of the required dependencies are in place and the vCLI package is installed, you can check to see if you can connect to your ESXi host by running the following command:

```
esxcli -s <host-location> -u <username> -p <password> system syslog config get
```

If the connection was successful, ESXCLI was successfully installed on your system. You should see output related to the ESXi host's syslog configuration.

### Configuration

There are several places where various configuration values need to be set in order for the ESXi Proxy Minion to run and connect properly.

### Proxy Config File

On the machine that will be running the Proxy Minon process(es), a proxy config file must be in place. This file should be located in the `/etc/salt/` directory and should be named `proxy`. If the file is not there by default, create it.

This file should contain the location of your Salt Master that the Salt Proxy will connect to.

---

**Note**: If you're running your ESXi Proxy Minion on version of Salt that is 2015.8.2 or newer, you also need to set `add_proxymodule_to_opts: False` in your proxy config file. The need to specify this configuration will be removed with Salt `2016.3.0`, the next major feature release. See the New in 2015.8.2 section of the Proxy Minion documentation for more information.

---

Example Proxy Config File:

```
# /etc/salt/proxy

master: <salt-master-location>
add_proxymodule_to_opts: False
```

### Pillar Profiles

Proxy minions get their configuration from Salt's Pillar. Every proxy must have a stanza in Pillar and a reference in the Pillar top-file that matches the Proxy ID. At a minimum for communication with the ESXi host, the pillar should look like this:

```
proxy:
  proxytype: esxi
  host: <ip or dns name of esxi host>
  username: <ESXi username>
  passwords:
    - first_password
    - second_password
    - third_password
```

Some other optional settings are `protocol` and `port`. These can be added to the pillar configuration.

#### proxytype

The `proxytype` key and value pair is critical, as it tells Salt which interface to load from the `proxy` directory in Salt's install hierarchy, or from `/srv/salt/_proxy` on the Salt Master (if you have created your own proxy module, for example). To use this ESXi Proxy Module, set this to `esxi`.

#### host

The location, or ip/dns, of the ESXi host. Required.

#### username

The username used to login to the ESXi host, such as `root`. Required.

### passwords

A list of passwords to be used to try and login to the ESXi host. At least one password in this list is required.

The proxy integration will try the passwords listed in order. It is configured this way so you can have a regular password and the password you may be updating for an ESXi host either via the *vsphere.update_host_password* execution module function or via the *esxi.password_present* state function. This way, after the password is changed, you should not need to restart the proxy minion--it should just pick up the the new password provided in the list. You can then change pillar at will to move that password to the front and retire the unused ones.

Use-case/reasoning for using a list of passwords: You are setting up an ESXi host for the first time, and the host comes with a default password. You know that you'll be changing this password during your initial setup from the default to a new password. If you only have one password option, and if you have a state changing the password, any remote execution commands or states that run after the password change will not be able to run on the host until the password is updated in Pillar and the Proxy Minion process is restarted.

This allows you to use any number of potential fallback passwords.

---

**Note:** When a password is changed on the host to one in the list of possible passwords, the further down on the list the password is, the longer individual commands will take to return. This is due to the nature of pyVmomi's login system. We have to wait for the first attempt to fail before trying the next password on the list.

This scenario is especially true, and even slower, when the proxy minion first starts. If the correct password is not the first password on the list, it may take up to a minute for `test.ping` to respond with a `True` result. Once the initial authorization is complete, the responses for commands will be a little faster.

To avoid these longer waiting periods, SaltStack recommends moving the correct password to the top of the list and restarting the proxy minion at your earliest convenience.

---

### protocol

If the ESXi host is not using the default protocol, set this value to an alternate protocol. Default is `https`. For example:

### port

If the ESXi host is not using the default port, set this value to an alternate port. Default is `443`.

### Example Configuration Files

An example of all of the basic configurations that need to be in place before starting the Proxy Minion processes includes the Proxy Config File, Pillar Top File, and any individual Proxy Minion Pillar files.

In this example, we'll assuming there are two ESXi hosts to connect to. Therefore, we'll be creating two Proxy Minion config files, one config for each ESXi host.

Proxy Config File:

```
# /etc/salt/proxy

master: <salt-master-location>
add_proxymodule_to_opts: False
```

Pillar Top File:

```
# /srv/pillar/top.sls

base:
  'esxi-1':
    - esxi-1
  'esxi-2':
    - esxi-2
```

Pillar Config File for the first ESXi host, esxi-1:

```
# /srv/pillar/esxi-1.sls

proxy:
  proxytype: esxi
  host: esxi-1.example.com
  username: 'root'
  passwords:
    - bad-password-1
    - backup-bad-password-1
```

Pillar Config File for the second ESXi host, esxi-2:

```
# /srv/pillar/esxi-2.sls

proxy:
  proxytype: esxi
  host: esxi-2.example.com
  username: 'root'
  passwords:
    - bad-password-2
    - backup-bad-password-2
```

### Starting the Proxy Minion

Once all of the correct configuration files are in place, it is time to start the proxy processes!

1. First, make sure your Salt Master is running.
2. Start the first Salt Proxy, in debug mode, by giving the Proxy Minion process and ID that matches the config file name created in the *Configuration* section.

```
salt-proxy --proxyid='esxi-1' -l debug
```

1. Accept the `esxi-1` Proxy Minion's key on the Salt Master:

```
# salt-key -L
Accepted Keys:
Denied Keys:
Unaccepted Keys:
esxi-1
Rejected Keys:
#
# salt-key -a esxi-1
The following keys are going to be accepted:
Unaccepted Keys:
```

```
esxi-1
Proceed? [n/Y] y
Key for minion esxi-1 accepted.
```

1. Repeat for the second Salt Proxy, this time we'll run the proxy process as a daemon, as an example.

```
salt-proxy --proxyid='esxi-2' -d
```

1. Accept the `esxi-2` Proxy Minion's key on the Salt Master:

```
# salt-key -L
Accepted Keys:
esxi-1
Denied Keys:
Unaccepted Keys:
esxi-2
Rejected Keys:
#
# salt-key -a esxi-1
The following keys are going to be accepted:
Unaccepted Keys:
esxi-2
Proceed? [n/Y] y
Key for minion esxi-1 accepted.
```

1. Check and see if your Proxy Minions are responding:

```
# salt 'esxi-*' test.ping
esxi-1:
    True
esxi-3:
    True
```

### Executing Commands

Now that you've configured your Proxy Minions and have them responding successfully to a `test.ping`, we can start executing commands against the ESXi hosts via Salt.

It's important to understand how this particular proxy works, and there are a couple of important pieces to be aware of in order to start running remote execution and state commands against the ESXi host via a Proxy Minion: the *vSphere Execution Module*, the *ESXi Execution Module*, and the *ESXi State Module*.

### vSphere Execution Module

The *`Salt.modules.vsphere`* is a standard Salt execution module that does the bulk of the work for the ESXi Proxy Minion. If you pull up the docs for it you'll see that almost every function in the module takes credentials (`username` and `password`) and a target `host` argument. When credentials and a host aren't passed, Salt runs commands through `pyVmomi` or `ESXCLI` against the local machine. If you wanted, you could run functions from this module on any machine where an appropriate version of `pyVmomi` and `ESXCLI` are installed, and that machine would reach out over the network and communicate with the ESXi host.

You'll notice that most of the functions in the vSphere module require a `host`, `username`, and `password`. These parameters are contained in the Pillar files and passed through to the function via the proxy process that is already running. You don't need to provide these parameters when you execute the commands. See the *Running Remote Execution Commands* section below for an example.

### ESXi Execution Module

In order for the Pillar information set up in the *Configuration* section above to be passed to the function call in the vSphere Execution Module, the *salt.modules.esxi* execution module acts as a ``shim'' between the vSphere execution module functions and the proxy process.

The ``shim'' takes the authentication credentials specified in the Pillar files and passes them through to the `host`, `username`, `password`, and optional `protocol` and `port` options required by the vSphere Execution Module functions.

If the function takes more positional, or keyword, arguments you can append them to the call. It's this shim that speaks to the ESXi host through the proxy, arranging for the credentials and hostname to be pulled from the Pillar section for the ESXi Proxy Minion.

Because of the presence of the shim, to lookup documentation for what functions you can use to interface with the ESXi host, you'll want to look in *salt.modules.vsphere* instead of *salt.modules.esxi*.

### Running Remote Execution Commands

To run commands from the Salt Master to execute, via the ESXi Proxy Minion, against the ESXi host, you use the `esxi.cmd <vsphere-function-name>` syntax to call functions located in the vSphere Execution Module. Both args and kwargs needed for various vsphere execution module functions must be passed through in a kwarg-type manor. For example:

```
salt 'esxi-*' esxi.cmd system_info
salt 'exsi-*' esxi.cmd get_service_running service_name='ssh'
```

### ESXi State Module

The ESXi State Module functions similarly to other state modules. The ``shim'' provided by the *ESXi Execution Module* passes the necessary `host`, `username`, and `password` credentials through, so those options don't need to be provided in the state. Other than that, state files are written and executed just like any other Salt state. See the *salt.modules.esxi* state for ESXi state functions.

The follow state file is an example of how to configure various pieces of an ESXi host including enabling SSH, uploading and SSH key, configuring a coredump network config, syslog, ntp, enabling VMotion, resetting a host password, and more.

```
# /srv/salt/configure-esxi.sls

configure-host-ssh:
  esxi.ssh_configured:
    - service_running: True
    - ssh_key_file: /etc/salt/ssh_keys/my_key.pub
    - service_policy: 'automatic'
    - service_restart: True
    - certificate_verify: True

configure-host-coredump:
  esxi.coredump_configured:
    - enabled: True
    - dump_ip: 'my-coredump-ip.example.com'

configure-host-syslog:
  esxi.syslog_configured:
```

```
    - syslog_configs:
        loghost: ssl://localhost:5432,tcp://10.1.0.1:1514
        default-timeout: 120
    - firewall: True
    - reset_service: True
    - reset_syslog_config: True
    - reset_configs: loghost,default-timeout

configure-host-ntp:
  esxi.ntp_configured:
    - service_running: True
    - ntp_servers:
      - 192.174.1.100
      - 192.174.1.200
    - service_policy: 'automatic'
    - service_restart: True

configure-vmotion:
  esxi.vmotion_configured:
    - enabled: True

configure-host-vsan:
  esxi.vsan_configured:
    - enabled: True
    - add_disks_to_vsan: True

configure-host-password:
  esxi.password_present:
    - password: 'new-bad-password'
```

States are called via the ESXi Proxy Minion just as they would on a regular minion. For example:

```
salt 'esxi-*' state.sls configure-esxi test=true
salt 'esxi-*' state.sls configure-esxi
```

### Relevant Salt Files and Resources

- *ESXi Proxy Minion*
- *ESXi Execution Module*
- *ESXi State Module*
- *Salt Proxy Minion Docs*
- *Salt Proxy Minion End-to-End Example*
- *vSphere Execution Module*

CHAPTER 11

# Salt Virt

The Salt Virt cloud controller capability was initially added to Salt in version 0.14.0 as an alpha technology.

The initial Salt Virt system supports core cloud operations:

- Virtual machine deployment
- Inspection of deployed VMs
- Virtual machine migration
- Network profiling
- Automatic VM integration with all aspects of Salt
- Image Pre-seeding

Many features are currently under development to enhance the capabilities of the Salt Virt systems.

**Note:** It is noteworthy that Salt was originally developed with the intent of using the Salt communication system as the backbone to a cloud controller. This means that the Salt Virt system is not an afterthought, simply a system that took the back seat to other development. The original attempt to develop the cloud control aspects of Salt was a project called butter. This project never took off, but was functional and proves the early viability of Salt to be a cloud controller.

**Warning:** Salt Virt does not work with KVM that is running in a VM. KVM must be running on the base hardware.

## 11.1 Salt Virt Tutorial

A tutorial about how to get Salt Virt up and running has been added to the tutorial section:

*Cloud Controller Tutorial*

## 11.2 The Salt Virt Runner

The point of interaction with the cloud controller is the **virt** runner. The **virt** runner comes with routines to execute specific virtual machine routines.

Reference documentation for the virt runner is available with the runner module documentation:

*Virt Runner Reference*

## 11.3 Based on Live State Data

The Salt Virt system is based on using Salt to query live data about hypervisors and then using the data gathered to make decisions about cloud operations. This means that no external resources are required to run Salt Virt, and that the information gathered about the cloud is live and accurate.

## 11.4 Deploy from Network or Disk

### 11.4.1 Virtual Machine Disk Profiles

Salt Virt allows for the disks created for deployed virtual machines to be finely configured. The configuration is a simple data structure which is read from the `config.option` function, meaning that the configuration can be stored in the minion config file, the master config file, or the minion's pillar.

This configuration option is called `virt.disk`. The default `virt.disk` data structure looks like this:

```
virt.disk:
  default:
    - system:
      size: 8192
      format: qcow2
      model: virtio
```

**Note**: The format and model does not need to be defined, Salt will default to the optimal format used by the underlying hypervisor, in the case of kvm this it is **qcow2** and **virtio**.

This configuration sets up a disk profile called default. The default profile creates a single system disk on the virtual machine.

#### Define More Profiles

Many environments will require more complex disk profiles and may require more than one profile, this can be easily accomplished:

```
virt.disk:
  default:
    - system:
        size: 8192
  database:
    - system:
        size: 8192
    - data:
        size: 30720
  web:
    - system:
        size: 1024
```

```
    - logs:
        size: 5120
```

This configuration allows for one of three profiles to be selected, allowing virtual machines to be created with different storage needs of the deployed vm.

### 11.4.2 Virtual Machine Network Profiles

Salt Virt allows for the network devices created for deployed virtual machines to be finely configured. The configuration is a simple data structure which is read from the `config.option` function, meaning that the configuration can be stored in the minion config file, the master config file, or the minion's pillar.

This configuration option is called `virt.nic`. By default the `virt.nic` option is empty but defaults to a data structure which looks like this:

```
virt.nic:
  default:
    eth0:
      bridge: br0
      model: virtio
```

---

**Note**: The model does not need to be defined, Salt will default to the optimal model used by the underlying hypervisor, in the case of kvm this model is **virtio**

---

This configuration sets up a network profile called default. The default profile creates a single Ethernet device on the virtual machine that is bridged to the hypervisor's **br0** interface. This default setup does not require setting up the `virt.nic` configuration, and is the reason why a default install only requires setting up the **br0** bridge device on the hypervisor.

#### Define More Profiles

Many environments will require more complex network profiles and may require more than one profile, this can be easily accomplished:

```
virt.nic:
  dual:
    eth0:
      bridge: service_br
    eth1:
      bridge: storage_br
  single:
    eth0:
      bridge: service_br
  triple:
    eth0:
      bridge: service_br
    eth1:
      bridge: storage_br
    eth2:
      bridge: dmz_br
  all:
    eth0:
      bridge: service_br
```

```
    eth1:
      bridge: storage_br
    eth2:
      bridge: dmz_br
    eth3:
      bridge: database_br
  dmz:
    eth0:
      bridge: service_br
    eth1:
      bridge: dmz_br
  database:
    eth0:
      bridge: service_br
    eth1:
      bridge: database_br
```

This configuration allows for one of six profiles to be selected, allowing virtual machines to be created which attach to different network depending on the needs of the deployed vm.

### 11.4.3 Salt as a Cloud Controller

In Salt 0.14.0, an advanced cloud control system were introduced, allow private cloud vms to be managed directly with Salt. This system is generally referred to as **Salt Virt**.

The Salt Virt system already exists and is installed within Salt itself, this means that besides setting up Salt, no additional salt code needs to be deployed.

---

**Note:** The `libvirt` python module and the `certtool` binary are required.

---

The main goal of Salt Virt is to facilitate a very fast and simple cloud. The cloud that can scale and is fully featured. Salt Virt comes with the ability to set up and manage complex virtual machine networking, powerful image and disk management, as well as virtual machine migration with and without shared storage.

This means that Salt Virt can be used to create a cloud from a blade center and a SAN, but can also create a cloud out of a swarm of Linux Desktops without a single shared storage system. Salt Virt can make clouds from truly commodity hardware, but can also stand up the power of specialized hardware as well.

#### Setting up Hypervisors

The first step to set up the hypervisors involves getting the correct software installed and setting up the hypervisor network interfaces.

#### Installing Hypervisor Software

Salt Virt is made to be hypervisor agnostic but currently the only fully implemented hypervisor is KVM via libvirt.

The required software for a hypervisor is libvirt and kvm. For advanced features install libguestfs or qemu-nbd.

---

**Note:** Libguestfs and qemu-nbd allow for virtual machine images to be mounted before startup and get pre-seeded with configurations and a salt minion

---

This sls will set up the needed software for a hypervisor, and run the routines to set up the libvirt pki keys.

**Note**: Package names and setup used is Red Hat specific, different package names will be required for different platforms

```
libvirt:
  pkg.installed: []
  file.managed:
    - name: /etc/sysconfig/libvirtd
    - contents: 'LIBVIRTD_ARGS="--listen"'
    - require:
      - pkg: libvirt
  virt.keys:
    - require:
      - pkg: libvirt
  service.running:
    - name: libvirtd
    - require:
      - pkg: libvirt
      - network: br0
      - libvirt: libvirt
    - watch:
      - file: libvirt

libvirt-python:
  pkg.installed: []

libguestfs:
  pkg.installed:
    - pkgs:
      - libguestfs
      - libguestfs-tools
```

### Hypervisor Network Setup

The hypervisors will need to be running a network bridge to serve up network devices for virtual machines, this formula will set up a standard bridge on a hypervisor connecting the bridge to eth0:

```
eth0:
  network.managed:
    - enabled: True
    - type: eth
    - bridge: br0

br0:
  network.managed:
    - enabled: True
    - type: bridge
    - proto: dhcp
    - require:
      - network: eth0
```

### Virtual Machine Network Setup

Salt Virt comes with a system to model the network interfaces used by the deployed virtual machines; by default a single interface is created for the deployed virtual machine and is bridged to `br0`. To get going with the default networking setup, ensure that the bridge interface named `br0` exists on the hypervisor and is bridged to an active network device.

---

**Note**: To use more advanced networking in Salt Virt, read the *Salt Virt Networking* document:

*Salt Virt Networking*

---

### Libvirt State

One of the challenges of deploying a libvirt based cloud is the distribution of libvirt certificates. These certificates allow for virtual machine migration. Salt comes with a system used to auto deploy these certificates. Salt manages the signing authority key and generates keys for libvirt clients on the master, signs them with the certificate authority and uses pillar to distribute them. This is managed via the `libvirt` state. Simply execute this formula on the minion to ensure that the certificate is in place and up to date:

---

**Note**: The above formula includes the calls needed to set up libvirt keys.

---

```
libvirt_keys:
  virt.keys
```

### Getting Virtual Machine Images Ready

Salt Virt, requires that virtual machine images be provided as these are not generated on the fly. Generating these virtual machine images differs greatly based on the underlying platform.

Virtual machine images can be manually created using KVM and running through the installer, but this process is not recommended since it is very manual and prone to errors.

Virtual Machine generation applications are available for many platforms:

**vm-builder**: https://wiki.debian.org/VMBuilder

> **See also**:
>
> vmbuilder-formula

Once virtual machine images are available, the easiest way to make them available to Salt Virt is to place them in the Salt file server. Just copy an image into `/srv/salt` and it can now be used by Salt Virt.

For purposes of this demo, the file name `centos.img` will be used.

### Existing Virtual Machine Images

Many existing Linux distributions distribute virtual machine images which can be used with Salt Virt. Please be advised that NONE OF THESE IMAGES ARE SUPPORTED BY SALTSTACK.

### CentOS

These images have been prepared for OpenNebula but should work without issue with Salt Virt, only the raw qcow image file is needed: http://wiki.centos.org/Cloud/OpenNebula

### Fedora Linux

Images for Fedora Linux can be found here: http://fedoraproject.org/en/get-fedora#clouds

### Ubuntu Linux

Images for Ubuntu Linux can be found here: http://cloud-images.ubuntu.com/

### Using Salt Virt

With hypervisors set up and virtual machine images ready, Salt can start issuing cloud commands.

Start by running a Salt Virt hypervisor info command:

```
salt-run virt.hyper_info
```

This will query what the running hypervisor stats are and display information for all configured hypervisors. This command will also validate that the hypervisors are properly configured.

Now that hypervisors are available a virtual machine can be provisioned. The `virt.init` routine will create a new virtual machine:

```
salt-run virt.init centos1 2 512 salt://centos.img
```

This command assumes that the CentOS virtual machine image is sitting in the root of the Salt fileserver. Salt Virt will now select a hypervisor to deploy the new virtual machine on and copy the virtual machine image down to the hypervisor.

Once the VM image has been copied down the new virtual machine will be seeded. Seeding the VMs involves setting pre-authenticated Salt keys on the new VM and if needed, will install the Salt Minion on the new VM before it is started.

---

**Note**: The biggest bottleneck in starting VMs is when the Salt Minion needs to be installed. Making sure that the source VM images already have Salt installed will GREATLY speed up virtual machine deployment.

---

Now that the new VM has been prepared, it can be seen via the `virt.query` command:

```
salt-run virt.query
```

This command will return data about all of the hypervisors and respective virtual machines.

Now that the new VM is booted it should have contacted the Salt Master, a `test.ping` will reveal if the new VM is running.

### Migrating Virtual Machines

Salt Virt comes with full support for virtual machine migration, and using the libvirt state in the above formula makes migration possible.

A few things need to be available to support migration. Many operating systems turn on firewalls when originally set up, the firewall needs to be opened up to allow for libvirt and kvm to cross communicate and execution migration routines. On Red Hat based hypervisors in particular port 16514 needs to be opened on hypervisors:

```
iptables -A INPUT -m state --state NEW -m tcp -p tcp --dport 16514 -j ACCEPT
```

---

**Note**: More in-depth information regarding distribution specific firewall settings can read in:

*Opening the Firewall up for Salt*

---

Salt also needs an additional flag to be turned on as well. The `virt.tunnel` option needs to be turned on. This flag tells Salt to run migrations securely via the libvirt TLS tunnel and to use port 16514. Without `virt.tunnel` libvirt tries to bind to random ports when running migrations. To turn on `virt.tunnel` simple apply it to the master config file:

```
virt.tunnel: True
```

Once the master config has been updated, restart the master and send out a call to the minions to refresh the pillar to pick up on the change:

```
salt \* saltutil.refresh_modules
```

Now, migration routines can be run! To migrate a VM, simply run the Salt Virt migrate routine:

```
salt-run virt.migrate centos <new hypervisor>
```

### VNC Consoles

Salt Virt also sets up VNC consoles by default, allowing for remote visual consoles to be oped up. The information from a `virt.query` routine will display the vnc console port for the specific vms:

```
centos
  CPU: 2
  Memory: 524288
  State: running
  Graphics: vnc - hyper6:5900
  Disk - vda:
    Size: 2.0G
    File: /srv/salt-images/ubuntu2/system.qcow2
    File Format: qcow2
  Nic - ac:de:48:98:08:77:
    Source: br0
    Type: bridge
```

The line *Graphics: vnc - hyper6:5900* holds the key. First the port named, in this case 5900, will need to be available in the hypervisor's firewall. Once the port is open, then the console can be easily opened via vncviewer:

```
vncviewer hyper6:5900
```

By default there is no VNC security set up on these ports, which suggests that keeping them firewalled and mandating that SSH tunnels be used to access these VNC interfaces. Keep in mind that activity on a VNC interface that is accessed can be viewed by any other user that accesses that same VNC interface, and any other user logging in can also operate with the logged in user on the virtual machine.

### Conclusion

Now with Salt Virt running, new hypervisors can be seamlessly added just by running the above states on new bare metal machines, and these machines will be instantly available to Salt Virt.

CHAPTER 12

# Command Line Reference

## 12.1 salt-call

### 12.1.1 salt-call

#### Synopsis

```
salt-call [options]
```

#### Description

The salt-call command is used to run module functions locally on a minion instead of executing them from the master. Salt-call is used to run a *Standalone Minion*, and was originally created for *troubleshooting*.

The Salt Master is contacted to retrieve state files and other resources during execution unless the `--local` option is specified.

---

**Note:** `salt-call` commands execute from the current user's shell context, while `salt` commands execute from the system's default context.

---

#### Options

**`--version`**
Print the version of Salt that is running.

**`--versions-report`**
Show program's dependencies and version number, and then exit

**`-h, --help`**
Show the help message and exit

**`-c`** CONFIG_DIR, **`--config-dir`**=CONFIG_dir
The location of the Salt configuration directory. This directory contains the configuration files for Salt master and minions. The default location on most systems is `/etc/salt`.

**`--hard-crash`**
Raise any original exception rather than exiting gracefully Default: False

**-g, --grains**
Return the information generated by the Salt grains

**-m** MODULE_DIRS, **--module-dirs**=MODULE_DIRS
Specify an additional directory to pull modules from. Multiple directories can be provided by passing -m /--module-dirs multiple times.

**-d, --doc, --documentation**
Return the documentation for the specified module or for all modules if none are specified

**--master**=MASTER
Specify the master to use. The minion must be authenticated with the master. If this option is omitted, the master options from the minion config will be used. If multi masters are set up the first listed master that responds will be used.

**--return** RETURNER
Set salt-call to pass the return data to one or many returner interfaces. To use many returner interfaces specify a comma delimited list of returners.

**--local**
Run salt-call locally, as if there was no master running.

**--file-root**=FILE_ROOT
Set this directory as the base file root.

**--pillar-root**=PILLAR_ROOT
Set this directory as the base pillar root.

**--retcode-passthrough**
Exit with the salt call retcode and not the salt binary retcode

**--metadata**
Print out the execution metadata as well as the return. This will print out the outputter data, the return code, etc.

**--id**=ID
Specify the minion id to use. If this option is omitted, the id option from the minion config will be used.

**--skip-grains**
Do not load grains.

**--refresh-grains-cache**
Force a refresh of the grains cache

### Logging Options

Logging options which override any settings defined on the configuration files.

**-l** LOG_LEVEL, **--log-level**=LOG_LEVEL
Console logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

**--log-file**=LOG_FILE
Log file path. Default: /var/log/salt/minion.

**--log-file-level**=LOG_LEVEL_LOGFILE
Logfile logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

#### Output Options

**--out**
Pass in an alternative outputter to display the return of data. This outputter can be any of the available outputters:

`grains`, `highstate`, `json`, `key`, `overstatestage`, `pprint`, `raw`, `txt`, `yaml`

Some outputters are formatted only for data returned from specific functions; for instance, the `grains` outputter will not work for non-grains data.

If an outputter is used that does not support the data passed into it, then Salt will fall back on the `pprint` outputter and display the return data using the Python `pprint` standard library module.

---

**Note**: If using `--out=json`, you will probably want `--static` as well. Without the static option, you will get a separate JSON string per minion which makes JSON output invalid as a whole. This is due to using an iterative outputter. So if you want to feed it to a JSON parser, use `--static` as well.

---

**--out-indent** OUTPUT_INDENT, **--output-indent** OUTPUT_INDENT
Print the output indented by the provided value in spaces. Negative values disable indentation. Only applicable in outputters that support indentation.

**--out-file**=OUTPUT_FILE, **--output-file**=OUTPUT_FILE
Write the output to the specified file.

**--no-color**
Disable all colored output

**--force-color**
Force colored output

---

**Note**: When using colored output the color codes are as follows:

`green` denotes success, `red` denotes failure, `blue` denotes changes and success and `yellow` denotes a expected future change in configuration.

---

#### See also

*salt(1) salt-master(1) salt-minion(1)*

## 12.2 salt

### 12.2.1 salt

#### Synopsis

salt `*' [ options ] sys.doc

salt -E `.*' [ options ] sys.doc cmd

salt -G `os:Arch.*' [ options ] test.ping

salt -C `G@os:Arch.* and webserv* or G@kernel:FreeBSD' [ options ] test.ping

### Description

Salt allows for commands to be executed across a swath of remote systems in parallel. This means that remote systems can be both controlled and queried with ease.

### Options

**--version**
Print the version of Salt that is running.

**--versions-report**
Show program's dependencies and version number, and then exit

**-h, --help**
Show the help message and exit

**-c** CONFIG_DIR, **--config-dir**=CONFIG_dir
The location of the Salt configuration directory. This directory contains the configuration files for Salt master and minions. The default location on most systems is `/etc/salt`.

**-t** TIMEOUT, **--timeout**=TIMEOUT
The timeout in seconds to wait for replies from the Salt minions. The timeout number specifies how long the command line client will wait to query the minions and check on running jobs. Default: 5

**-s, --static**
By default as of version 0.9.8 the salt command returns data to the console as it is received from minions, but previous releases would return data only after all data was received. Use the static option to only return the data with a hard timeout and after all minions have returned. Without the static option, you will get a separate JSON string per minion which makes JSON output invalid as a whole.

**--async**
Instead of waiting for the job to run on minions only print the job id of the started execution and complete.

**--state-output**=STATE_OUTPUT
New in version 0.17.

Override the configured `state_output` value for minion output. One of `full`, `terse`, `mixed`, `changes` or `filter`. Default: `full`.

**--subset**=SUBSET
Execute the routine on a random subset of the targeted minions. The minions will be verified that they have the named function before executing. The SUBSET argument is the count of the minions to target.

**-v** VERBOSE, **--verbose**
Turn on verbosity for the salt call, this will cause the salt command to print out extra data like the job id.

**--hide-timeout**
Instead of showing the return data for all minions. This option prints only the online minions which could be reached.

**-b** BATCH, **--batch-size**=BATCH
Instead of executing on all targeted minions at once, execute on a progressive set of minions. This option takes an argument in the form of an explicit number of minions to execute at once, or a percentage of minions to execute on.

**-a** EAUTH, **--auth**=EAUTH
Pass in an external authentication medium to validate against. The credentials will be prompted for. The options are *auto*, *keystone*, *ldap*, *pam*, and *stormpath*. Can be used with the -T option.

**-T, --make-token**
Used in conjunction with the -a option. This creates a token that allows for the authenticated user to send commands without needing to re-authenticate.

**--return**=RETURNER
Choose an alternative returner to call on the minion, if an alternative returner is used then the return will not come back to the command line but will be sent to the specified return system. The options are *carbon*, *cassandra*, *couchbase*, *couchdb*, *elasticsearch*, *etcd*, *hipchat*, *local*, *local_cache*, *memcache*, *mongo*, *mysql*, *odbc*, *postgres*, *redis*, *sentry*, *slack*, *sms*, *smtp*, *sqlite3*, *syslog*, and *xmpp*.

**-d, --doc, --documentation**
Return the documentation for the module functions available on the minions

**--args-separator**=ARGS_SEPARATOR
Set the special argument used as a delimiter between command arguments of compound commands. This is useful when one wants to pass commas as arguments to some of the commands in a compound command.

### Logging Options

Logging options which override any settings defined on the configuration files.

**-l** LOG_LEVEL, **--log-level**=LOG_LEVEL
Console logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

**--log-file**=LOG_FILE
Log file path. Default: /var/log/salt/master.

**--log-file-level**=LOG_LEVEL_LOGFILE
Logfile logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

### Target Selection

The default matching that Salt utilizes is shell-style globbing around the minion id. See https://docs.python.org/2/library/fnmatch.html#module-fnmatch.

**-E, --pcre**
The target expression will be interpreted as a PCRE regular expression rather than a shell glob.

**-L, --list**
The target expression will be interpreted as a comma-delimited list; example: server1.foo.bar,server2.foo.bar,example7.quo.qux

**-G, --grain**
The target expression matches values returned by the Salt grains system on the minions. The target expression is in the format of `<grain value>:<glob expression>'; example: `os:Arch*'

This was changed in version 0.9.8 to accept glob expressions instead of regular expression. To use regular expression matching with grains, use the --grain-pcre option.

**--grain-pcre**
The target expression matches values returned by the Salt grains system on the minions. The target expression is in the format of `<grain value>:< regular expression>'; example: `os:Arch.*'

**-N, --nodegroup**
Use a predefined compound target defined in the Salt master configuration file.

**-R, --range**
Instead of using shell globs to evaluate the target, use a range expression to identify targets. Range expressions look like %cluster.

Using the Range option requires that a range server is set up and the location of the range server is referenced in the master configuration file.

**-C, --compound**
Utilize many target definitions to make the call very granular. This option takes a group of targets separated by `and` or `or`. The default matcher is a glob as usual. If something other than a glob is used, preface it with the letter denoting the type; example: `webserv* and G@os:Debian or E@db*` Make sure that the compound target is encapsulated in quotes.

**-I, --pillar**
Instead of using shell globs to evaluate the target, use a pillar value to identify targets. The syntax for the target is the pillar key followed by a glob expression: ``role:production*'

**-S, --ipcidr**
Match based on Subnet (CIDR notation) or IPv4 address.

### Output Options

**--out**
Pass in an alternative outputter to display the return of data. This outputter can be any of the available outputters:

`grains`, `highstate`, `json`, `key`, `overstatestage`, `pprint`, `raw`, `txt`, `yaml`

Some outputters are formatted only for data returned from specific functions; for instance, the `grains` outputter will not work for non-grains data.

If an outputter is used that does not support the data passed into it, then Salt will fall back on the `pprint` outputter and display the return data using the Python `pprint` standard library module.

---

**Note:** If using `--out=json`, you will probably want `--static` as well. Without the static option, you will get a separate JSON string per minion which makes JSON output invalid as a whole. This is due to using an iterative outputter. So if you want to feed it to a JSON parser, use `--static` as well.

---

**--out-indent** OUTPUT_INDENT, **--output-indent** OUTPUT_INDENT
Print the output indented by the provided value in spaces. Negative values disable indentation. Only applicable in outputters that support indentation.

**--out-file**=OUTPUT_FILE, **--output-file**=OUTPUT_FILE
Write the output to the specified file.

**--no-color**
Disable all colored output

**--force-color**
Force colored output

---

**Note:** When using colored output the color codes are as follows:

`green` denotes success, `red` denotes failure, `blue` denotes changes and success and `yellow` denotes a expected future change in configuration.

---

### See also

*salt(7) salt-master(1) salt-minion(1)*

## 12.3 salt-cloud

## 12.4 salt-cp

### 12.4.1 salt-cp

Copy a file to a set of systems

#### Synopsis

```
salt-cp '*' [ options ] SOURCE DEST

salt-cp -E '.*' [ options ] SOURCE DEST

salt-cp -G 'os:Arch.*' [ options ] SOURCE DEST
```

#### Description

Salt copy copies a local file out to all of the Salt minions matched by the given target.

Note: salt-cp uses salt's publishing mechanism. This means the privacy of the contents of the file on the wire is completely dependent upon the transport in use. In addition, if the salt-master is running with debug logging it is possible that the contents of the file will be logged to disk.

#### Options

**--version**
Print the version of Salt that is running.

**--versions-report**
Show program's dependencies and version number, and then exit

**-h, --help**
Show the help message and exit

**-c** CONFIG_DIR, **--config-dir**=CONFIG_dir
The location of the Salt configuration directory. This directory contains the configuration files for Salt master and minions. The default location on most systems is `/etc/salt`.

**-t** TIMEOUT, **--timeout**=TIMEOUT
The timeout in seconds to wait for replies from the Salt minions. The timeout number specifies how long the command line client will wait to query the minions and check on running jobs. Default: 5

### Logging Options

Logging options which override any settings defined on the configuration files.

**-l** LOG_LEVEL, **--log-level**=LOG_LEVEL
: Console logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

**--log-file**=LOG_FILE
: Log file path. Default: /var/log/salt/master.

**--log-file-level**=LOG_LEVEL_LOGFILE
: Logfile logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

### Target Selection

The default matching that Salt utilizes is shell-style globbing around the minion id. See https://docs.python.org/2/library/fnmatch.html#module-fnmatch.

**-E, --pcre**
: The target expression will be interpreted as a PCRE regular expression rather than a shell glob.

**-L, --list**
: The target expression will be interpreted as a comma-delimited list; example: server1.foo.bar,server2.foo.bar,example7.quo.qux

**-G, --grain**
: The target expression matches values returned by the Salt grains system on the minions. The target expression is in the format of `<grain value>:<glob expression>'; example: `os:Arch*'

  This was changed in version 0.9.8 to accept glob expressions instead of regular expression. To use regular expression matching with grains, use the --grain-pcre option.

**--grain-pcre**
: The target expression matches values returned by the Salt grains system on the minions. The target expression is in the format of `<grain value>:< regular expression>'; example: `os:Arch.*'

**-N, --nodegroup**
: Use a predefined compound target defined in the Salt master configuration file.

**-R, --range**
: Instead of using shell globs to evaluate the target, use a range expression to identify targets. Range expressions look like %cluster.

  Using the Range option requires that a range server is set up and the location of the range server is referenced in the master configuration file.

### See also

*salt(1) salt-master(1) salt-minion(1)*

## 12.5 salt-key

### 12.5.1 salt-key

#### Synopsis

```
salt-key [ options ]
```

#### Description

Salt-key executes simple management of Salt server public keys used for authentication.

On initial connection, a Salt minion sends its public key to the Salt master. This key must be accepted using the `salt-key` command on the Salt master.

Salt minion keys can be in one of the following states:

- **unaccepted**: key is waiting to be accepted.
- **accepted**: key was accepted and the minion can communicate with the Salt master.
- **rejected**: key was rejected using the `salt-key` command. In this state the minion does not receive any communication from the Salt master.
- **denied**: key was rejected automatically by the Salt master. This occurs when a minion has a duplicate ID, or when a minion was rebuilt or had new keys generated and the previous key was not deleted from the Salt master. In this state the minion does not receive any communication from the Salt master.

To change the state of a minion key, use `-d` to delete the key and then accept or reject the key.

#### Options

**`--version`**
Print the version of Salt that is running.

**`--versions-report`**
Show program's dependencies and version number, and then exit

**`-h, --help`**
Show the help message and exit

**`-c` CONFIG_DIR, `--config-dir`**=CONFIG_dir
The location of the Salt configuration directory. This directory contains the configuration files for Salt master and minions. The default location on most systems is `/etc/salt`.

**`-u` USER, `--user`**=USER
Specify user to run salt-key

**`--hard-crash`**
Raise any original exception rather than exiting gracefully. Default is False.

**`-q, --quiet`**
Suppress output

**`-y, --yes`**
Answer `Yes' to all questions presented, defaults to False

**--rotate-aes-key**=ROTATE_AES_KEY
Setting this to False prevents the master from refreshing the key session when keys are deleted or rejected, this lowers the security of the key deletion/rejection operation. Default is True.

### Logging Options

Logging options which override any settings defined on the configuration files.

**--log-file**=LOG_FILE
Log file path. Default: /var/log/salt/minion.

**--log-file-level**=LOG_LEVEL_LOGFILE
Logfile logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

### Output Options

**--out**
Pass in an alternative outputter to display the return of data. This outputter can be any of the available outputters:

`grains`, `highstate`, `json`, `key`, `overstatestage`, `pprint`, `raw`, `txt`, `yaml`

Some outputters are formatted only for data returned from specific functions; for instance, the `grains` outputter will not work for non-grains data.

If an outputter is used that does not support the data passed into it, then Salt will fall back on the `pprint` outputter and display the return data using the Python `pprint` standard library module.

---

**Note:** If using `--out=json`, you will probably want `--static` as well. Without the static option, you will get a separate JSON string per minion which makes JSON output invalid as a whole. This is due to using an iterative outputter. So if you want to feed it to a JSON parser, use `--static` as well.

---

**--out-indent** OUTPUT_INDENT, **--output-indent** OUTPUT_INDENT
Print the output indented by the provided value in spaces. Negative values disable indentation. Only applicable in outputters that support indentation.

**--out-file**=OUTPUT_FILE, **--output-file**=OUTPUT_FILE
Write the output to the specified file.

**--no-color**
Disable all colored output

**--force-color**
Force colored output

---

**Note:** When using colored output the color codes are as follows:

`green` denotes success, `red` denotes failure, `blue` denotes changes and success and `yellow` denotes a expected future change in configuration.

---

### Actions

**-l** ARG, **--list**=ARG
: List the public keys. The args `pre`, `un`, and `unaccepted` will list unaccepted/unsigned keys. `acc` or `accepted` will list accepted/signed keys. `rej` or `rejected` will list rejected keys. Finally, `all` will list all keys.

**-L, --list-all**
: List all public keys. (Deprecated: use `--list all`)

**-a** ACCEPT, **--accept**=ACCEPT
: Accept the specified public key (use --include-all to match rejected keys in addition to pending keys). Globs are supported.

**-A, --accept-all**
: Accepts all pending keys.

**-r** REJECT, **--reject**=REJECT
: Reject the specified public key (use --include-all to match accepted keys in addition to pending keys). Globs are supported.

**-R, --reject-all**
: Rejects all pending keys.

**--include-all**
: Include non-pending keys when accepting/rejecting.

**-p** PRINT, **--print**=PRINT
: Print the specified public key.

**-P, --print-all**
: Print all public keys

**-d** DELETE, **--delete**=DELETE
: Delete the specified key. Globs are supported.

**-D, --delete-all**
: Delete all keys.

**-f** FINGER, **--finger**=FINGER
: Print the specified key's fingerprint.

**-F, --finger-all**
: Print all keys' fingerprints.

### Key Generation Options

**--gen-keys**=GEN_KEYS
: Set a name to generate a keypair for use with salt

**--gen-keys-dir**=GEN_KEYS_DIR
: Set the directory to save the generated keypair. Only works with `gen_keys_dir' option; default is the current directory.

**--keysize**=KEYSIZE
: Set the keysize for the generated key, only works with the `--gen-keys' option, the key size must be 2048 or higher, otherwise it will be rounded up to 2048. The default is 2048.

**--gen-signature**
: Create a signature file of the master's public-key named master_pubkey_signature. The signature can be sent to

a minion in the master's auth-reply and enables the minion to verify the master's public-key cryptographically. This requires a new signing-key-pair which can be auto-created with the --auto-create parameter.

**--priv**=PRIV
The private-key file to create a signature with

**--signature-path**=SIGNATURE_PATH
The path where the signature file should be written

**--pub**=PUB
The public-key file to create a signature for

**--auto-create**
Auto-create a signing key-pair if it does not yet exist

#### See also

*salt(7) salt-master(1) salt-minion(1)*

## 12.6 salt-master

### 12.6.1 salt-master

The Salt master daemon, used to control the Salt minions

#### Synopsis

```
salt-master [ options ]
```

#### Description

The master daemon controls the Salt minions

#### Options

**--version**
Print the version of Salt that is running.

**--versions-report**
Show program's dependencies and version number, and then exit

**-h, --help**
Show the help message and exit

**-c** CONFIG_DIR, **--config-dir**=CONFIG_dir
The location of the Salt configuration directory. This directory contains the configuration files for Salt master and minions. The default location on most systems is `/etc/salt`.

**-u** USER, **--user**=USER
Specify user to run salt-master

**-d, --daemon**
Run salt-master as a daemon

**--pid-file** PIDFILE
Specify the location of the pidfile. Default: /var/run/salt-master.pid

#### Logging Options

Logging options which override any settings defined on the configuration files.

**-l** LOG_LEVEL, **--log-level**=LOG_LEVEL
Console logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

**--log-file**=LOG_FILE
Log file path. Default: /var/log/salt/master.

**--log-file-level**=LOG_LEVEL_LOGFILE
Logfile logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

#### See also

*salt(1) salt(7) salt-minion(1)*

## 12.7 salt-minion

### 12.7.1 salt-minion

The Salt minion daemon, receives commands from a remote Salt master.

#### Synopsis

```
salt-minion [ options ]
```

#### Description

The Salt minion receives commands from the central Salt master and replies with the results of said commands.

#### Options

**--version**
Print the version of Salt that is running.

**--versions-report**
Show program's dependencies and version number, and then exit

**-h, --help**
Show the help message and exit

**-c** CONFIG_DIR, **--config-dir**=CONFIG_dir
The location of the Salt configuration directory. This directory contains the configuration files for Salt master and minions. The default location on most systems is `/etc/salt`.

**-u** USER, **--user**=USER
Specify user to run salt-minion

**-d**, **--daemon**
Run salt-minion as a daemon

**--pid-file** PIDFILE
Specify the location of the pidfile. Default: /var/run/salt-minion.pid

#### Logging Options

Logging options which override any settings defined on the configuration files.

**-l** LOG_LEVEL, **--log-level**=LOG_LEVEL
Console logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

**--log-file**=LOG_FILE
Log file path. Default: /var/log/salt/minion.

**--log-file-level**=LOG_LEVEL_LOGFILE
Logfile logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

#### See also

*salt(1) salt(7) salt-master(1)*

## 12.8 salt-proxy

### 12.8.1 salt-proxy

Receives commands from a Salt master and proxies these commands to devices that are unable to run a full minion.

#### Synopsis

```
salt-proxy [ options ]
```

#### Description

The Salt proxy minion receives commands from a Salt master, transmits appropriate commands to devices that are unable to run a minion, and replies with the results of said commands.

#### Options

**--proxyid**
The minion id that this proxy will assume. This is required.

**--version**
Print the version of Salt that is running.

**--versions-report**
Show program's dependencies and version number, and then exit

**-h, --help**
Show the help message and exit

**-c** CONFIG_DIR, **--config-dir**=CONFIG_dir
The location of the Salt configuration directory. This directory contains the configuration files for Salt master and minions. The default location on most systems is `/etc/salt`.

**-u** USER, **--user**=USER
Specify user to run salt-proxy

**-d, --daemon**
Run salt-proxy as a daemon

**--pid-file** PIDFILE
Specify the location of the pidfile. Default: `/var/run/salt-proxy-<id>.pid`

#### Logging Options

Logging options which override any settings defined on the configuration files.

**-l** LOG_LEVEL, **--log-level**=LOG_LEVEL
Console logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

**--log-file**=LOG_FILE
Log file path. Default: /var/log/salt/minion.

**--log-file-level**=LOG_LEVEL_LOGFILE
Logfile logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

#### See also

*salt(1) salt(7) salt-master(1) salt-minion(1)*

## 12.9 salt-run

### 12.9.1 salt-run

Execute a Salt runner

#### Synopsis

```
salt-run RUNNER
```

#### Description

salt-run is the frontend command for executing `Salt Runners`. Salt runners are simple modules used to execute convenience functions on the master

#### Options

**--version**
Print the version of Salt that is running.

**--versions-report**
Show program's dependencies and version number, and then exit

**-h, --help**
Show the help message and exit

**-c** CONFIG_DIR, **--config-dir**=CONFIG_dir
The location of the Salt configuration directory. This directory contains the configuration files for Salt master and minions. The default location on most systems is `/etc/salt`.

**-t** TIMEOUT, **--timeout**=TIMEOUT
The timeout in seconds to wait for replies from the Salt minions. The timeout number specifies how long the command line client will wait to query the minions and check on running jobs. Default: 1

**--hard-crash**
Raise any original exception rather than exiting gracefully. Default is False.

**-d, --doc, --documentation**
Display documentation for runners, pass a module or a runner to see documentation on only that module/runner.

#### Logging Options

Logging options which override any settings defined on the configuration files.

**-l** LOG_LEVEL, **--log-level**=LOG_LEVEL
Console logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

**--log-file**=LOG_FILE
Log file path. Default: /var/log/salt/master.

**--log-file-level**=LOG_LEVEL_LOGFILE
Logfile logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

#### See also

*salt(1) salt-master(1) salt-minion(1)*

## 12.10 salt-ssh

### 12.10.1 salt-ssh

#### Synopsis

```
salt-ssh '*' [ options ] sys.doc

salt-ssh -E '.*' [ options ] sys.doc cmd
```

### Description

Salt SSH allows for salt routines to be executed using only SSH for transport

### Options

**-r, --raw, --raw-shell**
Execute a raw shell command.

**--priv**
Specify the SSH private key file to be used for authentication.

**--roster**
Define which roster system to use, this defines if a database backend, scanner, or custom roster system is used. Default is the flat file roster.

**--roster-file**
Define an alternative location for the default roster file location. The default roster file is called `roster` and is found in the same directory as the master config file.

New in version 2014.1.0.

**--refresh, --refresh-cache**
Force a refresh of the master side data cache of the target's data. This is needed if a target's grains have been changed and the auto refresh timeframe has not been reached.

**--max-procs**
Set the number of concurrent minions to communicate with. This value defines how many processes are opened up at a time to manage connections, the more running process the faster communication should be, default is 25.

**-i, --ignore-host-keys**
Disables StrictHostKeyChecking to relax acceptance of new and unknown host keys.

**--no-host-keys**
Fully ignores ssh host keys which by default are honored and connections would ask for approval. Useful if the host key of a remote server has changed and would still error with --ignore-host-keys.

**--passwd**
Set the default password to attempt to use when authenticating.

**--key-deploy**
Set this flag to attempt to deploy the authorized ssh key with all minions. This combined with --passwd can make initial deployment of keys very fast and easy.

**--version**
Print the version of Salt that is running.

**--versions-report**
Show program's dependencies and version number, and then exit

**-h, --help**
Show the help message and exit

**-c** CONFIG_DIR, **--config-dir**=CONFIG_dir
The location of the Salt configuration directory. This directory contains the configuration files for Salt master and minions. The default location on most systems is `/etc/salt`.

### Target Selection

The default matching that Salt utilizes is shell-style globbing around the minion id. See https://docs.python.org/2/library/fnmatch.html#module-fnmatch.

**-E, --pcre**
The target expression will be interpreted as a PCRE regular expression rather than a shell glob.

### Logging Options

Logging options which override any settings defined on the configuration files.

**-l** LOG_LEVEL, **--log-level**=LOG_LEVEL
Console logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

**--log-file**=LOG_FILE
Log file path. Default: /var/log/salt/ssh.

**--log-file-level**=LOG_LEVEL_LOGFILE
Logfile logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

### Output Options

**--out**
Pass in an alternative outputter to display the return of data. This outputter can be any of the available outputters:

`grains`, `highstate`, `json`, `key`, `overstatestage`, `pprint`, `raw`, `txt`, `yaml`

Some outputters are formatted only for data returned from specific functions; for instance, the `grains` outputter will not work for non-grains data.

If an outputter is used that does not support the data passed into it, then Salt will fall back on the `pprint` outputter and display the return data using the Python `pprint` standard library module.

---

**Note:** If using `--out=json`, you will probably want `--static` as well. Without the static option, you will get a separate JSON string per minion which makes JSON output invalid as a whole. This is due to using an iterative outputter. So if you want to feed it to a JSON parser, use `--static` as well.

---

**--out-indent** OUTPUT_INDENT, **--output-indent** OUTPUT_INDENT
Print the output indented by the provided value in spaces. Negative values disable indentation. Only applicable in outputters that support indentation.

**--out-file**=OUTPUT_FILE, **--output-file**=OUTPUT_FILE
Write the output to the specified file.

**--no-color**
Disable all colored output

**--force-color**
Force colored output

---

**Note:** When using colored output the color codes are as follows:

`green` denotes success, `red` denotes failure, `blue` denotes changes and success and `yellow` denotes a expected future change in configuration.

### See also

*salt(7) salt-master(1) salt-minion(1)*

## 12.11 salt-syndic

### 12.11.1 salt-syndic

The Salt syndic daemon, a special minion that passes through commands from a higher master

#### Synopsis

```
salt-syndic [ options ]
```

#### Description

The Salt syndic daemon, a special minion that passes through commands from a higher master.

#### Options

**--version**
Print the version of Salt that is running.

**--versions-report**
Show program's dependencies and version number, and then exit

**-h, --help**
Show the help message and exit

**-c** CONFIG_DIR, **--config-dir**=CONFIG_dir
The location of the Salt configuration directory. This directory contains the configuration files for Salt master and minions. The default location on most systems is `/etc/salt`.

**-u** USER, **--user**=USER
Specify user to run salt-syndic

**-d, --daemon**
Run salt-syndic as a daemon

**--pid-file** PIDFILE
Specify the location of the pidfile. Default: /var/run/salt-syndic.pid

#### Logging Options

Logging options which override any settings defined on the configuration files.

**-l** LOG_LEVEL, **--log-level**=LOG_LEVEL
: Console logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

**--log-file**=LOG_FILE
: Log file path. Default: /var/log/salt/master.

**--log-file-level**=LOG_LEVEL_LOGFILE
: Logfile logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

#### See also

*salt(1) salt-master(1) salt-minion(1)*

## 12.12 salt-api

### 12.12.1 salt-api

Start interfaces used to remotely connect to the salt master

#### Synopsis

```
salt-api
```

#### Description

The Salt API system manages network api connectors for the Salt Master

#### Options

**--version**
: Print the version of Salt that is running.

**--versions-report**
: Show program's dependencies and version number, and then exit

**-h, --help**
: Show the help message and exit

**-c** CONFIG_DIR, **--config-dir**=CONFIG_dir
: The location of the Salt configuration directory. This directory contains the configuration files for Salt master and minions. The default location on most systems is `/etc/salt`.

**-d, --daemon**
: Run the salt-api as a daemon

**--pid-file**=PIDFILE
Specify the location of the pidfile. Default: /var/run/salt-api.pid

### Logging Options

Logging options which override any settings defined on the configuration files.

**-l** LOG_LEVEL, **--log-level**=LOG_LEVEL
Console logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

**--log-file**=LOG_FILE
Log file path. Default: /var/log/salt/api.

**--log-file-level**=LOG_LEVEL_LOGFILE
Logfile logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

### See also

*salt-api(7) salt(7) salt-master(1)*

## 12.13 spm

### 12.13.1 spm

*Salt Package Manager*

### Synopsis

```
spm <command> [<argument>]
```

### Description

spm is the frontend command for managing Salt packages. Packages normally only include formulas, meaning a group of SLS files that install into the `file_roots` on the Salt Master, but Salt modules can also be installed.

### Options

**-y, --assume-yes**
Assume `yes` instead of prompting the other whether or not to proceed with a particular command. Default is False.

**-f, --force**
When presented with a course of action that spm would normally refuse to perform, that action will be performed anyway. This is often destructive, and should be used with caution.

### Logging Options

Logging options which override any settings defined on the configuration files.

**-l** LOG_LEVEL, **--log-level**=LOG_LEVEL
: Console logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

**--log-file**=LOG_FILE
: Log file path. Default: /var/log/salt/spm.

**--log-file-level**=LOG_LEVEL_LOGFILE
: Logfile logging log level. One of `all`, `garbage`, `trace`, `debug`, `info`, `warning`, `error`, `quiet`. Default: `warning`.

### Commands

**update_repo**
: Connect to remote repositories locally configured on the system and download their metadata.

**install**
: Install a package from a configured SPM repository. Requires a package name.

**remove**
: Remove an installed package from the system. Requires a package name.

**info**
: List information about an installed package. Requires a package name.

**files**
: List files belonging to an installed package. Requires a package name.

**local**
: Perform one of the above options (except for remove) on a package file, instead of on a package in a repository, or an installed package. Requires a valid path to a local file on the system.

**build**
: Build a package from a directory containing a FORMULA file. Requires a valid path to a local directory on the system.

**create_repo**
: Scan a directory for valid SPM package files and build an SPM-METADATA file in that directory which describes them.

### See also

*salt(1) salt-master(1) salt-minion(1)*

CHAPTER 13

# Salt Module Reference

This section contains a list of the Python modules that are used to extend the various subsystems within Salt.

## 13.1 auth modules

| | |
|---|---|
| *auto* | An ``Always Approved'' eauth interface to test against, not intended for |
| *django* | Provide authentication using Django Web Framework |
| *keystone* | Provide authentication using OpenStack Keystone |
| *ldap* | Provide authentication using simple LDAP binds |
| *mysql* | Provide authentication using MySQL. |
| *pam* | Authenticate against PAM |
| *pki* | Authenticate via a PKI certificate. |
| *rest* | Provide authentication using a REST call |
| *sharedsecret* | Provide authentication using configured shared secret |
| *stormpath* | Provide authentication using Stormpath. |
| *yubico* | Provide authentication using YubiKey. |

### 13.1.1 salt.auth.auto

An ``Always Approved'' eauth interface to test against, not intended for production use

`salt.auth.auto.`**`auth`**(*username*, *password*)
Authenticate!

### 13.1.2 salt.auth.django

Provide authentication using Django Web Framework

**depends**

- Django Web Framework

Django authentication depends on the presence of the django framework in the `PYTHONPATH`, the Django project's `settings.py` file being in the `PYTHONPATH` and accessible via the `DJANGO_SETTINGS_MODULE` environment variable.

Django auth can be defined like any other eauth module:

```
external_auth:
  django:
    fred:
      - .*
      - '@runner'
```

This will authenticate Fred via Django and allow him to run any execution module and all runners.

The authorization details can optionally be located inside the Django database. The relevant entry in the `models.py` file would look like this:

```
class SaltExternalAuthModel(models.Model):
    user_fk = models.ForeignKey(auth.User)
    minion_matcher = models.CharField()
    minion_fn = models.CharField()
```

The *external_auth* clause in the master config would then look like this:

```
external_auth:
  django:
    ^model: <fully-qualified reference to model class>
```

When a user attempts to authenticate via Django, Salt will import the package indicated via the keyword `^model`. That model must have the fields indicated above, though the model DOES NOT have to be named `SaltExternalAuthModel'.

`salt.auth.django.`**`auth`**`(`*username*, *password*`)`
Simple Django auth

`salt.auth.django.`**`django_auth_setup`**`()`
Prepare the connection to the Django authentication framework

`salt.auth.django.`**`retrieve_auth_entries`**`(`*u=None*`)`

**Parameters** **u** -- Username to filter for

**Returns** Dictionary that can be slotted into the `__opts__` structure for eauth that designates the user associated ACL

Database records such as:

| username | minion_or_fn_matcher | minion_fn |
|---|---|---|
| fred | | test.ping |
| fred | server1 | network.interfaces |
| fred | server1 | raid.list |
| fred | server2 | .* |
| guru | .* | |
| smartadmin | server1 | .* |

Should result in an eauth config such as:

```
fred:
  - test.ping
  - server1:
      - network.interfaces
      - raid.list
  - server2:
      - .*
guru:
  - .*
```

```
smartadmin:
  - server1:
    - .*
```

### 13.1.3 salt.auth.keystone

Provide authentication using OpenStack Keystone

**depends**

- keystoneclient Python module

salt.auth.keystone.**auth**(*username*, *password*)
Try and authenticate

salt.auth.keystone.**get_auth_url**()
Try and get the URL from the config, else return localhost

### 13.1.4 salt.auth.ldap

Provide authentication using simple LDAP binds

**depends**

- ldap Python module

salt.auth.ldap.**auth**(*username*, *password*)
Simple LDAP auth

salt.auth.ldap.**expand_ldap_entries**(*entries*, *opts=None*)

**Parameters**

- **entries** -- ldap subtree in external_auth config option
- **opts** -- Opts to use when __opts__ not defined

**Returns** Dictionary with all allowed operations

Takes the ldap subtree in the external_auth config option and expands it with actual minion names

**webadmins%: <all users in the AD `webadmins' group>**

- **server1**
  - .*
- ldap(OU=webservers,dc=int,dc=bigcompany,dc=com) - test.ping - service.restart
- ldap(OU=Domain Controllers,dc=int,dc=bigcompany,dc=com) - allowed_fn_list_attribute^

This function only gets called if auth.ldap.activedirectory = True

salt.auth.ldap.**groups**(*username*, ***kwargs*)
Authenticate against an LDAP group

Behavior is highly dependent on if Active Directory is in use.

AD handles group membership very differently than OpenLDAP. See the *External Authentication* documentation for a thorough discussion of available parameters for customizing the search.

OpenLDAP allows you to search for all groups in the directory and returns members of those groups. Then we check against the username entered.

### 13.1.5 salt.auth.mysql

Provide authentication using MySQL.

When using MySQL as an authentication backend, you will need to create or use an existing table that has a username and a password column.

To get started, create a simple table that holds just a username and a password. The password field will hold a SHA256 checksum.

```
CREATE TABLE `users` (
  `id` int(11) NOT NULL AUTO_INCREMENT,
  `username` varchar(25) DEFAULT NULL,
  `password` varchar(70) DEFAULT NULL,
  PRIMARY KEY (`id`)
) ENGINE=InnoDB AUTO_INCREMENT=2 DEFAULT CHARSET=latin1;
```

To create a user within MySQL, execute the following statement.

```
INSERT INTO users VALUES (NULL, 'diana', SHA2('secret', 256))
```

```
mysql_auth:
  hostname: localhost
  database: SaltStack
  username: root
  password: letmein
  auth_sql: 'SELECT username FROM users WHERE username = "{0}" AND password = SHA2("{1}
 ↪", 256)'
```

The *auth_sql* contains the SQL that will validate a user to ensure they are correctly authenticated. This is where you can specify other SQL queries to authenticate users.

Enable MySQL authentication.

```
external_auth:
  mysql:
    damian:
      - test.*
```

**depends**

- MySQL-python Python module

`salt.auth.mysql.`**`auth`**(*username*, *password*)
Authenticate using a MySQL user table

### 13.1.6 salt.auth.pam

Authenticate against PAM

Provides an authenticate function that will allow the caller to authenticate a user against the Pluggable Authentication Modules (PAM) on the system.

Implemented using ctypes, so no compilation is necessary.

There is one extra configuration option for pam. The *pam_service* that is authenticated against. This defaults to *login*

```
auth.pam.service: login
```

**Note:** PAM authentication will not work for the `root` user.

The Python interface to PAM does not support authenticating as `root`.

**Note:** Using PAM groups with SSSD groups on python2.

To use sssd with the PAM eauth module and groups the *pysss* module is needed. On RedHat/CentOS this is *python-sss*.

This should not be needed with python >= 3.3, because the *os* modules has the *getgrouplist* function.

**class** `salt.auth.pam.`**`PamConv`**
Wrapper class for pam_conv structure

**`appdata_ptr`**
Structure/Union member

**`conv`**
Structure/Union member

**class** `salt.auth.pam.`**`PamHandle`**
Wrapper class for pam_handle_t

**`handle`**
Structure/Union member

**class** `salt.auth.pam.`**`PamMessage`**
Wrapper class for pam_message structure

**`msg`**
Structure/Union member

**`msg_style`**
Structure/Union member

**class** `salt.auth.pam.`**`PamResponse`**
Wrapper class for pam_response structure

**`resp`**
Structure/Union member

**`resp_retcode`**
Structure/Union member

`salt.auth.pam.`**`auth`**(*username*, *password*, ***kwargs*)
Authenticate via pam

`salt.auth.pam.`**`authenticate`**(*username*, *password*)
Returns True if the given username and password authenticate for the given service. Returns False otherwise

`username`: the username to authenticate

`password`: the password in plain text

`salt.auth.pam.`**`groups`**(*username*, **args*, ***kwargs*)
Retrieve groups for a given user for this auth provider

Uses system groups

### 13.1.7 salt.auth.pki

Authenticate via a PKI certificate.

**Note:** This module is Experimental and should be used with caution

Provides an authenticate function that will allow the caller to authenticate a user via their public cert against a pre-defined Certificate Authority.

TODO: Add a `ca_dir' option to configure a directory of CA files, a la Apache.

**depends**

- pyOpenSSL module

`salt.auth.pki.`**`auth`**(*username*, *password*, ***kwargs*)

Returns True if the given user cert (password is the cert contents) was issued by the CA and if cert's Common Name is equal to username.

Returns False otherwise.

**`username`**: **we need it to run the auth function from CLI/API**; it should be in master config auth/acl

**`password`**: **contents of user certificate (pem-encoded user public key)**; why ``password''? For CLI, it's the only available name

Configure the CA cert in the master config file:

```
external_auth:
  pki:
    ca_file: /etc/pki/tls/ca_certs/trusted-ca.crt
    your_user:
      - .*
```

### 13.1.8 salt.auth.rest module

Provide authentication using a REST call

Django auth can be defined like any other eauth module:

```
external_auth:
  rest:
    ^url: https://url/for/rest/call
    fred:
      - .*
      - '@runner'
```

If there are entries underneath the ^url entry then they are merged with any responses from the REST call. In the above example, assuming the REST call does not return any additional ACLs, this will authenticate Fred via a REST call and allow him to run any execution module and all runners.

The REST call should return a JSON object that maps to a regular eauth YAML structure as above.

`salt.auth.rest.`**`auth`**(*username*, *password*)

REST authentication

`salt.auth.rest.`**`rest_auth_setup`**()

### 13.1.9 salt.auth.sharedsecret

Provide authentication using configured shared secret

```
external_auth:
  sharedsecret:
    fred:
      - .*
      - '@jobs'
```

The shared secret should be added to the master configuration, for example in /etc/salt/master.d/sharedsecret.conf (make sure that file is only readable by the user running the master):

```
sharedsecret: OIUHF_CHANGE_THIS_12h88
```

This auth module should be used with caution. It was initially designed to work with a frontal that takes care of authentication (for example kerberos) and places the shared secret in the HTTP headers to the salt-api call. This salt-api call should really be done on localhost to avoid someone eavesdropping on the shared secret.

See the documentation for cherrypy to setup the headers in your frontal.

New in version Beryllium.

`salt.auth.sharedsecret.`**`auth`**(*username*, *sharedsecret*, ***kwargs*)
Shared secret authentication

### 13.1.10 salt.auth.stormpath

Provide authentication using Stormpath.

This driver requires some extra configuration beyond that which Stormpath normally requires.

```
stormpath:
  apiid: 1234567890
  apikey: 1234567890/ABCDEF
  # Can use an application ID
  application: 6789012345
  # Or can use a directory ID
  directory: 3456789012
  # But not both
```

New in version 2015.8.0.

`salt.auth.stormpath.`**`auth`**(*username*, *password*)
Authenticate using a Stormpath directory or application

### 13.1.11 salt.auth.yubico

Provide authentication using YubiKey.

New in version 2015.5.0.

**depends** yubico-client Python module

To get your YubiKey API key you will need to visit the website below.

https://upgrade.yubico.com/getapikey/

The resulting page will show the generated Client ID (aka AuthID or API ID) and the generated API key (Secret Key). Make a note of both and use these two values in your /etc/salt/master configuration.

/etc/salt/master

```
yubico_users:
  damian:
    id: 12345
    key: ABCDEFGHIJKLMNOPQRSTUVWXYZ
```

```
external_auth:
  yubico:
    damian:
      - test.*
```

Please wait five to ten minutes after generating the key before testing so that the API key will be updated on all the YubiCloud servers.

`salt.auth.yubico.`**`auth`**(*username*, *password*)
Authenticate against yubico server

`salt.auth.yubico.`**`groups`**(*username*, **args*, ***kwargs*)

## 13.2 beacon modules

| | |
|---|---|
| *adb* | Beacon to emit adb device state changes for Android devices |
| *btmp* | Beacon to fire events at failed login of users |
| *diskusage* | Beacon to monitor disk usage. |
| *glxinfo* | Beacon to emit when a display is available to a linux machine |
| *inotify* | Watch files and translate the changes into salt events |
| *journald* | A simple beacon to watch journald for specific entries |
| *load* | Beacon to emit system load averages |
| *memusage* | Beacon to monitor memory usage. |
| *network_info* | Beacon to monitor statistics from ethernet adapters |
| *network_settings* | Beacon to monitor network adapter setting changes on Linux |
| *pkg* | Watch for pkgs that have upgrades, then fire an event. |
| *proxy_example* | Example beacon to use with salt-proxy |
| *ps* | Send events covering service status |
| *salt_proxy* | Beacon to manage and report the status of |
| *service* | Send events covering service status |
| *sh* | Watch the shell commands being executed actively. |
| *twilio_txt_msg* | Beacon to emit Twilio text messages |
| *wtmp* | Beacon to fire events at login of users as registered in the wtmp file |

### 13.2.1 salt.beacons.adb module

Beacon to emit adb device state changes for Android devices

New in version 2016.3.0.

salt.beacons.adb.**beacon**(*config*)
Emit the status of all devices returned by adb

Specify the device states that should emit an event, there will be an event for each device with the event type and device specified.

```
beacons:
  adb:
    - states:
        - offline
        - unauthorized
        - missing
    - no_devices_event: True
    - battery_low: 25
```

salt.beacons.adb.**validate**(*config*)
Validate the beacon configuration

### 13.2.2 salt.beacons.btmp

Beacon to fire events at failed login of users

```
beacons:
  btmp: {}
```

salt.beacons.btmp.**beacon**(*config*)
Read the last btmp file and return information on the failed logins

```
beacons:
  btmp: {}
```

salt.beacons.btmp.**validate**(*config*)
Validate the beacon configuration

### 13.2.3 salt.beacons.diskusage

Beacon to monitor disk usage.

New in version 2015.5.0.

**depends** python-psutil

salt.beacons.diskusage.**beacon**(*config*)
Monitor the disk usage of the minion

Specify thresholds for each disk and only emit a beacon if any of them are exceeded.

```
beacons:
  diskusage:
    - /: 63%
    - /mnt/nfs: 50%
```

Windows drives must be quoted to avoid yaml syntax errors

```
beacons:
  diskusage:
    -  interval: 120
```

```
    - 'c:': 90%
    - 'd:': 50%
```

salt.beacons.diskusage.**validate**(*config*)
Validate the beacon configuration

### 13.2.4 salt.beacons.glxinfo module

Beacon to emit when a display is available to a linux machine

New in version 2016.3.0.

salt.beacons.glxinfo.**beacon**(*config*)
Emit the status of a connected display to the minion

Mainly this is used to detect when the display fails to connect for whatever reason.

```
beacons:
  glxinfo:
    user: frank
    screen_event: True
```

salt.beacons.glxinfo.**validate**(*config*)
Validate the beacon configuration

### 13.2.5 salt.beacons.inotify

Watch files and translate the changes into salt events

**depends**

- pyinotify Python module >= 0.9.5

**Caution** Using generic mask options like open, access, ignored, and closed_nowrite with reactors can easily cause the reactor to loop on itself. To mitigate this behavior, consider setting the *disable_during_state_run* flag to *True* in the beacon configuration.

**note** The *inotify* beacon only works on OSes that have *inotify* kernel support. Currently this excludes FreeBSD, Mac OS X, and Windows.

salt.beacons.inotify.**beacon**(*config*)
Watch the configured files

Example Config

```
beacons:
  inotify:
    /path/to/file/or/dir:
      mask:
        - open
        - create
        - close_write
      recurse: True
      auto_add: True
      exclude:
        - /path/to/file/or/dir/exclude1
        - /path/to/file/or/dir/exclude2
```

The mask list can contain the following events (the default mask is create, delete, and modify):

- access - File accessed
- attrib - File metadata changed
- close_nowrite - Unwritable file closed
- close_write - Writable file closed
- create - File created in watched directory
- delete - File deleted from watched directory
- delete_self - Watched file or directory deleted
- modify - File modified
- moved_from - File moved out of watched directory
- moved_to - File moved into watched directory
- move_self - Watched file moved
- open - File opened

The mask can also contain the following options:

- dont_follow - Don't dereference symbolic links
- excl_unlink - Omit events for children after they have been unlinked
- oneshot - Remove watch after one event
- onlydir - Operate only if name is directory

**recurse**: Recursively watch files in the directory

**auto_add**: Automatically start watching files that are created in the watched directory

**exclude**: Exclude directories or files from triggering events in the watched directory

`salt.beacons.inotify.`**`close`**(*config*)

`salt.beacons.inotify.`**`validate`**(*config*)
Validate the beacon configuration

### 13.2.6 salt.beacons.journald

A simple beacon to watch journald for specific entries

`salt.beacons.journald.`**`beacon`**(*config*)
The journald beacon allows for the systemd journal to be parsed and linked objects to be turned into events.

This beacons config will return all sshd jornal entries

```
beacons:
  journald:
    sshd:
      SYSLOG_IDENTIFIER: sshd
      PRIORITY: 6
```

`salt.beacons.journald.`**`validate`**(*config*)
Validate the beacon configuration

### 13.2.7 salt.beacons.load

Beacon to emit system load averages

salt.beacons.load.**beacon**(*config*)
Emit the load averages of this host.

Specify thresholds for each load average and only emit a beacon if any of them are exceeded.

*onchangeonly*: when *onchangeonly* is True the beacon will fire events only when the load average pass one threshold. Otherwise, it will fire an event at each beacon interval. The default is False.

***emitatstartup***: **when *emitatstartup* is False the beacon will not fire** event when the minion is reload. Applicable only when *onchangeonly* is True. The default is True.

```
beacons:
  load:
    1m:
      - 0.0
      - 2.0
    5m:
      - 0.0
      - 1.5
    15m:
      - 0.1
      - 1.0
    emitatstartup: True
    onchangeonly: False
```

salt.beacons.load.**validate**(*config*)
Validate the beacon configuration

### 13.2.8 salt.beacons.memusage module

Beacon to monitor memory usage.

New in version 2016.3.0.

**depends** python-psutil

salt.beacons.memusage.**beacon**(*config*)
Monitor the memory usage of the minion

Specify thresholds for percent used and only emit a beacon if it is exceeded.

```
beacons:
  memusage:
    - percent: 63%
```

salt.beacons.memusage.**validate**(*config*)
Validate the beacon configuration

### 13.2.9 salt.beacons.network_info

Beacon to monitor statistics from ethernet adapters

New in version 2015.5.0.

salt.beacons.network_info.**beacon**(*config*)
Emit the network statistics of this host.

Specify thresholds for each network stat and only emit a beacon if any of them are exceeded.

Emit beacon when any values are equal to configured values.

```
beacons:
  network_info:
    eth0:
        - type: equal
        - bytes_sent: 100000
        - bytes_recv: 100000
        - packets_sent: 100000
        - packets_recv: 100000
        - errin: 100
        - errout: 100
        - dropin: 100
        - dropout: 100
```

Emit beacon when any values are greater than configured values.

```
beacons:
  network_info:
    eth0:
        - type: greater
        - bytes_sent: 100000
        - bytes_recv: 100000
        - packets_sent: 100000
        - packets_recv: 100000
        - errin: 100
        - errout: 100
        - dropin: 100
        - dropout: 100
```

salt.beacons.network_info.**validate**(*config*)
Validate the beacon configuration

### 13.2.10 salt.beacons.network_settings

Beacon to monitor network adapter setting changes on Linux

New in version 2016.3.0.

**class** salt.beacons.network_settings.**Hashabledict**
Helper class that implements a hash function for a dictionary

salt.beacons.network_settings.**beacon**(*config*)
Watch for changes on network settings

By default, the beacon will emit when there is a value change on one of the settings on watch. The config also support the onvalue parameter for each setting, which instruct the beacon to only emit if the setting changed to the value defined.

Example Config

```
beacons:
  network_settings:
    eth0:
```

```
      ipaddr:
      promiscuity:
        onvalue: 1
    eth1:
      linkmode:
```

The config above will check for value changes on eth0 ipaddr and eth1 linkmode. It will also emit if the promiscuity value changes to 1.

Beacon items can use the * wildcard to make a definition apply to several interfaces. For example an eth* would apply to all ethernet interfaces.

Setting the argument coalesce = True will combine all the beacon results on a single event. The example below shows how to trigger coalesced results:

```
beacons:
  network_settings:
    coalesce: True
    eth0:
      ipaddr:
      promiscuity:
```

`salt.beacons.network_settings.`**`validate`**`(`*`config`*`)`
Validate the beacon configuration

### 13.2.11 salt.beacons.pkg

Watch for pkgs that have upgrades, then fire an event.

New in version 2016.3.0.

`salt.beacons.pkg.`**`beacon`**`(`*`config`*`)`
Check if installed packages are the latest versions and fire an event for those that have upgrades.

```
beacons:
  pkg:
    - pkgs:
        - zsh
        - apache2
    - refresh: True
```

`salt.beacons.pkg.`**`validate`**`(`*`config`*`)`
Validate the beacon configuration

### 13.2.12 salt.beacons.proxy_example module

Example beacon to use with salt-proxy

```
beacons:
  proxy_example:
    endpoint: beacon
```

`salt.beacons.proxy_example.`**`beacon`**`(`*`config`*`)`
Called several times each second https://docs.saltstack.com/en/latest/topics/beacons/#the-beacon-function

```
beacons:
  proxy_example:
    endpoint: beacon
```

salt.beacons.proxy_example.**validate**(*config*)
Validate the beacon configuration

### 13.2.13 salt.beacons.ps module

Send events covering service status

salt.beacons.ps.**beacon**(*config*)
Scan for processes and fire events

Example Config

```
beacons:
  ps:
    salt-master: running
    mysql: stopped
```

The config above sets up beacons to check that processes are running or stopped.

salt.beacons.ps.**validate**(*config*)
Validate the beacon configuration

### 13.2.14 salt.beacons.salt_proxy module

Beacon to manage and report the status of one or more salt proxy processes

New in version 2015.8.3.

salt.beacons.salt_proxy.**beacon**(*proxies*)
Handle configured proxies

```
beacons:
  salt_proxy:
    - p8000: {}
    - p8001: {}
```

### 13.2.15 salt.beacons.service

Send events covering service status

salt.beacons.service.**beacon**(*config*)
Scan for the configured services and fire events

Example Config

```
beacons:
  service:
    salt-master:
    mysql:
```

The config above sets up beacons to check for the salt-master and mysql services.

The config also supports two other parameters for each service:

*onchangeonly*: when *onchangeonly* is True the beacon will fire events only when the service status changes. Otherwise, it will fire an event at each beacon interval. The default is False.

*emitatstartup*: when *emitatstartup* is False the beacon will not fire event when the minion is reload. Applicable only when *onchangeonly* is True. The default is True.

*uncleanshutdown*: If *uncleanshutdown* is present it should point to the location of a pid file for the service. Most services will not clean up this pid file if they are shutdown uncleanly (e.g. via *kill -9*) or if they are terminated through a crash such as a segmentation fault. If the file is present, then the beacon will add *uncleanshutdown: True* to the event. If not present, the field will be False. The field is only added when the service is NOT running. Omitting the configuration variable altogether will turn this feature off.

Please note that some init systems can remove the pid file if the service registers as crashed. One such example is nginx on CentOS 7, where the service unit removes the pid file when the service shuts down (IE: the pid file is observed as removed when kill -9 is sent to the nginx master process). The `uncleanshutdown' option might not be of much use there, unless the unit file is modified.

Here is an example that will fire an event whenever the state of nginx changes and report an uncleanshutdown. This example is for Arch, which places nginx's pid file in */run*.

```
beacons:
  service:
    nginx:
      onchangeonly: True
      uncleanshutdown: /run/nginx.pid
```

salt.beacons.service.**validate**(*config*)
Validate the beacon configuration

### 13.2.16 salt.beacons.sh

Watch the shell commands being executed actively. This beacon requires strace.

salt.beacons.sh.**beacon**(*config*)
Scan the shell execve routines. This beacon will convert all login shells

```
beacons:
  sh: {}
```

salt.beacons.sh.**validate**(*config*)
Validate the beacon configuration

### 13.2.17 salt.beacons.twilio_txt_msg

Beacon to emit Twilio text messages

salt.beacons.twilio_txt_msg.**beacon**(*config*)
Emit a dict name ``texts'' whose value is a list of texts.

```
beacons:
  twilio_txt_msg:
    account_sid: "<account sid>"
    auth_token: "<auth token>"
```

```
    twilio_number: "+15555555555"
    interval: 10
```

salt.beacons.twilio_txt_msg.**validate**(*config*)
Validate the beacon configuration

### 13.2.18 salt.beacons.wtmp

Beacon to fire events at login of users as registered in the wtmp file

```
beacons:
  wtmp: {}
```

salt.beacons.wtmp.**beacon**(*config*)
Read the last wtmp file and return information on the logins

```
beacons:
  wtmp: {}
```

salt.beacons.wtmp.**validate**(*config*)
Validate the beacon configuration

## 13.3 engine modules

| | |
|---|---|
| *docker_events* | Send events from Docker events |
| *logentries* | An engine that sends events to the Logentries logging service. |
| *logstash* | An engine that reads messages from the salt event bus and pushes them onto a logstash endpoint. |
| *redis_sentinel* | An engine that reads messages from the redis sentinel pub-sub and sends reactor events based on the channels they are subscribed to. |
| *slack* | An engine that reads messages from Slack and sends them to the Salt event bus. |
| *sqs_events* | An engine that continuously reads messages from SQS and fires them as events. |
| *test* | A simple test engine, not intended for real use but as an example |
| *thorium* | Manage the Thorium complex event reaction system |

### 13.3.1 salt.engines.docker_events module

Send events from Docker events

salt.engines.docker_events.**start**(*docker_url='unix://var/run/docker.sock', timeout=60, tag='salt/engines/docker_events'*)
Scan for Docker events and fire events

Example Config

```
engines:
  docker_events:
    docker_url: unix://var/run/docker.sock
```

The config above sets up engines to listen for events from the Docker daemon and publish them to the Salt event bus.

### 13.3.2 salt.engines.logentries

An engine that sends events to the Logentries logging service.

**maintainer** Jimmy Tang (jimmy_tang@rapid7.com)

**maturity** New

**depends** ssl, certifi

**platform** all

To enable this engine the master and/or minion will need the following python libraries

ssl certifi

If you are running a new enough version of python then the ssl library will be present already.

You will also need the following values configured in the minion or master config.

**configuration**

**Example configuration**

**engines**:

- logentries: endpoint: data.logentries.com port: 10000 token: 057af3e2-1c05-47c5-882a-5cd644655dbf

The `token' can be obtained from the Logentries service.

To test this engine

```
salt '*' test.ping cmd.run uptime
```

class salt.engines.logentries.**PlainTextSocketAppender**(*verbose=True*, *LE_API='data.logentries.com'*, *LE_PORT=80*, *LE_TLS_PORT=443*)

**close_connection**()

**open_connection**()

**put**(*data*)

**reopen_connection**()

salt.engines.logentries.**SocketAppender**
alias of *TLSSocketAppender*

class salt.engines.logentries.**TLSSocketAppender**(*verbose=True*, *LE_API='data.logentries.com'*, *LE_PORT=80*, *LE_TLS_PORT=443*)

**open_connection**()

salt.engines.logentries.**start**(*endpoint='data.logentries.com'*, *port=10000*, *token=None*, *tag='salt/engines/logentries'*)
Listen to salt events and forward them to Logentries

### 13.3.3 salt.engines.logstash

An engine that reads messages from the salt event bus and pushes them onto a logstash endpoint.

**configuration**

**Example configuration**

**engines**:

- logstash: host: log.my_network.com port: 5959

**depends** logstash

salt.engines.logstash.**start**(*host*, *port=5959*, *tag='salt/engine/logstash'*)
Listen to salt events and forward them to logstash

### 13.3.4 salt.engines.redis_sentinel module

An engine that reads messages from the redis sentinel pubsub and sends reactor events based on the channels they are subscribed to.

**configuration**

**Example configuration**

**engines**:

- **redis_sentinel**:

  **hosts**: matching: `board*' port: 26379 interface: eth2

  **channels**:

  - `+switch-master'
  - `+odown'
  - `-odown'

**depends** redis

**class** salt.engines.redis_sentinel.**Listener**(*host=None*, *port=None*, *channels=None*, *tag=None*)

**run**()

**work**(*item*)

salt.engines.redis_sentinel.**start**(*hosts*, *channels*, *tag=None*)

### 13.3.5 salt.engines.slack module

An engine that reads messages from Slack and sends them to the Salt event bus. Alternatively Salt commands can be sent to the Salt master via Slack by setting the control parameter to `True` and using command prefaced with a `!`.

**configuration** Example configuration

```
engines:
    - slack:
       token: 'xoxb-xxxxxxxxxx-xxxxxxxxxxxxxxxxxxxxxxxx'
       control: True
       valid_users:
           - garethgreenaway
       valid_commands:
           - test.ping
           - cmd.run
           - list_jobs
           - list_commands
       aliases:
           list_jobs:
               cmd: jobs.list_jobs
           list_commands:
               cmd: pillar.get salt:engines:slack:valid_commands
 ↪target=saltmaster
```

**depends** slackclient

`salt.engines.slack.`**`start`**(*token*, *aliases=None*, *valid_users=None*, *valid_commands=None*, *control=False*, *tag='salt/engines/slack'*)

Listen to Slack events and forward them to Salt

### 13.3.6 salt.engines.sqs_events

An engine that continuously reads messages from SQS and fires them as events.

Note that long polling is utilized to avoid excessive CPU usage.

New in version 2015.8.0.

**depends** boto

#### Configuration

This engine can be run on the master or on a minion.

Example Config:

```
engines:
  - sqs_events:
      queue: test
      profile: my-sqs-profile # optional
```

Explicit sqs credentials are accepted but this engine can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-ec2.html
```

If IAM roles are not (or for `boto` version < 2.5.1) used you need to specify them either in a pillar or in the config file of the master or minion, as appropriate:

```
sqs.keyid: GKTADJGHEIQSXMKKRBJ08H
sqs.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

A region may also be specified in the configuration:

```
sqs.region: us-east-1
```

If a region is not specified, the default is us-east-1.

It's also possible to specify key, keyid and region via a profile:

```
myprofile:
  keyid: GKTADJGHEIQSXMKKRBJ08H
  key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
  region: us-east-1
```

Additionally you can define cross account sqs:

```
engines:
  - sqs_events:
      queue: prod
      owner_acct_id: 111111111111
```

salt.engines.sqs_events.**start**(*queue*, *profile=None*, *tag='salt/engine/sqs'*, *owner_acct_id=None*)
Listen to sqs and fire message on event bus

### 13.3.7 salt.engines.test

A simple test engine, not intended for real use but as an example

salt.engines.test.**start**()
Listen to events and write them to a log file

### 13.3.8 salt.engines.thorium module

Manage the Thorium complex event reaction system

salt.engines.thorium.**start**(*grains=False*, *grain_keys=None*, *pillar=False*, *pillar_keys=None*)
Execute the Thorium runtime

## 13.4 fileserver modules

| | |
|---|---|
| *azurefs* | The backend for serving files from the Azure blob storage service. |
| *gitfs* | Git Fileserver Backend |
| *hgfs* | Mercurial Fileserver Backend |
| *minionfs* | Fileserver backend which serves files pushed to the Master |
| *roots* | The default file server backend |
| *s3fs* | Amazon S3 Fileserver Backend |
| *svnfs* | Subversion Fileserver Backend |

### 13.4.1 salt.fileserver.azurefs

The backend for serving files from the Azure blob storage service.

To enable, add `azurefs` to the *`fileserver_backend`* option in the Master config file.

```
fileserver_backend:
  - azurefs
```

Each environment is configured as a storage container. The name of the container must match the name of the environment. The `storage_account` is the name of the storage account inside Azure where the container lives, and the `storage_key` is the access key used for that storage account:

```
azurefs_envs:
  base:
    storage_account: my_storage
    storage_key: frehgfw34fWGegG07fwsfw343tGFDSDGDFGD==
```

With this configuration, multiple storage accounts can be used with a single salt instrastructure.

### 13.4.2 salt.fileserver.gitfs

Git Fileserver Backend

With this backend, branches and tags in a remote git repository are exposed to salt as different environments.

To enable, add `git` to the *`fileserver_backend`* option in the Master config file.

```
fileserver_backend:
  - git
```

As of Salt 2014.7.0, the Git fileserver backend supports GitPython, pygit2, and dulwich to provide the Python interface to git. If more than one of these are present, the order of preference for which one will be chosen is the same as the order in which they were listed: pygit2, GitPython, dulwich (keep in mind, this order is subject to change).

An optional master config parameter (*`gitfs_provider`*) can be used to specify which provider should be used.

More detailed information on how to use gitfs can be found in the *Gitfs Walkthrough*.

---

**Note**: Minimum requirements

To use GitPython for gitfs requires a minimum GitPython version of 0.3.0, as well as the git CLI utility. Instructions for installing GitPython can be found *here*.

To use pygit2 for gitfs requires a minimum pygit2 version of 0.20.3. pygit2 0.20.3 requires libgit2 0.20.0. pygit2 and libgit2 are developed alongside one another, so it is recommended to keep them both at the same major release to avoid unexpected behavior. For example, pygit2 0.21.x requires libgit2 0.21.x, pygit2 0.22.x will require libgit2 0.22.x, etc.

To find stale refs, pygit2 additionally requires the git CLI utility to be installed.

---

### 13.4.3 salt.fileserver.hgfs

Mercurial Fileserver Backend

To enable, add `hg` to the *`fileserver_backend`* option in the Master config file.

```
fileserver_backend:
  - hg
```

After enabling this backend, branches, bookmarks, and tags in a remote mercurial repository are exposed to salt as different environments. This feature is managed by the *fileserver_backend* option in the salt master config file.

This fileserver has an additional option *hgfs_branch_method* that will set the desired branch method. Possible values are: `branches`, `bookmarks`, or `mixed`. If using `branches` or `mixed`, the `default` branch will be mapped to `base`.

Changed in version 2014.1.0: The *hgfs_base* master config parameter was added, allowing for a branch other than `default` to be used for the `base` environment, and allowing for a `base` environment to be specified when using an *hgfs_branch_method* of `bookmarks`.

**depends**

- mercurial
- python bindings for mercurial (`python-hglib`)

### 13.4.4 salt.fileserver.minionfs

Fileserver backend which serves files pushed to the Master

The *cp.push* function allows Minions to push files up to the Master. Using this backend, these pushed files are exposed to other Minions via the Salt fileserver.

To enable minionfs, *file_recv* needs to be set to `True` in the master config file (otherwise *cp.push* will not be allowed to push files to the Master), and `minion` must be added to the `fileserver_backends` list.

```
fileserver_backend:
  - minion
```

Other minionfs settings include: *minionfs_whitelist*, *minionfs_blacklist*, *minionfs_mountpoint*, and *minionfs_env*.

**See also**:

*MinionFS Backend Walkthrough*

### 13.4.5 salt.fileserver.roots

The default file server backend

This fileserver backend serves files from the Master's local filesystem. If *fileserver_backend* is not defined in the Master config file, then this backend is enabled by default. If it *is* defined then `roots` must be in the *fileserver_backend* list to enable this backend.

```
fileserver_backend:
  - roots
```

Fileserver environments are defined using the *file_roots* configuration option.

### 13.4.6 salt.fileserver.s3fs

Amazon S3 Fileserver Backend

This backend exposes directories in S3 buckets as Salt environments. To enable this backend, add `s3fs` to the *fileserver_backend* option in the Master config file.

```
fileserver_backend:
  - s3fs
```

S3 credentials must also be set in the master config file:

```
s3.keyid: GKTADJGHEIQSXMKKRBJ08H
s3.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

Alternatively, if on EC2 these credentials can be automatically loaded from instance metadata.

This fileserver supports two modes of operation for the buckets:

1. **A single bucket per environment**

   ```
   s3.buckets:
     production:
       - bucket1
       - bucket2
     staging:
       - bucket3
       - bucket4
   ```

2. **Multiple environments per bucket**

   ```
   s3.buckets:
     - bucket1
     - bucket2
     - bucket3
     - bucket4
   ```

Note that bucket names must be all lowercase both in the AWS console and in Salt, otherwise you may encounter `SignatureDoesNotMatch` errors.

A multiple-environment bucket must adhere to the following root directory structure:

```
s3://<bucket name>/<environment>/<files>
```

---

**Note**: This fileserver back-end requires the use of the MD5 hashing algorithm. MD5 may not be compliant with all security policies.

---

### 13.4.7 salt.fileserver.svnfs

Subversion Fileserver Backend

After enabling this backend, branches, and tags in a remote subversion repository are exposed to salt as different environments. To enable this backend, add `svn` to the *`fileserver_backend`* option in the Master config file.

```
fileserver_backend:
  - svn
```

This backend assumes a standard svn layout with directories for `branches`, `tags`, and `trunk`, at the repository root.

**depends**

- subversion

- pysvn

Changed in version 2014.7.0: The paths to the trunk, branches, and tags have been made configurable, via the config options *svnfs_trunk*, *svnfs_branches*, and *svnfs_tags*. *svnfs_mountpoint* was also added. Finally, support for per-remote configuration parameters was added. See the *documentation* for more information.

## 13.5 grains modules

| | |
|---|---|
| *chronos* | Generate chronos proxy minion grains. |
| *core* | The static grains, these are the core, or built in grains. |
| *disks* | Detect disks |
| *esxi* | Generate baseline proxy minion grains for ESXi hosts. |
| *extra* | |
| *fx2* | Generate baseline proxy minion grains for Dell FX2 chassis. |
| *junos* | Grains for junos. |
| *marathon* | Generate marathon proxy minion grains. |
| *mdadm* | Detect MDADM RAIDs |
| *opts* | Simple grain to merge the opts into the grains directly if the grain_opts |
| *philips_hue* | Static grains for the Philips HUE lamps |
| *rest_sample* | Generate baseline proxy minion grains |

### 13.5.1 salt.grains.chronos

Generate chronos proxy minion grains.

New in version 2015.8.2.

salt.grains.chronos.**kernel**()

salt.grains.chronos.**os**()

salt.grains.chronos.**os_data**()

salt.grains.chronos.**os_family**()

### 13.5.2 salt.grains.core

The static grains, these are the core, or built in grains.

When grains are loaded they are not loaded in the same way that modules are loaded, grain functions are detected and executed, the functions MUST return a dict which will be applied to the main grains dict. This module will always be executed first, so that any grains loaded here in the core module can be overwritten just by returning dict keys with the same value as those returned here

salt.grains.core.**append_domain**()
Return append_domain if set

salt.grains.core.**dns**()
Parse the resolver configuration file
New in version 2016.3.0.

salt.grains.core.**get_machine_id**()
Provide the machine-id

salt.grains.core.**get_master**()
Provides the minion with the name of its master. This is useful in states to target other services running on the master.

salt.grains.core.**get_server_id**()
Provides an integer based on the FQDN of a machine. Useful as server-id in MySQL replication or anywhere else you'll need an ID like this.

salt.grains.core.**hostname**()
Return fqdn, hostname, domainname

salt.grains.core.**hwaddr_interfaces**()
Provide a dict of the connected interfaces and their hw addresses (Mac Address)

salt.grains.core.**id_**()
Return the id

salt.grains.core.**ip4_interfaces**()
Provide a dict of the connected interfaces and their ip4 addresses The addresses will be passed as a list for each interface

salt.grains.core.**ip6_interfaces**()
Provide a dict of the connected interfaces and their ip6 addresses The addresses will be passed as a list for each interface

salt.grains.core.**ip_fqdn**()
Return ip address and FQDN grains

salt.grains.core.**ip_interfaces**()
Provide a dict of the connected interfaces and their ip addresses The addresses will be passed as a list for each interface

salt.grains.core.**locale_info**()
**Provides** defaultlanguage defaultencoding

salt.grains.core.**os_data**()
Return grains pertaining to the operating system

salt.grains.core.**path**()
Return the path

salt.grains.core.**pythonexecutable**()
Return the python executable in use

salt.grains.core.**pythonpath**()
Return the Python path

salt.grains.core.**pythonversion**()
Return the Python version

salt.grains.core.**saltpath**()
Return the path of the salt module

salt.grains.core.**saltversion**()
Return the version of salt

salt.grains.core.**saltversioninfo**()
Return the version_info of salt
New in version 0.17.0.

salt.grains.core.**zmqversion**()
Return the zeromq version

### 13.5.3 salt.grains.disks

Detect disks

salt.grains.disks.**disks**()
Return list of disk devices

### 13.5.4 salt.grains.esxi

Generate baseline proxy minion grains for ESXi hosts.

., versionadded:: 2015.8.4

salt.grains.esxi.**esxi**()

salt.grains.esxi.**kernel**()

salt.grains.esxi.**os**()

salt.grains.esxi.**os_family**()

### 13.5.5 salt.grains.extra

salt.grains.extra.**config**()
Return the grains set in the grains file

salt.grains.extra.**shell**()
Return the default shell to use on this system

### 13.5.6 salt.grains.fx2

Generate baseline proxy minion grains for Dell FX2 chassis. The challenge is that most of Salt isn't bootstrapped yet, so we need to repeat a bunch of things that would normally happen in proxy/fx2.py--just enough to get data from the chassis to include in grains.

salt.grains.fx2.**fx2**()

salt.grains.fx2.**kernel**()

salt.grains.fx2.**location**()

salt.grains.fx2.**os_data**()

salt.grains.fx2.**os_family**()

### 13.5.7 salt.grains.junos

Grains for junos. NOTE this is a little complicated--junos can only be accessed via salt-proxy-minion. Thus, some grains make sense to get them from the minion (PYTHONPATH), but others don't (ip_interfaces)

salt.grains.junos.**defaults**()

salt.grains.junos.**facts**()

salt.grains.junos.**os_family**()

### 13.5.8 salt.grains.marathon

Generate marathon proxy minion grains.

New in version 2015.8.2.

salt.grains.marathon.**kernel**()

salt.grains.marathon.**marathon**()

salt.grains.marathon.**os**()

salt.grains.marathon.**os_data**()

salt.grains.marathon.**os_family**()

### 13.5.9 salt.grains.mdadm

Detect MDADM RAIDs

salt.grains.mdadm.**mdadm**()
Return list of mdadm devices

### 13.5.10 salt.grains.opts

Simple grain to merge the opts into the grains directly if the grain_opts configuration value is set

salt.grains.opts.**opts**()
Return the minion configuration settings

### 13.5.11 salt.grains.philips_hue

Static grains for the Philips HUE lamps

New in version 2015.8.3.

salt.grains.philips_hue.**kernel**()

salt.grains.philips_hue.**os**()

salt.grains.philips_hue.**os_family**()

salt.grains.philips_hue.**product**()

salt.grains.philips_hue.**vendor**()

### 13.5.12 salt.grains.rest_sample

Generate baseline proxy minion grains

salt.grains.rest_sample.**kernel**()

salt.grains.rest_sample.**location**()

salt.grains.rest_sample.**os**()

salt.grains.rest_sample.**os_data**()

salt.grains.rest_sample.**os_family**()

salt.grains.rest_sample.**proxy_functions**(*proxy*)

The loader will execute functions with one argument and pass a reference to the proxymodules LazyLoader object. However, grains sometimes get called before the LazyLoader object is setup so *proxy* might be None.

## 13.6 execution modules

**Virtual modules**

### 13.6.1 salt.modules.pkg

pkg is a virtual module that is fulfilled by one of the following modules:

| Execution Module | Used for |
|---|---|
| *aptpkg* | Debian/Ubuntu-based distros which use `apt-get(8)` for package management |
| brew | Mac OS software management using Homebrew |
| *ebuild* | Gentoo-based systems (utilizes the `portage` python module as well as `emerge(1)`) |
| *freebsdpkg* | FreeBSD-based OSes using `pkg_add(1)` |
| *openbsdpkg* | OpenBSD-based OSes using `pkg_add(1)` |
| *pacman* | Arch Linux-based distros using `pacman(8)` |
| *pkgin* | NetBSD-based OSes using `pkgin(1)` |
| *pkgng* | FreeBSD-based OSes using `pkg(8)` |
| *pkgutil* | Solaris-based OSes using OpenCSW`s `pkgutil(1)` |
| *solarispkg* | Solaris-based OSes using `pkgadd(1M)` |
| *solarisips* | Solaris-based OSes using IPS `pkg(1)` |
| *win_pkg* | Salt's Windows Package Manager <windows-package-manager |
| *yumpkg* | RedHat-based distros and derivatives using `yum(8)` or `dnf(8)` |
| *zypper* | SUSE-based distros using `zypper(8)` |

| | |
|---|---|
| *aliases* | Manage the information in the aliases file |
| *alternatives* | Support for Alternatives system |
| *apache* | Support for Apache |
| *aptpkg* | Support for APT (Advanced Packaging Tool) |
| *archive* | A module to wrap (non-Windows) archive calls |
| *artifactory* | Module for fetching artifacts from Artifactory |
| *at* | Wrapper module for at(1) |
| *augeas_cfg* | Manages configuration files via augeas |
| *aws_sqs* | Support for the Amazon Simple Queue Service. |
| *bamboohr* | Support for BambooHR |
| *bcache* | Module for managing BCache sets |
| *beacons* | Module for managing the Salt beacons on a minion |
| *bigip* | An execution module which can manipulate an f5 bigip via iControl REST |
| *blockdev* | Module for managing block devices |
| *bluez* | Support for Bluetooth (using BlueZ in Linux). |
| *boto_asg* | Connection module for Amazon Autoscale Groups |
| *boto_cfn* | Connection module for Amazon Cloud Formation |
| *boto_cloudtrail* | Connection module for Amazon CloudTrail |
| *boto_cloudwatch* | Connection module for Amazon CloudWatch |

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| | |
|---|---|
| *boto_datapipeline* | Connection module for Amazon Data Pipeline |
| *boto_dynamodb* | Connection module for Amazon DynamoDB |
| *boto_ec2* | Connection module for Amazon EC2 |
| *boto_elasticache* | Connection module for Amazon Elasticache |
| *boto_elb* | Connection module for Amazon ELB |
| *boto_iam* | Connection module for Amazon IAM |
| *boto_iot* | Connection module for Amazon IoT |
| *boto_kms* | Connection module for Amazon KMS |
| *boto_lambda* | Connection module for Amazon Lambda |
| *boto_rds* | Connection module for Amazon RDS |
| *boto_route53* | Connection module for Amazon Route53 |
| *boto_secgroup* | Connection module for Amazon Security Groups |
| *boto_sns* | Connection module for Amazon SNS |
| *boto_sqs* | Connection module for Amazon SQS |
| *boto_vpc* | Connection module for Amazon VPC |
| *bower* | Manage and query Bower packages |
| *bridge* | Module for gathering and managing bridging information |
| *bsd_shadow* | Manage the password database on BSD systems |
| *btrfs* | Module for managing BTRFS file systems. |
| *cabal* | Manage and query Cabal packages |
| *cassandra* | Cassandra NoSQL Database Module |
| *cassandra_cql* | Cassandra Database Module |
| *chassis* | Glue execution module to link to the *fx2 proxymodule*. |
| *chef* | Execute chef in server or solo mode |
| *chocolatey* | A dead simple module wrapping calls to the Chocolatey package manager |
| *chronos* | Module providing a simple management interface to a chronos cluster. |
| *cloud* | Salt-specific interface for calling Salt Cloud directly |
| *cmdmod* | A module for shelling out. |
| *composer* | Use composer to install PHP dependencies for a directory |
| *config* | Return config information |
| *consul* | Interact with Consul |
| *container_resource* | Common resources for LXC and systemd-nspawn containers |
| *cp* | Minion side functions for salt-cp |
| *cpan* | Manage Perl modules using CPAN |
| *cron* | Work with cron |
| *cyg* | Manage cygwin packages. |
| cytest | |
| *daemontools* | daemontools service module. This module will create daemontools type |
| *data* | Manage a local persistent data structure that can hold any arbitrary data |
| *ddns* | Support for RFC 2136 dynamic DNS updates. |
| *deb_apache* | Support for Apache |
| *deb_postgres* | Module to provide Postgres compatibility to salt for debian family specific tools. |
| *debbuild* | Debian Package builder system |

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| | |
|---|---|
| *debconfmod* | Support for Debconf |
| *debian_ip* | The networking module for Debian based distros |
| *debian_service* | Service support for Debian systems (uses update-rc.d and /sbin/service) |
| *defaults* | |
| *devmap* | Device-Mapper module |
| *dig* | Compendium of generic DNS utilities. |
| *disk* | Module for managing disks and blockdevices |
| *djangomod* | Manage Django sites |
| *dnsmasq* | Module for managing dnsmasq |
| *dnsutil* | Compendium of generic DNS utilities |
| *dockercompose* | Module to import docker-compose via saltstack |
| *dockerio* | Management of Docker Containers |
| *dockerng* | Management of Docker Containers |
| *dpkg* | Support for DEB packages |
| *drac* | Manage Dell DRAC |
| *dracr* | Manage Dell DRAC. |
| *drbd* | DRBD administration module |
| *ebuild* | Support for Portage |
| *eix* | Support for Eix |
| *elasticsearch* | Elasticsearch - A distributed RESTful search and analytics server |
| *environ* | Support for getting and setting the environment variables of the current salt process. |
| *eselect* | Support for eselect, Gentoo's configuration and management tool. |
| *esxi* | Glues the VMware vSphere Execution Module to the VMware ESXi Proxy Minions to the *esxi proxymodule*. |
| *etcd_mod* | Execution module to work with etcd |
| *ethtool* | Module for running ethtool command |
| *event* | Use the *Salt Event System* to fire events from the master to the minion and vice-versa. |
| *extfs* | Module for managing ext2/3/4 file systems |
| *file* | Manage information about regular files, directories, |
| *firewalld* | Support for firewalld. |
| *freebsd_sysctl* | Module for viewing and modifying sysctl parameters |
| *freebsdjail* | The jail module for FreeBSD |
| *freebsdkmod* | Module to manage FreeBSD kernel modules |
| *freebsdpkg* | Remote package support using `pkg_add(1)` |
| *freebsdports* | Install software from the FreeBSD `ports(7)` system |
| *freebsdservice* | The service module for FreeBSD |
| *gem* | Manage ruby gems. |
| *genesis* | Module for managing container and VM images |
| *gentoo_service* | Top level package command wrapper, used to translate the os detected by grains |
| *gentoolkitmod* | Support for Gentoolkit |
| *git* | Support for the Git SCM |
| *github* | Module for interacting with the GitHub v3 API. |
| *glance* | Module for handling openstack glance calls. |

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| | |
|---|---|
| glusterfs | Manage a glusterfs pool |
| gnomedesktop | GNOME implementations |
| gpg | Manage a GPG keychains, add keys, create keys, retrieve keys from keyservers. |
| grains | Return/control aspects of the grains data |
| group | |
| groupadd | Manage groups on Linux, OpenBSD and NetBSD |
| grub_legacy | Support for GRUB Legacy |
| guestfs | Interact with virtual machine images via libguestfs |
| hadoop | Support for hadoop |
| haproxyconn | Support for haproxy |
| hashutil | A collection of hashing and encoding functions |
| hg | Support for the Mercurial SCM |
| hipchat | Module for sending messages to hipchat. |
| hosts | Manage the information in the hosts file |
| htpasswd | Support for htpasswd command. |
| http | Module for making various web calls. |
| ifttt | Support for IFTTT |
| ilo | Manage HP ILO |
| img | Virtual machine image management tools |
| incron | Work with incron |
| influx | InfluxDB - A distributed time series database |
| infoblox | Module for managing Infoblox |
| ini_manage | Edit ini files |
| inspectlib | |
| inspectlib.collector | |
| inspectlib.dbhandle | |
| inspectlib.exceptions | |
| inspectlib.query | |
| introspect | Functions to perform introspection on a minion, and return data in a format |
| ipmi | Support IPMI commands over LAN. |
| ipset | Support for ipset |
| iptables | Support for iptables |
| iwtools | Support for Wireless Tools for Linux |
| jboss7 | Module for managing JBoss AS 7 through the CLI interface. |
| jboss7_cli | Module for low-level interaction with JbossAS7 through CLI. |
| jenkins | Module for controlling Jenkins |
| junos | Module for interfacing to Junos devices |
| kerberos | Manage Kerberos KDC |
| key | Functions to view the minion's public key information |
| keyboard | Module for managing keyboards on supported POSIX-like systems using systemd, or such as Redhat, Debian and Gentoo. |
| keystone | Module for handling openstack keystone calls. |
| kmod | Module to manage Linux kernel modules |
| launchctl | Module for the management of MacOS systems that use launchd/launchctl |

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Table 13.6 -- continued from previous page

| | |
|---|---|
| *layman* | Support for Layman |
| *ldap3* | Query and modify an LDAP database (alternative interface) |
| *ldapmod* | Salt interface to LDAP commands |
| *linux_acl* | Support for Linux File Access Control Lists |
| *linux_ip* | The networking module for Non-RH/Deb Linux distros |
| *linux_lvm* | Support for Linux LVM2 |
| *linux_sysctl* | Module for viewing and modifying sysctl parameters |
| *localemod* | Module for managing locales on POSIX-like systems. |
| *locate* | Module for using the locate utilities |
| *logadm* | Module for managing Solaris logadm based log rotations. |
| *logrotate* | Module for managing logrotate. |
| *lvs* | Support for LVS (Linux Virtual Server) |
| *lxc* | Control Linux Containers via Salt |
| *mac_assistive* | This module allows you to manage assistive access on OS X minions with 10.9+ |
| *mac_brew* | Homebrew for Mac OS X |
| *mac_defaults* | Set defaults on Mac OS |
| *mac_desktop* | Mac OS X implementations of various commands in the ``desktop'' interface |
| *mac_group* | Manage groups on Mac OS 10.7+ |
| *mac_keychain* | Install certificates into the keychain on Mac OS |
| *mac_pkgutil* | Installer support for OS X. |
| *mac_ports* | Support for MacPorts under Mac OSX. |
| *mac_power* | Module for editing power settings on Mac OS X |
| *mac_service* | The service module for Mac OS X .. |
| *mac_shadow* | New in version 2016.3.0. |
| *mac_softwareupdate* | Support for the softwareupdate command on MacOS. |
| *mac_user* | Manage users on Mac OS 10.7+ |
| *mac_sysctl* | Module for viewing and modifying sysctl parameters |
| *mac_system* | New in version 2016.3.0. |
| *mac_timezone* | Module for editing date/time settings on Mac OS X |
| *mac_user* | Manage users on Mac OS 10.7+ |
| *mac_xattr* | This module allows you to manage extended attributes on files or directories |
| *makeconf* | Support for modifying make.conf under Gentoo |
| *marathon* | Module providing a simple management interface to a marathon cluster. |
| *match* | The match module allows for match routines to be run and determine target specs |
| *mdadm* | Salt module to manage RAID arrays with mdadm |
| *mdata* | Module for managaging metadata in SmartOS Zones |
| *memcached* | Module for Management of Memcached Keys |
| *mine* | The function cache system allows for data to be stored on the master so it can be easily read by other minions |
| *minion* | Module to provide information about minions |
| *mod_random* | Provides access to randomness generators. |
| *modjk* | Control Modjk via the Apache Tomcat ``Status'' worker |

Continued on next page

Table 13.6 -- continued from previous page

| | |
|---|---|
| *mongodb* | Module to provide MongoDB functionality to Salt |
| *monit* | Monit service module. |
| *moosefs* | Module for gathering and managing information about MooseFS |
| *mount* | Salt module to manage Unix mounts and the fstab file |
| *mssql* | Module to provide MS SQL Server compatibility to salt. |
| *munin* | Run munin plugins/checks from salt and format the output as data. |
| *mysql* | Module to provide MySQL compatibility to salt. |
| *nacl* | This module helps include encrypted passwords in pillars, grains and salt state files. |
| *nagios* | Run nagios plugins/checks from salt and get the return as data. |
| *nagios_rpc* | Check Host & Service status from Nagios via JSON RPC. |
| *netaddress* | Module for getting information about network addresses. |
| *netbsd_sysctl* | Module for viewing and modifying sysctl parameters |
| *netbsdservice* | The service module for NetBSD |
| *netscaler* | Module to provide Citrix Netscaler compatibility to Salt (compatible with netscaler 9.2+) |
| *network* | Module for gathering and managing network information |
| *neutron* | Module for handling OpenStack Neutron calls |
| *nfs3* | Module for managing NFS version 3. |
| *nftables* | Support for nftables |
| *nginx* | Support for nginx |
| *node* | Module for full system inspection. |
| *nova* | Module for handling OpenStack Nova calls |
| *npm* | Manage and query NPM packages. |
| *nspawn* | Manage nspawn containers |
| *omapi* | This module interacts with an ISC DHCP Server via OMAPI. |
| *openbsd_sysctl* | Module for viewing and modifying OpenBSD sysctl parameters |
| *openbsdpkg* | Package support for OpenBSD |
| *openbsdrcctl* | The rcctl service module for OpenBSD |
| *openbsdservice* | The service module for OpenBSD |
| *openstack_config* | Modify, retrieve, or delete values from OpenStack configuration files. |
| *openvswitch* | Support for Open vSwitch - module with basic Open vSwitch commands. |
| *opkg* | Support for Opkg |
| *oracle* | Oracle DataBase connection module |
| *osquery* | Support for OSQuery - https://osquery.io. |
| *pacman* | A module to wrap pacman calls, since Arch is the best |
| *pagerduty* | Module for Firing Events via PagerDuty |
| *pagerduty_util* | Module for manageing PagerDuty resource |
| *pam* | Support for pam |
| *parted* | Module for managing partitions on POSIX-like systems. |
| *pecl* | Manage PHP pecl extensions. |
| *philips_hue* | Philips HUE lamps module for proxy. |
| *pillar* | Extract the pillar data for this minion |

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Table 13.6 -- continued from previous page

| | |
|---|---|
| *pip* | Install Python packages with pip to either the system or a virtualenv |
| *pkg_resource* | Resources needed by pkg providers |
| *pkgin* | Package support for pkgin based systems, inspired from freebsdpkg module |
| *pkgng* | Support for `pkgng`, the new package manager for FreeBSD |
| *pkgutil* | Pkgutil support for Solaris |
| *portage_config* | Configure `portage(5)` |
| *postfix* | Support for Postfix |
| *postgres* | Module to provide Postgres compatibility to salt. |
| *poudriere* | Support for poudriere |
| *powerpath* | powerpath support. |
| *proxy* | This module allows you to manage proxy settings |
| *ps* | A salt interface to psutil, a system and process library. |
| *publish* | Publish a command from a minion to a target |
| *puppet* | Execute puppet routines |
| *pushbullet* | Module for sending messages to Pushbullet (https://www.pushbullet.com) |
| *pushover_notify* | Module for sending messages to Pushover (https://www.pushover.net) |
| *pw_group* | Manage groups on FreeBSD |
| *pw_user* | Manage users with the useradd command |
| *pyenv* | Manage python installations with pyenv. |
| *qemu_img* | Qemu-img Command Wrapper |
| *qemu_nbd* | Qemu Command Wrapper |
| *quota* | Module for managing quotas on POSIX-like systems. |
| *rabbitmq* | Module to provide RabbitMQ compatibility to Salt. |
| *raet_publish* | Publish a command from a minion to a target |
| *rallydev* | Support for RallyDev |
| *random_org* | Module for retrieving random information from Random.org |
| *rbenv* | Manage ruby installations with rbenv. |
| *rdp* | Manage RDP Service on Windows servers |
| *redismod* | Module to provide redis functionality to Salt |
| *reg* | |
| *rest_package* | Package support for the REST example |
| *rest_service* | Provide the service module for the proxy-minion REST sample |
| *restartcheck* | checkrestart functionality for Debian and Red Hat Based systems |
| *ret* | Module to integrate with the returner system and retrieve data sent to a salt returner |
| *rh_ip* | The networking module for RHEL/Fedora based distros |
| *rh_service* | Service support for RHEL-based systems, including support for both upstart and sysvinit |
| *riak* | Riak Salt Module |
| *rpm* | Support for rpm |
| *rpmbuild* | RPM Package builder system |
| *rsync* | Wrapper for rsync |

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Table 13.6 -- continued from previous page

| | |
|---|---|
| runit | runit service module |
| rvm | Manage ruby installations and gemsets with RVM, the Ruby Version Manager. |
| s3 | Connection module for Amazon S3 |
| s6 | s6 service module |
| salt_proxy | Salt proxy module |
| saltcloudmod | Control a salt cloud system |
| saltutil | The Saltutil module is used to manage the state of the salt minion itself. |
| schedule | Module for managing the Salt schedule on a minion |
| scsi | SCSI administration module |
| sdb | Module for Manipulating Data via the Salt DB API |
| seed | Virtual machine image management tools |
| selinux | Execute calls on selinux |
| sensors | Read lm-sensors |
| serverdensity_device | Wrapper around Server Density API |
| service | If Salt's OS detection does not identify a different virtual service module, the minion will fall back to using this basic module, which simply wraps sysvinit scripts. |
| shadow | Manage the shadow file on Linux systems |
| slack_notify | Module for sending messages to Slack |
| slsutil | Utility functions for use with or in SLS files |
| smartos_imgadm | Module for running imgadm command on SmartOS |
| smartos_virt | virst compatibility module for managing VMs on SmartOS |
| smartos_vmadm | Module for running vmadm command on SmartOS |
| smbios | Interface to SMBIOS/DMI |
| smf | Service support for Solaris 10 and 11, should work with other systems that use SMF also. |
| smtp | Module for Sending Messages via SMTP |
| solaris_fmadm | Module for running fmadm and fmdump on Solaris |
| solaris_group | Manage groups on Solaris |
| solaris_shadow | Manage the password database on Solaris systems |
| solaris_system | Support for reboot, shutdown, etc |
| solaris_user | Manage users with the useradd command |
| solarisips | IPS pkg support for Solaris |
| solarispkg | Package support for Solaris |
| solr | Apache Solr Salt Module |
| splunk | Module for interop with the Splunk API |
| splunk_search | Module for interop with the Splunk API |
| sqlite3 | Support for SQLite3 |
| ssh | Manage client ssh components |
| ssh_package | Service support for the REST example |
| ssh_service | Provide the service module for the proxy-minion SSH sample .. |
| state | Control the state system on the minion. |
| status | Module for returning various status data about a minion. |
| stormpath | Support for Stormpath |
| supervisord | Provide the service module for system supervisord or supervisord in a |
| svn | Subversion SCM |

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Table 13.6 -- continued from previous page

| | |
|---|---|
| *swift* | Module for handling OpenStack Swift calls |
| *sysbench* | The `sysbench' module is used to analyze the performance of the minions, right from the master! It measures various system parameters such as CPU, Memory, File I/O, Threads and Mutex. |
| *sysfs* | Module for interfacing with SysFS |
| *syslog_ng* | Module for getting information about syslog-ng |
| *sysmod* | The sys module provides information about the available functions on the minion |
| *sysrc* | sysrc module for FreeBSD |
| *system* | Support for reboot, shutdown, etc |
| *system_profiler* | System Profiler Module |
| *systemd* | Provides the service module for systemd |
| *telemetry* | Connection module for Telemetry |
| *temp* | Simple module for creating temporary directories and files |
| *test* | Module for running arbitrary tests |
| *test_virtual* | Module for running arbitrary tests with a __virtual__ function |
| *timezone* | Module for managing timezone on POSIX-like systems. |
| *tls* | A salt module for SSL/TLS. |
| *tomcat* | Support for Tomcat |
| *trafficserver* | Apache Traffic Server execution module. |
| *tuned* | Interface to Red Hat tuned-adm module |
| *twilio_notify* | Module for notifications via Twilio |
| *udev* | Manage and query udev info |
| *upstart* | Module for the management of upstart systems. |
| *uptime* | Wrapper around uptime API |
| user | |
| *useradd* | Manage users with the useradd command |
| *uwsgi* | uWSGI stats server http://uwsgi-docs.readthedocs.org/en/latest/StatsServer.html |
| *varnish* | Support for Varnish |
| *vbox_guest* | VirtualBox Guest Additions installer |
| *vboxmanage* | Support for VirtualBox using the VBoxManage command |
| *victorops* | Support for VictorOps |
| *virt* | Work with virtual machines managed by libvirt |
| *virtualenv_mod* | Create virtualenv environments. |
| *vsphere* | Manage VMware vCenter servers and ESXi hosts. |
| *win_autoruns* | Module for listing programs that automatically run on startup |
| *win_certutil* | This module allows you to install certificates into the windows certificate manager. |
| *win_dacl* | Manage DACLs on Windows |
| *win_disk* | Module for gathering disk information on Windows |
| *win_dism* | Install features/packages for Windows using DISM, which is useful for minions not running server versions of Windows. |
| *win_dns_client* | Module for configuring DNS Client on Windows systems |
| *win_dsc* | Module for managing PowerShell modules |

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Table 13.6 -- continued from previous page

| | |
|---|---|
| win_file | Manage information about files on the minion, set/read user, group |
| win_firewall | Module for configuring Windows Firewall |
| win_groupadd | Manage groups on Windows |
| win_iis | Microsoft IIS site management via WebAdministration powershell module |
| win_ip | The networking module for Windows based systems |
| win_license | This module allows you to manage windows licensing via slmgr.vbs |
| win_network | Module for gathering and managing network information |
| win_ntp | Management of NTP servers on Windows |
| win_path | Manage the Windows System PATH |
| win_pkg | A module to manage software on Windows |
| win_powercfg | This module allows you to control the power settings of a windows minion via powercfg. |
| win_repo | Module to manage Windows software repo on a Standalone Minion |
| win_servermanager | Manage Windows features via the ServerManager powershell module |
| win_service | Windows Service module. |
| win_shadow | Manage the shadow file |
| win_status | Module for returning various status data about a minion. |
| win_system | Module for managing windows systems. |
| win_task | Windows Task Scheduler Module .. |
| win_timezone | Module for managing timezone on Windows systems. |
| win_update | Module for running windows updates. |
| win_useradd | Module for managing Windows Users |
| win_wua | Module for managing Windows Updates using the Windows Update Agent. |
| x509 | Manage X509 certificates |
| xapi | This module (mostly) uses the XenAPI to manage Xen virtual machines. |
| xfs | Module for managing XFS file systems. |
| xmpp | Module for Sending Messages via XMPP (a.k.a. |
| yumpkg | Support for YUM/DNF |
| zabbix | Support for Zabbix |
| zcbuildout | Management of zc.buildout |
| zenoss | Module for working with the Zenoss API |
| zfs | Salt interface to ZFS commands |
| zk_concurrency | Concurrency controls in zookeeper |
| znc | znc - An advanced IRC bouncer |
| zpool | Module for running ZFS zpool command |
| zypper | Package support for openSUSE via the zypper package manager |

### 13.6.2 salt.modules.aliases

Manage the information in the aliases file

salt.modules.aliases.**get_target**(*alias*)

Return the target associated with an alias

CLI Example:

```
salt '*' aliases.get_target alias
```

salt.modules.aliases.**has_target**(*alias*, *target*)
Return true if the alias/target is set

CLI Example:

```
salt '*' aliases.has_target alias target
```

salt.modules.aliases.**list_aliases**()
Return the aliases found in the aliases file in this format:

```
{'alias': 'target'}
```

CLI Example:

```
salt '*' aliases.list_aliases
```

salt.modules.aliases.**rm_alias**(*alias*)
Remove an entry from the aliases file

CLI Example:

```
salt '*' aliases.rm_alias alias
```

salt.modules.aliases.**set_target**(*alias*, *target*)
Set the entry in the aliases file for the given alias, this will overwrite any previous entry for the given alias or create a new one if it does not exist.

CLI Example:

```
salt '*' aliases.set_target alias target
```

### 13.6.3 salt.modules.alternatives

Support for Alternatives system

**codeauthor** Radek Rada <radek.rada@gmail.com>

salt.modules.alternatives.**auto**(*name*)
Trigger alternatives to set the path for <name> as specified by priority.

CLI Example:

```
salt '*' alternatives.auto name
```

salt.modules.alternatives.**check_exists**(*name*, *path*)
Check if the given path is an alternative for a name.

New in version 2015.8.4.

CLI Example:

```
salt '*' alternatives.check_exists name path
```

salt.modules.alternatives.**check_installed**(*name*, *path*)
Check if the current highest-priority match for a given alternatives link is set to the desired path

CLI Example:

```
salt '*' alternatives.check_installed name path
```

salt.modules.alternatives.**display**(*name*)
Display alternatives settings for defined command name

CLI Example:

```
salt '*' alternatives.display editor
```

salt.modules.alternatives.**install**(*name*, *link*, *path*, *priority*)
Install symbolic links determining default commands

CLI Example:

```
salt '*' alternatives.install editor /usr/bin/editor /usr/bin/emacs23 50
```

salt.modules.alternatives.**remove**(*name*, *path*)
Remove symbolic links determining the default commands.

CLI Example:

```
salt '*' alternatives.remove name path
```

salt.modules.alternatives.**set**(*name*, *path*)
Manually set the alternative <path> for <name>.

CLI Example:

```
salt '*' alternatives.set name path
```

salt.modules.alternatives.**show_current**(*name*)
Display the current highest-priority alternative for a given alternatives link

CLI Example:

```
salt '*' alternatives.show_current editor
```

salt.modules.alternatives.**show_link**(*name*)
Display master link for the alternative

New in version 2015.8.13,2016.3.4,2016.11.0.

CLI Example:

```
salt '*' alternatives.show_link editor
```

### 13.6.4 salt.modules.apache

Support for Apache

**Note:** The functions in here are generic functions designed to work with all implementations of Apache. Debian-specific functions have been moved into deb_apache.py, but will still load under the `apache` namespace when a Debian-based system is detected.

salt.modules.apache.**config**(*name*, *config*, *edit=True*)
Create VirtualHost configuration files
**name** File for the virtual host
**config** VirtualHost configurations

---

**Note**: This function is not meant to be used from the command line. Config is meant to be an ordered dict of all of the apache configs.

---

CLI Example:

```
salt '*' apache.config /etc/httpd/conf.d/ports.conf config="[{'Listen': '22'}]"
```

salt.modules.apache.**directives**()
Return list of directives together with expected arguments and places where the directive is valid (`apachectl -L`)

CLI Example:

```
salt '*' apache.directives
```

salt.modules.apache.**fullversion**()
Return server version (`apachectl -V`)

CLI Example:

```
salt '*' apache.fullversion
```

salt.modules.apache.**modules**()
Return list of static and shared modules (`apachectl -M`)

CLI Example:

```
salt '*' apache.modules
```

salt.modules.apache.**server_status**(*profile='default'*)
Get Information from the Apache server-status handler

---

**Note**: The server-status handler is disabled by default. In order for this function to work it needs to be enabled. See http://httpd.apache.org/docs/2.2/mod/mod_status.html

---

The following configuration needs to exists in pillar/grains. Each entry nested in `apache.server-status` is a profile of a vhost/server. This would give support for multiple apache servers/vhosts.

```
apache.server-status:
  default:
    url: http://localhost/server-status
    user: someuser
    pass: password
    realm: 'authentication realm for digest passwords'
    timeout: 5
```

CLI Examples:

```
salt '*' apache.server_status
salt '*' apache.server_status other-profile
```

salt.modules.apache.**servermods**()
Return list of modules compiled into the server (`apachectl -l`)

CLI Example:

```
salt '*' apache.servermods
```

salt.modules.apache.**signal**(*signal=None*)
Signals httpd to start, restart, or stop.

CLI Example:

```
salt '*' apache.signal restart
```

salt.modules.apache.**useradd**(*pwfile*, *user*, *password*, *opts=''*)
Add HTTP user using the `htpasswd` command. If the `htpasswd` file does not exist, it will be created. Valid options that can be passed are:

```
n  Don't update file; display results on stdout.
m  Force MD5 hashing of the password (default).
d  Force CRYPT(3) hashing of the password.
p  Do not hash the password (plaintext).
s  Force SHA1 hashing of the password.
```

CLI Examples:

```
salt '*' apache.useradd /etc/httpd/htpasswd larry badpassword
salt '*' apache.useradd /etc/httpd/htpasswd larry badpass opts=ns
```

salt.modules.apache.**userdel**(*pwfile*, *user*)
Delete HTTP user from the specified `htpasswd` file.

CLI Example:

```
salt '*' apache.userdel /etc/httpd/htpasswd larry
```

salt.modules.apache.**version**()
Return server version (`apachectl -v`)

CLI Example:

```
salt '*' apache.version
```

salt.modules.apache.**vhosts**()
Show the settings as parsed from the config file (currently only shows the virtualhost settings) (`apachectl -S`). Because each additional virtual host adds to the execution time, this command may require a long timeout be specified by using `-t 10`.

CLI Example:

```
salt -t 10 '*' apache.vhosts
```

### 13.6.5 salt.modules.aptpkg

Support for APT (Advanced Packaging Tool)

**Important:** If you feel that Salt should be using this module to manage packages on a minion, and it is using a different module (or gives an error similar to *`pkg.install' is not available*), see *here*.

**Note:** For virtual package support, either the `python-apt` or `dctrl-tools` package must be installed.

For repository management, the `python-apt` package must be installed.

`salt.modules.aptpkg.`**`autoremove`**(*list_only=False*, *purge=False*)

New in version 2015.5.0.

Remove packages not required by another package using `apt-get autoremove`.

**list_only** [False] Only retrieve the list of packages to be auto-removed, do not actually perform the auto-removal.

**purge** [False] Also remove package config data when autoremoving packages.

New in version 2015.8.0.

CLI Example:

```
salt '*' pkg.autoremove
salt '*' pkg.autoremove list_only=True
salt '*' pkg.autoremove purge=True
```

`salt.modules.aptpkg.`**`del_repo`**(*repo*, ***kwargs*)

Delete a repo from the sources.list / sources.list.d

If the .list file is in the sources.list.d directory and the file that the repo exists in does not contain any other repo configuration, the file itself will be deleted.

The repo passed in must be a fully formed repository definition string.

CLI Examples:

```
salt '*' pkg.del_repo "myrepo definition"
```

`salt.modules.aptpkg.`**`del_repo_key`**(*name=None*, ***kwargs*)

New in version 2015.8.0.

Remove a repo key using `apt-key del`

**name** Repo from which to remove the key. Unnecessary if `keyid` is passed.

**keyid** The KeyID of the GPG key to remove

**keyid_ppa** [False] If set to `True`, the repo's GPG key ID will be looked up from ppa.launchpad.net and removed.

**Note:** Setting this option to `True` requires that the `name` param also be passed.

CLI Examples:

```
salt '*' pkg.del_repo_key keyid=0123ABCD
salt '*' pkg.del_repo_key name='ppa:foo/bar' keyid_ppa=True
```

`salt.modules.aptpkg.`**`expand_repo_def`**(***kwargs*)

Take a repository definition and expand it to the full pkg repository dict that can be used for comparison. This is a helper function to make the Debian/Ubuntu apt sources sane for comparison in the pkgrepo states.

This is designed to be called from pkgrepo states and will have little use being called on the CLI.

salt.modules.aptpkg.**file_dict**(**packages*)

List the files that belong to a package, grouped by package. Not specifying any packages will return a list of _every_ file on the system's package database (not generally recommended).

CLI Examples:

```
salt '*' pkg.file_dict httpd
salt '*' pkg.file_dict httpd postfix
salt '*' pkg.file_dict
```

salt.modules.aptpkg.**file_list**(**packages*)

List the files that belong to a package. Not specifying any packages will return a list of _every_ file on the system's package database (not generally recommended).

CLI Examples:

```
salt '*' pkg.file_list httpd
salt '*' pkg.file_list httpd postfix
salt '*' pkg.file_list
```

salt.modules.aptpkg.**get_repo**(*repo*, ***kwargs*)

Display a repo from the sources.list / sources.list.d

The repo passed in needs to be a complete repo entry.

CLI Examples:

```
salt '*' pkg.get_repo "myrepo definition"
```

salt.modules.aptpkg.**get_selections**(*pattern=None*, *state=None*)

View package state from the dpkg database.

Returns a dict of dicts containing the state, and package names:

```
{'<host>':
    {'<state>': ['pkg1',
                 ...
                ]
    },
    ...
}
```

CLI Example:

```
salt '*' pkg.get_selections
salt '*' pkg.get_selections 'python-*'
salt '*' pkg.get_selections state=hold
salt '*' pkg.get_selections 'openssh*' state=hold
```

salt.modules.aptpkg.**hold**(*name=None*, *pkgs=None*, *sources=None*, ***kwargs*)

New in version 2014.7.0.

Set package in `hold' state, meaning it will not be upgraded.
**name** The name of the package, e.g., `tmux'

CLI Example:

```
salt '*' pkg.hold <package name>
```

**pkgs** A list of packages to hold. Must be passed as a python list.

CLI Example:

```
salt '*' pkg.hold pkgs='["foo", "bar"]'
```

salt.modules.aptpkg.**info_installed**(**names*)

Return the information of the named package(s) installed on the system.

New in version 2015.8.1.

**names** The names of the packages for which to return information.

CLI example:

```
salt '*' pkg.info_installed <package1>
salt '*' pkg.info_installed <package1> <package2> <package3> ...
```

salt.modules.aptpkg.**install**(*name=None*, *refresh=False*, *fromrepo=None*, *skip_verify=False*, *debconf=None*, *pkgs=None*, *sources=None*, *reinstall=False*, ***kwargs*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any apt-get/dpkg commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *`config option`* called `systemd.scope`, with a value of `False` (no quotes).

Install the passed package, add refresh=True to update the dpkg database.

**name** The name of the package to be installed. Note that this parameter is ignored if either ``pkgs'' or ``sources'' is passed. Additionally, please note that this option can only be used to install packages from a software repository. To install a package file manually, use the ``sources'' option.

32-bit packages can be installed on 64-bit systems by appending the architecture designation (`:i386`, etc.) to the end of the package name.

CLI Example:

```
salt '*' pkg.install <package name>
```

**refresh** Whether or not to refresh the package database before installing.

**fromrepo** Specify a package repository to install from (e.g., `apt-get -t unstable install somepackage`)

**skip_verify** Skip the GPG verification check (e.g., `--allow-unauthenticated`, or `--force-bad-verify` for install from package file).

**debconf** Provide the path to a debconf answers file, processed before installation.

**version** Install a specific version of the package, e.g. 1.2.3~0ubuntu0. Ignored if ``pkgs'' or ``sources'' is passed.

**reinstall** [False] Specifying reinstall=True will use `apt-get install --reinstall` rather than simply `apt-get install` for requested packages that are already installed.

If a version is specified with the requested package, then `apt-get install --reinstall` will only be used if the installed version matches the requested version.

New in version 2015.8.0.

Multiple Package Installation Options:

**pkgs** A list of packages to install from a software repository. Must be passed as a python list.

CLI Example:

```
salt '*' pkg.install pkgs='["foo", "bar"]'
salt '*' pkg.install pkgs='["foo", {"bar": "1.2.3-0ubuntu0"}]'
```

**sources** A list of DEB packages to install. Must be passed as a list of dicts, with the keys being package names, and the values being the source URI or local path to the package. Dependencies are automatically resolved and marked as auto-installed.

32-bit packages can be installed on 64-bit systems by appending the architecture designation (`:i386`, etc.) to the end of the package name.

Changed in version 2014.7.0.

CLI Example:

```
salt '*' pkg.install sources='[{"foo": "salt://foo.deb"},{"bar": "salt://bar.
↪deb"}]'
```

**force_yes** Passes `--force-yes` to the apt-get command. Don't use this unless you know what you're doing.

New in version 0.17.4.

**install_recommends** Whether to install the packages marked as recommended. Default is True.

New in version 2015.5.0.

**only_upgrade** Only upgrade the packages, if they are already installed. Default is False.

New in version 2015.5.0.

**force_conf_new** Always install the new version of any configuration files.

New in version 2015.8.0.

Returns a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

`salt.modules.aptpkg.`**`latest_version`**(**names*, ***kwargs*)

Return the latest version of the named package available for upgrade or installation. If more than one package name is specified, a dict of name/version pairs is returned.

If the latest version of a given package is already installed, an empty string will be returned for that package.

A specific repo can be requested using the `fromrepo` keyword argument.

CLI Example:

```
salt '*' pkg.latest_version <package name>
salt '*' pkg.latest_version <package name> fromrepo=unstable
salt '*' pkg.latest_version <package1> <package2> <package3> ...
```

`salt.modules.aptpkg.`**`list_pkgs`**(*versions_as_list=False*, *removed=False*, *purge_desired=False*, ***kwargs*)

List the packages currently installed in a dict:

```
{'<package_name>': '<version>'}
```

**removed** If `True`, then only packages which have been removed (but not purged) will be returned.

**purge_desired** If `True`, then only packages which have been marked to be purged, but can't be purged due to their status as dependencies for other installed packages, will be returned. Note that these packages will appear in installed

Changed in version 2014.1.1: Packages in this state now correctly show up in the output of this function.

---

**Note:** External dependencies

Virtual package resolution requires the `dctrl-tools` package to be installed. Virtual packages will show a version of `1`.

CLI Example:

```
salt '*' pkg.list_pkgs
salt '*' pkg.list_pkgs versions_as_list=True
```

`salt.modules.aptpkg.`**`list_repos`**`()`

Lists all repos in the sources.list (and sources.lists.d) files

CLI Example:

```
salt '*' pkg.list_repos
salt '*' pkg.list_repos disabled=True
```

`salt.modules.aptpkg.`**`list_upgrades`**`(`*refresh=True*, *dist_upgrade=True*, ***kwargs*`)`

List all available package upgrades.

**refresh** Whether to refresh the package database before listing upgrades. Default: True.

**dist_upgrade** Whether to list the upgrades using dist-upgrade vs upgrade. Default is to use dist-upgrade.

CLI Example:

```
salt '*' pkg.list_upgrades
```

`salt.modules.aptpkg.`**`mod_repo`**`(`*repo*, *saltenv='base'*, ***kwargs*`)`

Modify one or more values for a repo. If the repo does not exist, it will be created, so long as the definition is well formed. For Ubuntu the `ppa:<project>/repo` format is acceptable. `ppa:` format can only be used to create a new repository.

The following options are available to modify a repo definition:

**comps** a comma separated list of components for the repo, e.g. `main`

**file** a file name to be used

**keyserver** keyserver to get gpg key from

**keyid** key id to load with the keyserver argument

**key_url** URL to a GPG key to add to the APT GPG keyring

**consolidate** if `True`, will attempt to de-dup and consolidate sources

**comments** Sometimes you want to supply additional information, but not as enabled configuration. Anything supplied for this list will be saved in the repo configuration with a comment marker (#) in front.

New in version 2015.8.9.

**Note:** Due to the way keys are stored for APT, there is a known issue where the key won't be updated unless another change is made at the same time. Keys should be properly added on initial configuration.

CLI Examples:

```
salt '*' pkg.mod_repo 'myrepo definition' uri=http://new/uri
salt '*' pkg.mod_repo 'myrepo definition' comps=main,universe
```

`salt.modules.aptpkg.`**`owner`**`(`**paths*`)`

New in version 2014.7.0.

Return the name of the package that owns the file. Multiple file paths can be passed. Like *pkg.version*, if a single path is passed, a string will be returned, and if multiple paths are passed, a dictionary of file/package name pairs will be returned.

If the file is not owned by a package, or is not present on the minion, then an empty string will be returned for that path.

CLI Example:

```
salt '*' pkg.owner /usr/bin/apachectl
salt '*' pkg.owner /usr/bin/apachectl /usr/bin/basename
```

salt.modules.aptpkg.**purge**(*name=None*, *pkgs=None*, ***kwargs*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any apt-get/dpkg commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *config option* called `systemd.scope`, with a value of `False` (no quotes).

Remove packages via `apt-get purge` along with all configuration files.

**name** The name of the package to be deleted.

Multiple Package Options:

**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.purge <package name>
salt '*' pkg.purge <package1>,<package2>,<package3>
salt '*' pkg.purge pkgs='["foo", "bar"]'
```

salt.modules.aptpkg.**refresh_db**()

Updates the APT database to latest packages based upon repositories

Returns a dict, with the keys being package databases and the values being the result of the update attempt. Values can be one of the following:

- `True`: Database updated successfully
- `False`: Problem updating database
- `None`: Database already up-to-date

CLI Example:

```
salt '*' pkg.refresh_db
```

salt.modules.aptpkg.**remove**(*name=None*, *pkgs=None*, ***kwargs*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any apt-get/dpkg commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *config option* called `systemd.scope`, with a value of `False` (no quotes).

Remove packages using `apt-get remove`.

**name** The name of the package to be deleted.

Multiple Package Options:

**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.remove <package name>
salt '*' pkg.remove <package1>,<package2>,<package3>
salt '*' pkg.remove pkgs='["foo", "bar"]'
```

`salt.modules.aptpkg.`**`set_selections`**(*path=None*, *selection=None*, *clear=False*, *saltenv='base'*)

Change package state in the dpkg database.

The state can be any one of, documented in `dpkg(1)`:

- install
- hold
- deinstall
- purge

This command is commonly used to mark specific packages to be held from being upgraded, that is, to be kept at a certain version. When a state is changed to anything but being held, then it is typically followed by `apt-get -u dselect-upgrade`.

Note: Be careful with the `clear` argument, since it will start with setting all packages to deinstall state.

Returns a dict of dicts containing the package names, and the new and old versions:

```
{'<host>':
    {'<package>': {'new': '<new-state>',
                   'old': '<old-state>'}
    },
    ...
}
```

CLI Example:

```
salt '*' pkg.set_selections selection='{"install": ["netcat"]}'
salt '*' pkg.set_selections selection='{"hold": ["openssh-server", "openssh-client
↪"]}'
salt '*' pkg.set_selections salt://path/to/file
salt '*' pkg.set_selections salt://path/to/file clear=True
```

`salt.modules.aptpkg.`**`unhold`**(*name=None*, *pkgs=None*, *sources=None*, ***kwargs*)

New in version 2014.7.0.

Set package current in `hold' state to install state, meaning it will be upgraded.

**name** The name of the package, e.g., `tmux'

CLI Example:

```
salt '*' pkg.unhold <package name>
```

**pkgs** A list of packages to hold. Must be passed as a python list.

CLI Example:

```
salt '*' pkg.unhold pkgs='["foo", "bar"]'
```

`salt.modules.aptpkg.`**`upgrade`**(*refresh=True*, *dist_upgrade=False*, ***kwargs*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now

used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any apt-get/dpkg commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *`config option`* called `systemd.scope`, with a value of `False` (no quotes).

Upgrades all packages via `apt-get upgrade` or `apt-get dist-upgrade` if `dist_upgrade` is `True`.

Returns a dict containing the changes:

```
{'<package>':  {'old': '<old-version>',
                'new': '<new-version>'}}
```

**dist_upgrade** Whether to perform the upgrade using dist-upgrade vs upgrade. Default is to use upgrade.

New in version 2014.7.0.

**force_conf_new** Always install the new version of any configuration files.

New in version 2015.8.0.

CLI Example:

```
salt '*' pkg.upgrade
```

`salt.modules.aptpkg.`**`upgrade_available`**(*name*)

Check whether or not an upgrade is available for a given package

CLI Example:

```
salt '*' pkg.upgrade_available <package name>
```

`salt.modules.aptpkg.`**`version`**(**names*, ***kwargs*)

Returns a string representing the package version or an empty string if not installed. If more than one package name is specified, a dict of name/version pairs is returned.

CLI Example:

```
salt '*' pkg.version <package name>
salt '*' pkg.version <package1> <package2> <package3> ...
```

`salt.modules.aptpkg.`**`version_cmp`**(*pkg1*, *pkg2*, *ignore_epoch=False*)

Do a cmp-style comparison on two packages. Return -1 if pkg1 < pkg2, 0 if pkg1 == pkg2, and 1 if pkg1 > pkg2. Return None if there was a problem making the comparison.

**ignore_epoch** [False] Set to `True` to ignore the epoch when comparing versions

New in version 2015.8.10,2016.3.2.

CLI Example:

```
salt '*' pkg.version_cmp '0.2.4-0ubuntu1' '0.2.4.1-0ubuntu1'
```

### 13.6.6 salt.modules.archive

A module to wrap (non-Windows) archive calls

New in version 2014.1.0.

`salt.modules.archive.`**`cmd_unzip`**(*zip_file*, *dest*, *excludes=None*, *template=None*, *options=None*, *runas=None*, *trim_output=False*)

New in version 2015.5.0: In versions 2014.7.x and earlier, this function was known as `archive.unzip`.

Uses the `unzip` command to unpack zip files. This command is part of the Info-ZIP suite of tools, and is typically packaged as simply `unzip`.

**zip_file** Path of zip file to be unpacked

**dest** The destination directory into which the file should be unpacked

**excludes** [None] Comma-separated list of files not to unpack. Can also be passed in a Python list.

**template** [None] Can be set to `jinja' or another supported template engine to render the command arguments before execution:

```
salt '*' archive.cmd_unzip template=jinja /tmp/zipfile.zip /tmp/{{grains.id}}/
 ↪ excludes=file_1,file_2
```

**options** [None] Additional command-line options to pass to the `unzip` binary.

Changed in version 2015.8.0: The mandatory - prefixing has been removed. An options string beginning with a *--long-option*, would have uncharacteristically needed its first - removed under the former scheme.

**runas** [None] Unpack the zip file as the specified user. Defaults to the user under which the minion is running.

New in version 2015.5.0.

**trim_output** [False] The number of files we should output on success before the rest are trimmed, if this is set to True then it will default to 100

CLI Example:

```
salt '*' archive.cmd_unzip /tmp/zipfile.zip /home/strongbad/ excludes=file_1,file_
 ↪2
```

`salt.modules.archive.`**`cmd_zip`**(*zip_file*, *sources*, *template=None*, *cwd=None*, *runas=None*)

New in version 2015.5.0: In versions 2014.7.x and earlier, this function was known as `archive.zip`.

Uses the `zip` command to create zip files. This command is part of the Info-ZIP suite of tools, and is typically packaged as simply `zip`.

**zip_file** Path of zip file to be created

**sources** Comma-separated list of sources to include in the zip file. Sources can also be passed in a Python list.

**template** [None] Can be set to `jinja' or another supported template engine to render the command arguments before execution:

```
salt '*' archive.cmd_zip template=jinja /tmp/zipfile.zip /tmp/sourcefile1,/
 ↪tmp/{{grains.id}}.txt
```

**cwd** [None] Use this argument along with relative paths in `sources` to create zip files which do not contain the leading directories. If not specified, the zip file will be created as if the cwd was `/`, and creating a zip file of `/foo/bar/baz.txt` will contain the parent directories `foo` and `bar`. To create a zip file containing just `baz.txt`, the following command would be used:

```
salt '*' archive.cmd_zip /tmp/baz.zip baz.txt cwd=/foo/bar
```

New in version 2014.7.1.

**runas** [None] Create the zip file as the specified user. Defaults to the user under which the minion is running.

New in version 2015.5.0.

CLI Example:

```
salt '*' archive.cmd_zip /tmp/zipfile.zip /tmp/sourcefile1,/tmp/sourcefile2
```

`salt.modules.archive.`**`gunzip`**(*gzipfile*, *template=None*, *runas=None*, *options=None*)

Uses the gunzip command to unpack gzip files

**template** [None] Can be set to `jinja' or another supported template engine to render the command arguments before execution:

```
salt '*' archive.gunzip template=jinja /tmp/{{grains.id}}.txt.gz
```

**runas** [None] The user with which to run the gzip command line
**options** [None] Pass any additional arguments to gzip

New in version 2016.3.4.

CLI Example:

```
# Create /tmp/sourcefile.txt
salt '*' archive.gunzip /tmp/sourcefile.txt.gz
salt '*' archive.gunzip /tmp/sourcefile.txt options='--verbose'
```

salt.modules.archive.**gzip**(*sourcefile*, *template=None*, *runas=None*, *options=None*)

Uses the gzip command to create gzip files

**template** [None] Can be set to `jinja' or another supported template engine to render the command arguments before execution:

```
salt '*' archive.gzip template=jinja /tmp/{{grains.id}}.txt
```

**runas** [None] The user with which to run the gzip command line
**options** [None] Pass any additional arguments to gzip

New in version 2016.3.4.

CLI Example:

```
# Create /tmp/sourcefile.txt.gz
salt '*' archive.gzip /tmp/sourcefile.txt
salt '*' archive.gzip /tmp/sourcefile.txt options='-9 --verbose'
```

salt.modules.archive.**rar**(*rarfile*, *sources*, *template=None*, *cwd=None*, *runas=None*)

Uses rar for Linux to create rar files

**rarfile** Path of rar file to be created
**sources** Comma-separated list of sources to include in the rar file. Sources can also be passed in a Python list.
**cwd** [None] Run the rar command from the specified directory. Use this argument along with relative file paths to create rar files which do not contain the leading directories. If not specified, this will default to the home directory of the user under which the salt minion process is running.

New in version 2014.7.1.

**template** [None] Can be set to `jinja' or another supported template engine to render the command arguments before execution:

```
salt '*' archive.rar template=jinja /tmp/rarfile.rar '/tmp/sourcefile1,/tmp/{
↪{grains.id}}.txt'
```

CLI Example:

```
salt '*' archive.rar /tmp/rarfile.rar /tmp/sourcefile1,/tmp/sourcefile2
```

salt.modules.archive.**tar**(*options*, *tarfile*, *sources=None*, *dest=None*, *cwd=None*, *template=None*, *runas=None*)

**Note:** This function has changed for version 0.17.0. In prior versions, the `cwd` and `template` arguments must be specified, with the source directories/files coming as a space-separated list at the end of the command. Beginning with 0.17.0, `sources` must be a comma-separated list, and the `cwd` and `template` arguments are optional.

Uses the tar command to pack, unpack, etc. tar files

**options** Options to pass to the tar command

Changed in version 2015.8.0: The mandatory - prefixing has been removed. An options string beginning with a *--long-option*, would have uncharacteristically needed its first - removed under the former scheme.

Also, tar will parse its options differently if short options are used with or without a preceding -, so it is better to not confuse the user into thinking they're using the non-- format, when really they are using the with-- format.

**tarfile** The filename of the tar archive to pack/unpack

**sources** Comma delimited list of files to **pack** into the tarfile. Can also be passed as a Python list.

**dest** The destination directory into which to **unpack** the tarfile

**cwd** [None] The directory in which the tar command should be executed. If not specified, will default to the home directory of the user under which the salt minion process is running.

**template** [None] Can be set to `jinja' or another supported template engine to render the command arguments before execution:

```
salt '*' archive.tar -cjvf /tmp/salt.tar.bz2 {{grains.saltpath}}
 ↪template=jinja
```

CLI Examples:

```
# Create a tarfile
salt '*' archive.tar -cjvf /tmp/tarfile.tar.bz2 /tmp/file_1,/tmp/file_2
# Unpack a tarfile
salt '*' archive.tar xf foo.tar dest=/target/directory
```

`salt.modules.archive.`**`unrar`**(*rarfile*, *dest*, *excludes=None*, *template=None*, *runas=None*, *trim_output=False*)

Uses rar for Linux to unpack rar files

**rarfile** Name of rar file to be unpacked

**dest** The destination directory into which to **unpack** the rar file

**template** [None] Can be set to `jinja' or another supported template engine to render the command arguments before execution:

```
salt '*' archive.unrar template=jinja /tmp/rarfile.rar /tmp/{{grains.id}}/
 ↪excludes=file_1,file_2
```

**trim_output** [False] The number of files we should output on success before the rest are trimmed, if this is set to True then it will default to 100

CLI Example:

```
salt '*' archive.unrar /tmp/rarfile.rar /home/strongbad/ excludes=file_1,file_2
```

`salt.modules.archive.`**`unzip`**(*zip_file*, *dest*, *excludes=None*, *template=None*, *runas=None*, *trim_output=False*, *password=None*)

Uses the `zipfile` Python module to unpack zip files

Changed in version 2015.5.0: This function was rewritten to use Python's native zip file support. The old functionality has been preserved in the new function *archive.cmd_unzip*. For versions 2014.7.x and earlier, see the *archive.cmd_zip* documentation.

**zip_file** Path of zip file to be unpacked

**dest** The destination directory into which the file should be unpacked

**excludes** [None] Comma-separated list of files not to unpack. Can also be passed in a Python list.

**template** [None] Can be set to `jinja' or another supported template engine to render the command arguments before execution:

```
salt '*' archive.unzip template=jinja /tmp/zipfile.zip /tmp/{{grains.id}}/
 ↪excludes=file_1,file_2
```

**runas** [None] Unpack the zip file as the specified user. Defaults to the user under which the minion is running.
**trim_output** [False] The number of files we should output on success before the rest are trimmed, if this is set to True then it will default to 100
CLI Example:

```
salt '*' archive.unzip /tmp/zipfile.zip /home/strongbad/ excludes=file_1,file_2
```

**password**: **None** Password to use with password protected zip files

New in version 2016.3.0.

CLI Example:

```
salt '*' archive.unzip /tmp/zipfile.zip /home/strongbad/ password='BadPassword'
```

salt.modules.archive.**zip**(*zip_file*, *sources*, *template=None*, *cwd=None*, *runas=None*)
Uses the `zipfile` Python module to create zip files

Changed in version 2015.5.0: This function was rewritten to use Python's native zip file support. The old functionality has been preserved in the new function *archive.cmd_zip*. For versions 2014.7.x and earlier, see the *archive.cmd_zip* documentation.
**zip_file** Path of zip file to be created
**sources** Comma-separated list of sources to include in the zip file. Sources can also be passed in a Python list.
**template** [None] Can be set to `jinja' or another supported template engine to render the command arguments before execution:

```
salt '*' archive.zip template=jinja /tmp/zipfile.zip /tmp/sourcefile1,/tmp/{
↪{grains.id}}.txt
```

**cwd** [None] Use this argument along with relative paths in `sources` to create zip files which do not contain the leading directories. If not specified, the zip file will be created as if the cwd was `/`, and creating a zip file of `/foo/bar/baz.txt` will contain the parent directories `foo` and `bar`. To create a zip file containing just `baz.txt`, the following command would be used:

```
salt '*' archive.zip /tmp/baz.zip baz.txt cwd=/foo/bar
```

**runas** [None] Create the zip file as the specified user. Defaults to the user under which the minion is running.
CLI Example:

```
salt '*' archive.zip /tmp/zipfile.zip /tmp/sourcefile1,/tmp/sourcefile2
```

### 13.6.7 salt.modules.artifactory

Module for fetching artifacts from Artifactory

**exception** salt.modules.artifactory.**ArtifactoryError**(*value*)

salt.modules.artifactory.**get_latest_release**(*artifactory_url*, *repository*, *group_id*, *artifact_id*, *packaging*, *target_dir='/tmp'*, *target_file=None*, *classifier=None*, *username=None*, *password=None*)
Gets the latest release of the artifact
**artifactory_url** URL of artifactory instance
**repository** Release repository in artifactory to retrieve artifact from, for example: libs-releases
**group_id** Group Id of the artifact
**artifact_id** Artifact Id of the artifact
**packaging** Packaging type (jar,war,ear,etc)
**target_dir** Target directory to download artifact to (default: /tmp)

**target_file** Target file to download artifact to (by default it is target_dir/artifact_id-version.packaging)
**classifier** Artifact classifier name (ex: sources,javadoc,etc). Optional parameter.
**username** Artifactory username. Optional parameter.
**password** Artifactory password. Optional parameter.

salt.modules.artifactory.**get_latest_snapshot**(*artifactory_url*, *repository*, *group_id*, *artifact_id*, *packaging*, *target_dir='/tmp'*, *target_file=None*, *classifier=None*, *username=None*, *password=None*)

Gets latest snapshot of the given artifact
**artifactory_url** URL of artifactory instance
**repository** Snapshot repository in artifactory to retrieve artifact from, for example: libs-snapshots
**group_id** Group Id of the artifact
**artifact_id** Artifact Id of the artifact
**packaging** Packaging type (jar,war,ear,etc)
**target_dir** Target directory to download artifact to (default: /tmp)
**target_file** Target file to download artifact to (by default it is target_dir/artifact_id-snapshot_version.packaging)
**classifier** Artifact classifier name (ex: sources,javadoc,etc). Optional parameter.
**username** Artifactory username. Optional parameter.
**password** Artifactory password. Optional parameter.

salt.modules.artifactory.**get_release**(*artifactory_url*, *repository*, *group_id*, *artifact_id*, *packaging*, *version*, *target_dir='/tmp'*, *target_file=None*, *classifier=None*, *username=None*, *password=None*)

Gets the specified release of the artifact
**artifactory_url** URL of artifactory instance
**repository** Release repository in artifactory to retrieve artifact from, for example: libs-releases
**group_id** Group Id of the artifact
**artifact_id** Artifact Id of the artifact
**packaging** Packaging type (jar,war,ear,etc)
**version** Version of the artifact
**target_dir** Target directory to download artifact to (default: /tmp)
**target_file** Target file to download artifact to (by default it is target_dir/artifact_id-version.packaging)
**classifier** Artifact classifier name (ex: sources,javadoc,etc). Optional parameter.
**username** Artifactory username. Optional parameter.
**password** Artifactory password. Optional parameter.

salt.modules.artifactory.**get_snapshot**(*artifactory_url*, *repository*, *group_id*, *artifact_id*, *packaging*, *version*, *snapshot_version=None*, *target_dir='/tmp'*, *target_file=None*, *classifier=None*, *username=None*, *password=None*)

Gets snapshot of the desired version of the artifact
**artifactory_url** URL of artifactory instance
**repository** Snapshot repository in artifactory to retrieve artifact from, for example: libs-snapshots
**group_id** Group Id of the artifact
**artifact_id** Artifact Id of the artifact
**packaging** Packaging type (jar,war,ear,etc)
**version** Version of the artifact
**target_dir** Target directory to download artifact to (default: /tmp)
**target_file** Target file to download artifact to (by default it is target_dir/artifact_id-snapshot_version.packaging)
**classifier** Artifact classifier name (ex: sources,javadoc,etc). Optional parameter.
**username** Artifactory username. Optional parameter.
**password** Artifactory password. Optional parameter.

### 13.6.8 salt.modules.at

Wrapper module for at(1)

Also, a `tag' feature has been added to more easily tag jobs.

`salt.modules.at.`**`at`**(**args*, ***kwargs*)

Add a job to the queue.

The `timespec' follows the format documented in the at(1) manpage.

CLI Example:

```
salt '*' at.at <timespec> <cmd> [tag=<tag>] [runas=<user>]
salt '*' at.at 12:05am '/sbin/reboot' tag=reboot
salt '*' at.at '3:05am +3 days' 'bin/myscript' tag=nightly runas=jim
```

`salt.modules.at.`**`atc`**(*jobid*)

Print the at(1) script that will run for the passed job id. This is mostly for debugging so the output will just be text.

CLI Example:

```
salt '*' at.atc <jobid>
```

`salt.modules.at.`**`atq`**(*tag=None*)

List all queued and running jobs or only those with an optional `tag'.

CLI Example:

```
salt '*' at.atq
salt '*' at.atq [tag]
salt '*' at.atq [job number]
```

`salt.modules.at.`**`atrm`**(**args*)

Remove jobs from the queue.

CLI Example:

```
salt '*' at.atrm <jobid> <jobid> .. <jobid>
salt '*' at.atrm all
salt '*' at.atrm all [tag]
```

`salt.modules.at.`**`jobcheck`**(***kwargs*)

Check the job from queue. The kwargs dict include `hour minute day month year tag runas' Other parameters will be ignored.

CLI Example:

```
salt '*' at.jobcheck runas=jam day=13
salt '*' at.jobcheck day=13 month=12 year=13 tag=rose
```

### 13.6.9 salt.modules.augeas_cfg

Manages configuration files via augeas

This module requires the `augeas` Python module.

**Warning**: Minimal installations of Debian and Ubuntu have been seen to have packaging bugs with python-augeas, causing the augeas module to fail to import. If the minion has the augeas module installed, but the functions in this execution module fail to run due to being unavailable, first restart the salt-minion service. If the problem persists past that, the following command can be run from the master to determine what is causing the import to fail:

```
salt minion-id cmd.run 'python -c "from augeas import Augeas"'
```

For affected Debian/Ubuntu hosts, installing `libpython2.7` has been known to resolve the issue.

`salt.modules.augeas_cfg.`**`execute`**(*context=None*, *lens=None*, *commands=()*, *load_path=None*)
Execute Augeas commands

New in version 2014.7.0.

CLI Example:

```
salt '*' augeas.execute /files/etc/redis/redis.conf \
commands='["set bind 0.0.0.0", "set maxmemory 1G"]'
```

**context** The Augeas context
**lens** The Augeas lens to use
**commands** The Augeas commands to execute

New in version 2016.3.0.
**load_path** A colon-spearated list of directories that modules should be searched in. This is in addition to the standard load path and the directories in AUGEAS_LENS_LIB.

`salt.modules.augeas_cfg.`**`get`**(*path*, *value=''*, *load_path=None*)
Get a value for a specific augeas path

CLI Example:

```
salt '*' augeas.get /files/etc/hosts/1/ ipaddr
```

**path** The path to get the value of
**value** The optional value to get

New in version 2016.3.0.
**load_path** A colon-spearated list of directories that modules should be searched in. This is in addition to the standard load path and the directories in AUGEAS_LENS_LIB.

`salt.modules.augeas_cfg.`**`ls`**(*path*, *load_path=None*)
List the direct children of a node

CLI Example:

```
salt '*' augeas.ls /files/etc/passwd
```

**path** The path to list

New in version 2016.3.0.
**load_path** A colon-spearated list of directories that modules should be searched in. This is in addition to the standard load path and the directories in AUGEAS_LENS_LIB.

`salt.modules.augeas_cfg.`**`match`**(*path*, *value=''*, *load_path=None*)
Get matches for path expression

CLI Example:

```
salt '*' augeas.match /files/etc/services/service-name ssh
```

**path** The path to match
**value** The value to match on

New in version 2016.3.0.
**load_path** A colon-spearated list of directories that modules should be searched in. This is in addition to the standard load path and the directories in AUGEAS_LENS_LIB.

salt.modules.augeas_cfg.**remove**(*path*, *load_path=None*)
Get matches for path expression

CLI Example:

```
salt '*' augeas.remove \
/files/etc/sysctl.conf/net.ipv4.conf.all.log_martians
```

**path** The path to remove

New in version 2016.3.0.
**load_path** A colon-spearated list of directories that modules should be searched in. This is in addition to the standard load path and the directories in AUGEAS_LENS_LIB.

salt.modules.augeas_cfg.**setvalue**(**args*)
Set a value for a specific augeas path

CLI Example:

```
salt '*' augeas.setvalue /files/etc/hosts/1/canonical localhost
```

This will set the first entry in /etc/hosts to localhost

CLI Example:

```
salt '*' augeas.setvalue /files/etc/hosts/01/ipaddr 192.168.1.1 \
                         /files/etc/hosts/01/canonical test
```

Adds a new host to /etc/hosts the ip address 192.168.1.1 and hostname test

CLI Example:

```
salt '*' augeas.setvalue prefix=/files/etc/sudoers/ \
         "spec[user = '%wheel']/user" "%wheel" \
         "spec[user = '%wheel']/host_group/host" 'ALL' \
         "spec[user = '%wheel']/host_group/command[1]" 'ALL' \
         "spec[user = '%wheel']/host_group/command[1]/tag" 'PASSWD' \
         "spec[user = '%wheel']/host_group/command[2]" '/usr/bin/apt-get' \
         "spec[user = '%wheel']/host_group/command[2]/tag" NOPASSWD
```

Ensures that the following line is present in /etc/sudoers:

```
%wheel ALL = PASSWD : ALL , NOPASSWD : /usr/bin/apt-get , /usr/bin/aptitude
```

salt.modules.augeas_cfg.**tree**(*path*, *load_path=None*)
Returns recursively the complete tree of a node

CLI Example:

```
salt '*' augeas.tree /files/etc/
```

**path** The base of the recursive listing

New in version 2016.3.0.

**load_path** A colon-spearated list of directories that modules should be searched in. This is in addition to the standard load path and the directories in AUGEAS_LENS_LIB.

### 13.6.10 salt.modules.aws_sqs

Support for the Amazon Simple Queue Service.

`salt.modules.aws_sqs.`**`create_queue`**(*name*, *region*, *opts=None*, *user=None*)

Creates a queue with the correct name.

**name** Name of the SQS queue to create

**region** Region to create the SQS queue in

**opts** [None] Any additional options to add to the command line

**user** [None] Run hg as a user other than what the minion runs as

CLI Example:

salt `*' aws_sqs.create_queue <sqs queue> <region>

`salt.modules.aws_sqs.`**`delete_message`**(*queue*, *region*, *receipthandle*, *opts=None*, *user=None*)

Delete one or more messages from a queue in a region

**queue** The name of the queue to delete messages from

**region** Region where SQS queues exists

**receipthandle** The ReceiptHandle of the message to delete. The ReceiptHandle is obtained in the return from receive_message

**opts** [None] Any additional options to add to the command line

**user** [None] Run as a user other than what the minion runs as

CLI Example:

```
salt '*' aws_sqs.delete_message <sqs queue> <region> receipthandle='<sqs
↪ReceiptHandle>'
```

New in version 2014.7.0.

`salt.modules.aws_sqs.`**`delete_queue`**(*name*, *region*, *opts=None*, *user=None*)

Deletes a queue in the region.

**name** Name of the SQS queue to deletes

**region** Name of the region to delete the queue from

**opts** [None] Any additional options to add to the command line

**user** [None] Run hg as a user other than what the minion runs as

CLI Example:

salt `*' aws_sqs.delete_queue <sqs queue> <region>

`salt.modules.aws_sqs.`**`list_queues`**(*region*, *opts=None*, *user=None*)

List the queues in the selected region.

**region** Region to list SQS queues for

**opts** [None] Any additional options to add to the command line

**user** [None] Run hg as a user other than what the minion runs as

CLI Example:

salt `*' aws_sqs.list_queues <region>

`salt.modules.aws_sqs.`**`queue_exists`**(*name*, *region*, *opts=None*, *user=None*)

Returns True or False on whether the queue exists in the region

**name** Name of the SQS queue to search for

**region** Name of the region to search for the queue in

**opts** [None] Any additional options to add to the command line

**user** [None] Run hg as a user other than what the minion runs as
CLI Example:
salt `*' aws_sqs.queue_exists <sqs queue> <region>

salt.modules.aws_sqs.**receive_message**(*queue*, *region*, *num=1*, *opts=None*, *user=None*)
Receive one or more messages from a queue in a region
**queue** The name of the queue to receive messages from
**region** Region where SQS queues exists
**num** [1] The max number of messages to receive
**opts** [None] Any additional options to add to the command line
**user** [None] Run as a user other than what the minion runs as
CLI Example:

```
salt '*' aws_sqs.receive_message <sqs queue> <region>
salt '*' aws_sqs.receive_message <sqs queue> <region> num=10
```

New in version 2014.7.0.

### 13.6.11 salt.modules.bamboohr

Support for BambooHR

New in version 2015.8.0.

Requires a `subdomain` and an `apikey` in `/etc/salt/minion`:

salt.modules.bamboohr.**list_employees**(*order_by='id'*)
Show all employees for this company.

CLI Example:
salt myminion bamboohr.list_employees
By default, the return data will be keyed by ID. However, it can be ordered by any other field. Keep in mind that if the field that is chosen contains duplicate values (i.e., location is used, for a company which only has one location), then each duplicate value will be overwritten by the previous. Therefore, it is advisable to only sort by fields that are guaranteed to be unique.

CLI Examples:
salt myminion bamboohr.list_employees order_by=id salt myminion bamboohr.list_employees order_by=displayName salt myminion bamboohr.list_employees order_by=workEmail

salt.modules.bamboohr.**list_meta_fields**()
Show all meta data fields for this company.

CLI Example:
salt myminion bamboohr.list_meta_fields

salt.modules.bamboohr.**list_users**(*order_by='id'*)
Show all users for this company.

CLI Example:
salt myminion bamboohr.list_users
By default, the return data will be keyed by ID. However, it can be ordered by any other field. Keep in mind that if the field that is chosen contains duplicate values (i.e., location is used, for a company which only has one location), then each duplicate value will be overwritten by the previous. Therefore, it is advisable to only sort by fields that are guaranteed to be unique.

CLI Examples:
salt myminion bamboohr.list_users order_by=id salt myminion bamboohr.list_users order_by=email

salt.modules.bamboohr.**show_employee**(*emp_id*, *fields=None*)

Show all employees for this company.

CLI Example:

salt myminion bamboohr.show_employee 1138

By default, the fields normally returned from bamboohr.list_employees are returned. These fields are:

- canUploadPhoto
- department
- displayName
- firstName
- id
- jobTitle
- lastName
- location
- mobilePhone
- nickname
- photoUploaded
- photoUrl
- workEmail
- workPhone
- workPhoneExtension

If needed, a different set of fields may be specified, separated by commas:

CLI Example:

salt myminion bamboohr.show_employee 1138 displayName,dateOfBirth

A list of available fields can be found at http://www.bamboohr.com/api/documentation/employees.php

salt.modules.bamboohr.**update_employee**(*emp_id*, *key=None*, *value=None*, *items=None*)

Update one or more items for this employee. Specifying an empty value will clear it for that employee.

CLI Examples:

salt myminion bamboohr.update_employee 1138 nickname Curly salt myminion bamboohr.update_employee 1138 nickname `' salt myminion bamboohr.update_employee 1138 items='{``nickname'': ``Curly''} salt myminion bamboohr.update_employee 1138 items='{``nickname'': ``''}

### 13.6.12 salt.modules.bcache module

Module for managing BCache sets

BCache is a block-level caching mechanism similar to ZFS L2ARC/ZIL, dm-cache and fscache. It works by formatting one block device as a cache set, then adding backend devices (which need to be formatted as such) to the set and activating them.

It's available in Linux mainline kernel since 3.10

https://www.kernel.org/doc/Documentation/bcache.txt

This module needs the bcache userspace tools to function.

salt.modules.bcache.**attach**(*dev=None*)

Attach a backing devices to a cache set If no dev is given, all backing devices will be attached.

CLI example:

```
salt '*' bcache.attach sdc
salt '*' bcache.attach /dev/bcache1
```

**Returns** bool or None if nuttin' happened

salt.modules.bcache.**back_make**(*dev*, *cache_mode='writeback'*, *force=False*, *attach=True*, *bucket_size=None*)

Create a backing device for attachment to a set. Because the block size must be the same, a cache set already needs to exist.

CLI example:

```
salt '*' bcache.back_make sdc cache_mode=writeback attach=True
```

**Parameters**

- **cache_mode** -- writethrough, writeback, writearound or none.
- **force** -- Overwrite existing bcaches
- **attach** -- Immediately attach the backing device to the set
- **bucket_size** -- Size of a bucket (see kernel doc)

salt.modules.bcache.**cache_make**(*dev*, *reserved=None*, *force=False*, *block_size=None*, *bucket_size=None*, *attach=True*)

Create BCache cache on a block device. If blkdiscard is available the entire device will be properly cleared in advance.

CLI example:

```
salt '*' bcache.cache_make sdb reserved=10% block_size=4096
```

**Parameters**

- **reserved** -- if dev is a full device, create a partition table with this size empty.

  **Note:** this increases the amount of reserved space available to SSD garbage collectors, potentially (vastly) increasing performance

- **block_size** -- Block size of the cache; defaults to devices' logical block size
- **force** -- Overwrite existing BCache sets
- **attach** -- Attach all existing backend devices immediately

salt.modules.bcache.**config**(*dev=None*, ***kwargs*)

Show or update config of a bcache device.

If no device is given, operate on the cache set itself.

CLI example:

```
salt '*' bcache.config
salt '*' bcache.config bcache1
salt '*' bcache.config errors=panic journal_delay_ms=150
salt '*' bcache.config bcache1 cache_mode=writeback writeback_percent=15
```

**Returns** config or True/False

salt.modules.bcache.**detach**(*dev=None*)

Detach a backing device(s) from a cache set If no dev is given, all backing devices will be attached.

Detaching a backing device will flush it's write cache. This should leave the underlying device in a consistent state, but might take a while.

CLI example:

```
salt '*' bcache.detach sdc
salt '*' bcache.detach bcache1
```

salt.modules.bcache.**device**(*dev*, *stats=False*, *config=False*, *internals=False*, *superblock=False*)

Check the state of a single bcache device

CLI example:

```
salt '*' bcache.device bcache0
salt '*' bcache.device /dev/sdc stats=True
```

**Parameters**

- **stats** -- include statistics
- **settings** -- include all settings
- **internals** -- include all internals
- **superblock** -- include superblock info

salt.modules.bcache.**start**()

Trigger a start of the full bcache system through udev.

CLI example:

```
salt '*' bcache.start
```

salt.modules.bcache.**status**(*stats=False*, *config=False*, *internals=False*, *superblock=False*, *alldevs=False*)

Show the full status of the BCache system and optionally all it's involved devices

CLI example:

```
salt '*' bcache.status
salt '*' bcache.status stats=True
salt '*' bcache.status internals=True alldevs=True
```

**Parameters**

- **stats** -- include statistics
- **config** -- include settings
- **internals** -- include internals
- **superblock** -- include superblock

salt.modules.bcache.**stop**(*dev=None*)

Stop a bcache device If no device is given, all backing devices will be detached from the cache, which will subsequently be stopped.

> **Warning**: `Stop' on an individual backing device means hard-stop; no attempt at flushing will be done and the bcache device will seemingly `disappear' from the device lists

CLI example:

```
salt '*' bcache.stop
```

salt.modules.bcache.**super**(*dev*)
Read out BCache SuperBlock

CLI example:

```
salt '*' bcache.device bcache0
salt '*' bcache.device /dev/sdc
```

salt.modules.bcache.**uuid**(*dev=None*)
Return the bcache UUID of a block device. If no device is given, the Cache UUID is returned.

CLI example:

```
salt '*' bcache.uuid
salt '*' bcache.uuid /dev/sda
salt '*' bcache.uuid bcache0
```

### 13.6.13 salt.modules.beacons

Module for managing the Salt beacons on a minion

New in version 2015.8.0.

salt.modules.beacons.**add**(*name*, *beacon_data*, ***kwargs*)
Add a beacon on the minion

**Parameters**

- **name** -- Name of the beacon to configure
- **beacon_data** -- Dictionary or list containing configuration for beacon.

**Returns** Boolean and status message on success or failure of add.

CLI Example:

```
salt '*' beacons.add ps "{'salt-master': 'stopped', 'apache2': 'stopped'}"
```

salt.modules.beacons.**delete**(*name*, ***kwargs*)
Delete a beacon item

**Parameters** **name** -- Name of the beacon to delete

**Returns** Boolean and status message on success or failure of delete.

CLI Example:

```
salt '*' beacons.delete ps

salt '*' beacons.delete load
```

salt.modules.beacons.**disable**(***kwargs*)
Disable all beaconsd jobs on the minion

**Returns** Boolean and status message on success or failure of disable.

CLI Example:

```
salt '*' beacons.disable
```

salt.modules.beacons.**disable_beacon**(*name*, ***kwargs*)
Disable beacon on the minion

**Name** Name of the beacon to disable.

**Returns** Boolean and status message on success or failure of disable.

CLI Example:

```
salt '*' beacons.disable_beacon ps
```

salt.modules.beacons.**enable**(***kwargs*)

Enable all beacons on the minion

**Returns** Boolean and status message on success or failure of enable.

CLI Example:

```
salt '*' beacons.enable
```

salt.modules.beacons.**enable_beacon**(*name*, ***kwargs*)

Enable beacon on the minion

**Name** Name of the beacon to enable.

**Returns** Boolean and status message on success or failure of enable.

CLI Example:

```
salt '*' beacons.enable_beacon ps
```

salt.modules.beacons.**list**(*return_yaml=True*)

List the beacons currently configured on the minion

**Parameters** **return_yaml** -- Whether to return YAML formatted output, default True

**Returns** List of currently configured Beacons.

CLI Example:

```
salt '*' beacons.list
```

salt.modules.beacons.**modify**(*name*, *beacon_data*, ***kwargs*)

Modify an existing beacon

**Parameters**

- **name** -- Name of the beacon to configure
- **beacon_data** -- Dictionary or list containing updated configuration for beacon.

**Returns** Boolean and status message on success or failure of modify.

CLI Example:

```
salt '*' beacons.modify ps "{'salt-master': 'stopped', 'apache2': 'stopped'}"
```

salt.modules.beacons.**save**()

Save all beacons on the minion

**Returns** Boolean and status message on success or failure of save.

CLI Example:

```
salt '*' beacons.save
```

### 13.6.14 salt.modules.bigip

**An execution module which can manipulate an f5 bigip via iControl REST**

**maturity** develop

**platform** f5_bigip_11.6

salt.modules.bigip.**add_pool_member**(*hostname*, *username*, *password*, *name*, *member*)

A function to connect to a bigip device and add a new member to an existing pool.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the pool to modify
**member** The name of the member to add i.e. 10.1.1.2:80
CLI Example:

```
salt '*' bigip.add_pool_members bigip admin admin my-pool 10.2.2.1:80
```

salt.modules.bigip.**commit_transaction**(*hostname*, *username*, *password*, *label*)

A function to connect to a bigip device and commit an existing transaction.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**label** the label of this transaction stored within the grain: `bigip_f5_trans:<label>`
CLI Example:

```
salt '*' bigip.commit_transaction bigip admin admin my_transaction
```

salt.modules.bigip.**create_monitor**(*hostname*, *username*, *password*, *monitor_type*, *name*, ***kwargs*)

A function to connect to a bigip device and create a monitor.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**monitor_type** The type of monitor to create
**name** The name of the monitor to create
**kwargs** Consult F5 BIGIP user guide for specific options for each monitor type. Typically, tmsh arg names are used.
CLI Example:

```
salt '*' bigip.create_monitor bigip admin admin http my-http-monitor timeout=10
↪interval=5
```

salt.modules.bigip.**create_node**(*hostname*, *username*, *password*, *name*, *address*, *trans_label=None*)

A function to connect to a bigip device and create a node.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the node
**address** The address of the node
**trans_label** The label of the transaction stored within the grain: `bigip_f5_trans:<label>`
CLI Example:

```
salt '*' bigip.create_node bigip admin admin 10.1.1.2
```

salt.modules.bigip.**create_pool**(*hostname*, *username*, *password*, *name*, *members=None*, *allow_nat=None*, *allow_snat=None*, *description=None*, *gateway_failsafe_device=None*, *ignore_persisted_weight=None*, *ip_tos_to_client=None*, *ip_tos_to_server=None*, *link_qos_to_client=None*, *link_qos_to_server=None*, *load_balancing_mode=None*, *min_active_members=None*, *min_up_members=None*, *min_up_members_action=None*, *min_up_members_checking=None*, *monitor=None*, *profiles=None*, *queue_depth_limit=None*, *queue_on_connection_limit=None*, *queue_time_limit=None*, *reselect_tries=None*, *service_down_action=None*, *slow_ramp_time=None*)

A function to connect to a bigip device and create a pool.

**hostname** The host/address of the bigip device

**username** The iControl REST username

**password** The iControl REST password

**name** The name of the pool to create.

**members** List of comma delimited pool members to add to the pool. i.e. 10.1.1.1:80,10.1.1.2:80,10.1.1.3:80

**allow_nat** [yes | no]

**allow_snat** [yes | no]

**description** [string]

**gateway_failsafe_device** [string]

**ignore_persisted_weight** [enabled | disabled]

**ip_tos_to_client** [pass-through | [integer]]

**ip_tos_to_server** [pass-through | [integer]]

**link_qos_to_client** [pass-through | [integer]]

**link_qos_to_server** [pass-through | [integer]]

**load_balancing_mode** [dynamic-ratio-member | dynamic-ratio-node | fastest-app-response | fastest-node | least-connections-members | least-connections-node | least-sessions | observed-member | observed-node | predictive-member | predictive-node | ratio-least-connections-member | ratio-least-connections-node | ratio-member | ratio-node | ratio-session | round-robin | weighted-least-connections-member | weighted-least-connections-node]

**min_active_members** [integer]

**min_up_members** [integer]

**min_up_members_action** [failover | reboot | restart-all]

**min_up_members_checking** [enabled | disabled]

**monitor** [name]

**profiles** [none | profile_name]

**queue_depth_limit** [integer]

**queue_on_connection_limit** [enabled | disabled]

**queue_time_limit** [integer]

**reselect_tries** [integer]

**service_down_action** [drop | none | reselect | reset]

**slow_ramp_time** [integer]

CLI Example:

```
salt '*' bigip.create_pool bigip admin admin my-pool 10.1.1.1:80,10.1.1.2:80,10.1.
↪1.3:80 monitor=http
```

salt.modules.bigip.**create_profile**(*hostname*, *username*, *password*, *profile_type*, *name*, ***kwargs*)

A function to connect to a bigip device and create a profile.

**hostname** The host/address of the bigip device

**username** The iControl REST username

**password** The iControl REST password

**profile_type** The type of profile to create

**name** The name of the profile to create
**kwargs** `[ arg=val ] ... [arg=key1:val1,key2:val2] ...`

Consult F5 BIGIP user guide for specific options for each monitor type. Typically, tmsh arg names are used.

**Creating Complex Args** Profiles can get pretty complicated in terms of the amount of possible config options. Use the following shorthand to create complex arguments such as lists, dictionaries, and lists of dictionaries. An option is also provided to pass raw json as well.

**lists `[i,i,i]`**: `param='item1,item2,item3'`

**Dictionary `[k:v,k:v,k,v]`**: `param='key-1:val-1,key-2:val2,key-3:va-3'`

**List of Dictionaries `[k:v,k:v|k:v,k:v|k:v,k:v]`**: `param='key-1:val-1,key-2:val-2|key-1:val-1,key-2:val-2|key-1:val-1,key-2:val-2'`

**JSON: `'j{ ... }j'`**: `cert-key-chain='j{ "default": { "cert": "default.crt","chain": "default.crt","key": "default.key" } }j'`

**Escaping Delimiters**: Use `\,` or `\:` or `\|` to escape characters which shouldn't be treated as delimiters i.e. `ciphers='DEFAULT\:!SSLv3'`

CLI Examples:

```
salt '*' bigip.create_profile bigip admin admin http my-http-profile defaultsFrom=
↪'/Common/http'
salt '*' bigip.create_profile bigip admin admin http my-http-profile defaultsFrom=
↪'/Common/http' \
   enforcement=maxHeaderCount:3200,maxRequests:10
```

salt.modules.bigip.**create_virtual**(*hostname*, *username*, *password*, *name*, *destination*, *pool=None*, *address_status=None*, *auto_lasthop=None*, *bwc_policy=None*, *cmp_enabled=None*, *connection_limit=None*, *dhcp_relay=None*, *description=None*, *fallback_persistence=None*, *flow_eviction_policy=None*, *gtm_score=None*, *ip_forward=None*, *ip_protocol=None*, *internal=None*, *twelve_forward=None*, *last_hop_pool=None*, *mask=None*, *mirror=None*, *nat64=None*, *persist=None*, *profiles=None*, *policies=None*, *rate_class=None*, *rate_limit=None*, *rate_limit_mode=None*, *rate_limit_dst=None*, *rate_limit_src=None*, *rules=None*, *related_rules=None*, *reject=None*, *source=None*, *source_address_translation=None*, *source_port=None*, *state=None*, *traffic_classes=None*, *translate_address=None*, *translate_port=None*, *vlans=None*)

A function to connect to a bigip device and create a virtual server.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the virtual to create
**destination** [ [virtual_address_name:port] | [ipv4:port] | [ipv6.port] ]
**pool** [ [pool_name] | none]
**address_status** [yes | no]
**auto_lasthop** [default | enabled | disabled ]
**bwc_policy** [none] | string]
**cmp_enabled** [yes | no]
**dhcp_relay** [yes | no]
**connection_limit** [integer]
**description** [string]
**state** [disabled | enabled]

**fallback_persistence** [none | [profile name] ]
**flow_eviction_policy** [none | [eviction policy name] ]
**gtm_score** [integer]
**ip_forward** [yes | no]
**ip_protocol** [any | protocol]
**internal** [yes | no]
**twelve_forward** (12-forward) [yes | no]
**last_hop-pool** [ [pool_name] | none]
**mask** { [ipv4] | [ipv6] }
**mirror** { [disabled | enabled | none] }
**nat64** [enabled | disabled]
**persist** [none | profile1,profile2,profile3 ... ]
**profiles** [none | default | profile1,profile2,profile3 ... ]
**policies** [none | default | policy1,policy2,policy3 ... ]
**rate_class** [name]
**rate_limit** [integer]
**rate_limit_mode** [destination | object | object-destination | object-source | object-source-destination | source | source-destination]
**rate_limit_dst** [integer]
**rate_limitçsrc** [integer]
**rules** [none | [rule_one,rule_two ...] ]
**related_rules** [none | [rule_one,rule_two ...] ]
**reject** [yes | no]
**source** { [ipv4[/prefixlen]] | [ipv6[/prefixlen]] }
**source_address_translation** [none | snat:pool_name | lsn | automap ]
**source_port** [change | preserve | preserve-strict]
**state** [enabled | disabled]
**traffic_classes** [none | default | class_one,class_two ... ]
**translate_address** [enabled | disabled]
**translate_port** [enabled | disabled]
**vlans** [none | default | [enabled|disabled]:vlan1,vlan2,vlan3 ... ]
CLI Examples:

```
salt '*' bigip.create_virtual bigip admin admin my-virtual-3 26.2.2.5:80 \
    pool=my-http-pool-http profiles=http,tcp

salt '*' bigip.create_virtual bigip admin admin my-virtual-3 43.2.2.5:80 \
    pool=test-http-pool-http profiles=http,websecurity persist=cookie,hash \
    policies=asm_auto_l7_policy__http-virtual \
    rules=_sys_APM_ExchangeSupport_helper,_sys_https_redirect \
    related_rules=_sys_APM_activesync,_sys_APM_ExchangeSupport_helper \
    source_address_translation=snat:my-snat-pool \
    translate_address=enabled translate_port=enabled \
    traffic_classes=my-class,other-class \
    vlans=enabled:external,internal
```

salt.modules.bigip.**delete_monitor**(*hostname*, *username*, *password*, *monitor_type*, *name*)
A function to connect to a bigip device and delete an existing monitor.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**monitor_type** The type of monitor to delete
**name** The name of the monitor to delete
CLI Example:

```
salt '*' bigip.delete_monitor bigip admin admin http my-http-monitor
```

salt.modules.bigip.**delete_node**(*hostname*, *username*, *password*, *name*, *trans_label=None*)

A function to connect to a bigip device and delete a specific node.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the node which will be deleted.
**trans_label** The label of the transaction stored within the grain: `bigip_f5_trans:<label>`

CLI Example:

```
salt '*' bigip.delete_node bigip admin admin my-node
```

salt.modules.bigip.**delete_pool**(*hostname*, *username*, *password*, *name*)

A function to connect to a bigip device and delete a specific pool.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the pool which will be deleted

CLI Example:

```
salt '*' bigip.delete_node bigip admin admin my-pool
```

salt.modules.bigip.**delete_pool_member**(*hostname*, *username*, *password*, *name*, *member*)

A function to connect to a bigip device and delete a specific pool.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the pool to modify
**member** The name of the pool member to delete

CLI Example:

```
salt '*' bigip.delete_node bigip admin admin my-pool 10.2.2.2:80
```

salt.modules.bigip.**delete_profile**(*hostname*, *username*, *password*, *profile_type*, *name*)

A function to connect to a bigip device and delete an existing profile.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**profile_type** The type of profile to delete
**name** The name of the profile to delete

CLI Example:

```
salt '*' bigip.delete_profile bigip admin admin http my-http-profile
```

salt.modules.bigip.**delete_transaction**(*hostname*, *username*, *password*, *label*)

A function to connect to a bigip device and delete an existing transaction.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**label** The label of this transaction stored within the grain: `bigip_f5_trans:<label>`

CLI Example:

```
salt '*' bigip.delete_transaction bigip admin admin my_transaction
```

salt.modules.bigip.**delete_virtual**(*hostname*, *username*, *password*, *name*)

A function to connect to a bigip device and delete a specific virtual.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the virtual to delete
CLI Example:

```
salt '*' bigip.delete_virtual bigip admin admin my-virtual
```

salt.modules.bigip.**list_monitor**(*hostname*, *username*, *password*, *monitor_type*, *name=None*)

A function to connect to a bigip device and list an existing monitor. If no name is provided than all monitors of the specified type will be listed.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**monitor_type** The type of monitor(s) to list
**name** The name of the monitor to list
CLI Example:

```
salt '*' bigip.list_monitor bigip admin admin http my-http-monitor
```

salt.modules.bigip.**list_node**(*hostname*, *username*, *password*, *name=None*, *trans_label=None*)

A function to connect to a bigip device and list all nodes or a specific node.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the node to list. If no name is specified than all nodes will be listed.
**trans_label** The label of the transaction stored within the grain: `bigip_f5_trans:<label>`
CLI Example:

```
salt '*' bigip.list_node bigip admin admin my-node
```

salt.modules.bigip.**list_pool**(*hostname*, *username*, *password*, *name=None*)

A function to connect to a bigip device and list all pools or a specific pool.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the pool to list. If no name is specified then all pools will be listed.
CLI Example:

```
salt '*' bigip.list_pool bigip admin admin my-pool
```

salt.modules.bigip.**list_profile**(*hostname*, *username*, *password*, *profile_type*, *name=None*)

A function to connect to a bigip device and list an existing profile. If no name is provided than all profiles of the specified type will be listed.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**profile_type** The type of profile(s) to list
**name** The name of the profile to list
CLI Example:

```
salt '*' bigip.list_profile bigip admin admin http my-http-profile
```

salt.modules.bigip.**list_transaction**(*hostname*, *username*, *password*, *label*)

A function to connect to a bigip device and list an existing transaction.

**hostname** The host/address of the bigip device

**username** The iControl REST username

**password** The iControl REST password

**label** the label of this transaction stored within the grain: `bigip_f5_trans:<label>`

CLI Example:

```
salt '*' bigip.list_transaction bigip admin admin my_transaction
```

salt.modules.bigip.**list_virtual**(*hostname*, *username*, *password*, *name=None*)

A function to connect to a bigip device and list all virtuals or a specific virtual.

**hostname** The host/address of the bigip device

**username** The iControl REST username

**password** The iControl REST password

**name** The name of the virtual to list. If no name is specified than all virtuals will be listed.

CLI Example:

```
salt '*' bigip.list_virtual bigip admin admin my-virtual
```

salt.modules.bigip.**modify_monitor**(*hostname*, *username*, *password*, *monitor_type*, *name*, ***kwargs*)

A function to connect to a bigip device and modify an existing monitor.

**hostname** The host/address of the bigip device

**username** The iControl REST username

**password** The iControl REST password

**monitor_type** The type of monitor to modify

**name** The name of the monitor to modify

**kwargs** Consult F5 BIGIP user guide for specific options for each monitor type. Typically, tmsh arg names are used.

CLI Example:

```
salt '*' bigip.modify_monitor bigip admin admin http my-http-monitor  timout=16
↪interval=6
```

salt.modules.bigip.**modify_node**(*hostname*, *username*, *password*, *name*, *connection_limit=None*, *description=None*, *dynamic_ratio=None*, *logging=None*, *monitor=None*, *rate_limit=None*, *ratio=None*, *session=None*, *state=None*, *trans_label=None*)

A function to connect to a bigip device and modify an existing node.

**hostname** The host/address of the bigip device

**username** The iControl REST username

**password** The iControl REST password

**name** The name of the node to modify

**connection_limit** [integer]

**description** [string]

**dynamic_ratio** [integer]

**logging** [enabled | disabled]

**monitor** [[name] | none | default]

**rate_limit** [integer]

**ratio** [integer]

**session** [user-enabled | user-disabled]

**state** [user-down | user-up ]

**trans_label** The label of the transaction stored within the grain: `bigip_f5_trans:<label>`

CLI Example:

```
salt '*' bigip.modify_node bigip admin admin 10.1.1.2 ratio=2 logging=enabled
```

salt.modules.bigip.**modify_pool**(*hostname*, *username*, *password*, *name*, *allow_nat=None*, *allow_snat=None*, *description=None*, *gateway_failsafe_device=None*, *ignore_persisted_weight=None*, *ip_tos_to_client=None*, *ip_tos_to_server=None*, *link_qos_to_client=None*, *link_qos_to_server=None*, *load_balancing_mode=None*, *min_active_members=None*, *min_up_members=None*, *min_up_members_action=None*, *min_up_members_checking=None*, *monitor=None*, *profiles=None*, *queue_depth_limit=None*, *queue_on_connection_limit=None*, *queue_time_limit=None*, *reselect_tries=None*, *service_down_action=None*, *slow_ramp_time=None*)

A function to connect to a bigip device and modify an existing pool.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the pool to modify.
**allow_nat** [yes | no]
**allow_snat** [yes | no]
**description** [string]
**gateway_failsafe_device** [string]
**ignore_persisted_weight** [yes | no]
**ip_tos_to_client** [pass-through | [integer]]
**ip_tos_to_server** [pass-through | [integer]]
**link_qos_to_client** [pass-through | [integer]]
**link_qos_to_server** [pass-through | [integer]]
**load_balancing_mode** [dynamic-ratio-member | dynamic-ratio-node | fastest-app-response | fastest-node | least-connections-members | least-connections-node | least-sessions | observed-member | observed-node | predictive-member | predictive-node | ratio-least-connections-member | ratio-least-connections-node | ratio-member | ratio-node | ratio-session | round-robin | weighted-least-connections-member | weighted-least-connections-node]
**min_active_members** [integer]
**min_up_members** [integer]
**min_up_members_action** [failover | reboot | restart-all]
**min_up_members_checking** [enabled | disabled]
**monitor** [name]
**profiles** [none | profile_name]
**queue_on_connection_limit** [enabled | disabled]
**queue_depth_limit** [integer]
**queue_time_limit** [integer]
**reselect_tries** [integer]
**service_down_action** [drop | none | reselect | reset]
**slow_ramp_time** [integer]

CLI Example:

```
salt '*' bigip.modify_pool bigip admin admin my-pool 10.1.1.1:80,10.1.1.2:80,10.1.
↪1.3:80 min_active_members=1
```

salt.modules.bigip.**modify_pool_member**(*hostname*, *username*, *password*, *name*, *member*, *connection_limit=None*, *description=None*, *dynamic_ratio=None*, *inherit_profile=None*, *logging=None*, *monitor=None*, *priority_group=None*, *profiles=None*, *rate_limit=None*, *ratio=None*, *session=None*, *state=None*)

A function to connect to a bigip device and modify an existing member of a pool.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the pool to modify
**member** The name of the member to modify i.e. 10.1.1.2:80
**connection_limit** [integer]
**description** [string]
**dynamic_ratio** [integer]
**inherit_profile** [enabled | disabled]
**logging** [enabled | disabled]
**monitor** [name]
**priority_group** [integer]
**profiles** [none | profile_name]
**rate_limit** [integer]
**ratio** [integer]
**session** [user-enabled | user-disabled]
**state** [ user-up | user-down ]
CLI Example:

```
salt '*' bigip.modify_pool_member bigip admin admin my-pool 10.2.2.1:80 state=use-
↪down session=user-disabled
```

salt.modules.bigip.**modify_profile**(*hostname*, *username*, *password*, *profile_type*, *name*, ***kwargs*)

A function to connect to a bigip device and create a profile.

A function to connect to a bigip device and create a profile.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**profile_type** The type of profile to create
**name** The name of the profile to create
**kwargs** `[ arg=val ] ... [arg=key1:val1,key2:val2] ...`

Consult F5 BIGIP user guide for specific options for each monitor type. Typically, tmsh arg names are used.

Creating Complex Args

Profiles can get pretty complicated in terms of the amount of possible config options. Use the following shorthand to create complex arguments such as lists, dictionaries, and lists of dictionaries. An option is also provided to pass raw json as well.

**lists [i,i,i]**: `param='item1,item2,item3'`

**Dictionary [k:v,k:v,k,v]**: `param='key-1:val-1,key-2:val2,key-3:va-3'`

**List of Dictionaries [k:v,k:v|k:v,k:v|k:v,k:v]**: `param='key-1:val-1,key-2:val-2|key-1:val-1,key-2:val-2|key-1:val-1,key-2:val-2'`

**JSON: 'j{ ... }j'**: `cert-key-chain='j{ "default": { "cert": "default.crt","chain": "default.crt","key": "default.key" } }j'`

**Escaping Delimiters**: Use `\,` or `\:` or `\|` to escape characters which shouldn't be treated as delimiters i.e. `ciphers='DEFAULT\:!SSLv3'`

CLI Examples:

```
salt '*' bigip.modify_profile bigip admin admin http my-http-profile defaultsFrom=
↪'/Common/http'

salt '*' bigip.modify_profile bigip admin admin http my-http-profile defaultsFrom=
↪'/Common/http' \
    enforcement=maxHeaderCount:3200,maxRequests:10

salt '*' bigip.modify_profile bigip admin admin client-ssl my-client-ssl-1
↪retainCertificate=false \
    ciphers='DEFAULT\:!SSLv3'
    cert_key_chain='j{ "default": { "cert": "default.crt", "chain": "default.crt
↪", "key": "default.key" } }j'
```

salt.modules.bigip.**modify_virtual**(*hostname*, *username*, *password*, *name*, *destination=None*, *pool=None*, *address_status=None*, *auto_lasthop=None*, *bwc_policy=None*, *cmp_enabled=None*, *connection_limit=None*, *dhcp_relay=None*, *description=None*, *fallback_persistence=None*, *flow_eviction_policy=None*, *gtm_score=None*, *ip_forward=None*, *ip_protocol=None*, *internal=None*, *twelve_forward=None*, *last_hop_pool=None*, *mask=None*, *mirror=None*, *nat64=None*, *persist=None*, *profiles=None*, *policies=None*, *rate_class=None*, *rate_limit=None*, *rate_limit_mode=None*, *rate_limit_dst=None*, *rate_limit_src=None*, *rules=None*, *related_rules=None*, *reject=None*, *source=None*, *source_address_translation=None*, *source_port=None*, *state=None*, *traffic_classes=None*, *translate_address=None*, *translate_port=None*, *vlans=None*)

A function to connect to a bigip device and modify an existing virtual server.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the virtual to modify
**destination** [ [virtual_address_name:port] | [ipv4:port] | [ipv6.port] ]
**pool** [ [pool_name] | none]
**address_status** [yes | no]
**auto_lasthop** [default | enabled | disabled ]
**bwc_policy** [none] | string]
**cmp_enabled** [yes | no]
**dhcp_relay** [yes | no}
**connection_limit** [integer]
**description** [string]
**state** [disabled | enabled]
**fallback_persistence** [none | [profile name] ]
**flow_eviction_policy** [none | [eviction policy name] ]
**gtm_score** [integer]
**ip_forward** [yes | no]
**ip_protocol** [any | protocol]
**internal** [yes | no]
**twelve_forward** (12-forward) [yes | no]
**last_hop-pool** [ [pool_name] | none]
**mask** { [ipv4] | [ipv6] }

**mirror** { [disabled | enabled | none] }
**nat64** [enabled | disabled]
**persist** [none | profile1,profile2,profile3 ... ]
**profiles** [none | default | profile1,profile2,profile3 ... ]
**policies** [none | default | policy1,policy2,policy3 ... ]
**rate_class** [name]
**rate_limit** [integer]
**rate_limitr_mode** [destination | object | object-destination | object-source | object-source-destination | source | source-destination]
**rate_limit_dst** [integer]
**rate_limit_src** [integer]
**rules** [none | [rule_one,rule_two ...] ]
**related_rules** [none | [rule_one,rule_two ...] ]
**reject** [yes | no]
**source** { [ipv4[/prefixlen]] | [ipv6[/prefixlen]] }
**source_address_translation** [none | snat:pool_name | lsn | automap ]
**source_port** [change | preserve | preserve-strict]
**state** [enabled | disable]
**traffic_classes** [none | default | class_one,class_two ... ]
**translate_address** [enabled | disabled]
**translate_port** [enabled | disabled]
**vlans** [none | default | [enabled|disabled]:vlan1,vlan2,vlan3 ... ]
CLI Example:

```
salt '*' bigip.modify_virtual bigip admin admin my-virtual source_address_
 ↪translation=none
salt '*' bigip.modify_virtual bigip admin admin my-virtual rules=my-rule,my-other-
 ↪rule
```

salt.modules.bigip.**replace_pool_members**(*hostname*, *username*, *password*, *name*, *members*)
A function to connect to a bigip device and replace members of an existing pool with new members.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the pool to modify
**members** List of comma delimited pool members to replace existing members with. i.e. 10.1.1.1:80,10.1.1.2:80,10.1.1.3:80
CLI Example:

```
salt '*' bigip.replace_pool_members bigip admin admin my-pool 10.2.2.1:80,10.2.2.
 ↪2:80,10.2.2.3:80
```

salt.modules.bigip.**start_transaction**(*hostname*, *username*, *password*, *label*)
A function to connect to a bigip device and start a new transaction.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**label** The name / alias for this transaction. The actual transaction id will be stored within a grain called `bigip_f5_trans:<label>`
CLI Example:

```
salt '*' bigip.start_transaction bigip admin admin my_transaction
```

### 13.6.15 salt.modules.blockdev

Module for managing block devices

New in version 2014.7.0.

Deprecated since version Carbon: Merged to *disk* module

salt.modules.blockdev.**dump**(*device*, *args=None*)

Return all contents of dumpe2fs for a specified device

Deprecated since version 2016.3.0: Use *disk.dump*

**args** a list containing only the desired arguments to return

CLI Example:

```
salt '*' blockdev.dump /dev/sdX1
```

salt.modules.blockdev.**format**(*device*, *fs_type='ext4'*, *inode_size=None*, *lazy_itable_init=None*)

Format a filesystem onto a block device

New in version 2015.8.2.

**device** The block device in which to create the new filesystem

**fs_type** The type of filesystem to create

**inode_size** Size of the inodes

This option is only enabled for ext and xfs filesystems

**lazy_itable_init** If enabled and the uninit_bg feature is enabled, the inode table will not be fully initialized by mke2fs. This speeds up filesystem initialization noticeably, but it requires the kernel to finish initializing the filesystem in the background when the filesystem is first mounted. If the option value is omitted, it defaults to 1 to enable lazy inode table zeroing.

This option is only enabled for ext filesystems

CLI Example:

```
salt '*' blockdev.format /dev/sdX1
```

salt.modules.blockdev.**fstype**(*device*)

Return the filesystem name of a block device

New in version 2015.8.2.

**device** The name of the block device

CLI Example:

```
salt '*' blockdev.fstype /dev/sdX1
```

salt.modules.blockdev.**resize2fs**(*device*)

Resizes the filesystem.

Deprecated since version 2016.3.0: Use *disk.resize2fs*

CLI Example: .. code-block:: bash

salt `*' blockdev.resize2fs /dev/sdX1

salt.modules.blockdev.**tune**(*device*, ***kwargs*)

Set attributes for the specified device

Deprecated since version 2016.3.0: Use *disk.tune*

CLI Example:

```
salt '*' blockdev.tune /dev/sdX1 read-ahead=1024 read-write=True
```

Valid options are: `read-ahead`, `filesystem-read-ahead`, `read-only`, `read-write`.

See the `blockdev(8)` manpage for a more complete description of these options.

`salt.modules.blockdev.`**`wipe`**(*device*)
Remove the filesystem information

Deprecated since version 2016.3.0: Use *disk.tune*

CLI Example:

```
salt '*' blockdev.wipe /dev/sdX1
```

### 13.6.16 salt.modules.bluez

Support for Bluetooth (using BlueZ in Linux).

The following packages are required packages for this module:

bluez >= 5.7 bluez-libs >= 5.7 bluez-utils >= 5.7 pybluez >= 0.18

`salt.modules.bluez.`**`address`**()
Get the many addresses of the Bluetooth adapter

CLI Example:

```
salt '*' bluetooth.address
```

`salt.modules.bluez.`**`block`**(*bdaddr*)
Block a specific bluetooth device by BD Address

CLI Example:

```
salt '*' bluetooth.block DE:AD:BE:EF:CA:FE
```

`salt.modules.bluez.`**`discoverable`**(*dev*)
Enable this bluetooth device to be discoverable.

CLI Example:

```
salt '*' bluetooth.discoverable hci0
```

`salt.modules.bluez.`**`noscan`**(*dev*)
Turn off scanning modes on this device.

CLI Example:

```
salt '*' bluetooth.noscan hci0
```

`salt.modules.bluez.`**`pair`**(*address*, *key*)
Pair the bluetooth adapter with a device

CLI Example:

```
salt '*' bluetooth.pair DE:AD:BE:EF:CA:FE 1234
```

Where DE:AD:BE:EF:CA:FE is the address of the device to pair with, and 1234 is the passphrase.

TODO: This function is currently broken, as the bluez-simple-agent program no longer ships with BlueZ >= 5.0. It needs to be refactored.

salt.modules.bluez.**power**(*dev*, *mode*)
Power a bluetooth device on or off

CLI Examples:

```
salt '*' bluetooth.power hci0 on
salt '*' bluetooth.power hci0 off
```

salt.modules.bluez.**scan**()
Scan for bluetooth devices in the area

CLI Example:

```
salt '*' bluetooth.scan
```

salt.modules.bluez.**start**()
Start the bluetooth service.

CLI Example:

```
salt '*' bluetooth.start
```

salt.modules.bluez.**stop**()
Stop the bluetooth service.

CLI Example:

```
salt '*' bluetooth.stop
```

salt.modules.bluez.**unblock**(*bdaddr*)
Unblock a specific bluetooth device by BD Address

CLI Example:

```
salt '*' bluetooth.unblock DE:AD:BE:EF:CA:FE
```

salt.modules.bluez.**unpair**(*address*)
Unpair the bluetooth adapter from a device

CLI Example:

```
salt '*' bluetooth.unpair DE:AD:BE:EF:CA:FE
```

Where DE:AD:BE:EF:CA:FE is the address of the device to unpair.

TODO: This function is currently broken, as the bluez-simple-agent program no longer ships with BlueZ >= 5.0. It needs to be refactored.

salt.modules.bluez.**version**()
Return Bluez version from bluetoothd -v

CLI Example:

```
salt '*' bluetoothd.version
```

### 13.6.17 salt.modules.boto_asg

Connection module for Amazon Autoscale Groups

New in version 2014.7.0.

**configuration** This module accepts explicit autoscale credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-
↪ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
asg.keyid: GKTADJGHEIQSXMKKRBJ08H
asg.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

A region may also be specified in the configuration:

```
asg.region: us-east-1
```

If a region is not specified, the default is us-east-1.

It's also possible to specify key, keyid and region via a profile, either as a passed in dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

**depends** boto

salt.modules.boto_asg.**create**(*name*, *launch_config_name*, *availability_zones*, *min_size*, *max_size*, *desired_capacity=None*, *load_balancers=None*, *default_cooldown=None*, *health_check_type=None*, *health_check_period=None*, *placement_group=None*, *vpc_zone_identifier=None*, *tags=None*, *termination_policies=None*, *suspended_processes=None*, *scaling_policies=None*, *scheduled_actions=None*, *region=None*, *notification_arn=None*, *notification_types=None*, *key=None*, *keyid=None*, *profile=None*)

Create an autoscale group.

CLI example:

```
salt myminion boto_asg.create myasg mylc '["us-east-1a", "us-east-1e"]' 1 10 load_
↪balancers='["myelb", "myelb2"]' tags='[{"key": "Name", value="myasg",
↪"propagate_at_launch": True}]'
```

salt.modules.boto_asg.**create_launch_configuration**(*name*, *image_id*, *key_name=None*, *security_groups=None*, *user_data=None*, *instance_type='m1.small'*, *kernel_id=None*, *ramdisk_id=None*, *block_device_mappings=None*, *instance_monitoring=False*, *spot_price=None*, *instance_profile_name=None*, *ebs_optimized=False*, *associate_public_ip_address=None*, *volume_type=None*, *delete_on_termination=True*, *iops=None*, *use_block_device_types=False*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create a launch configuration.

CLI example:

```
salt myminion boto_asg.create_launch_configuration mylc image_id=ami-0b9c9f62 key_
↪name='mykey' security_groups='["mygroup"]' instance_type='c3.2xlarge'
```

salt.modules.boto_asg.**delete**(*name*, *force=False*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete an autoscale group.

CLI example:

```
salt myminion boto_asg.delete myasg region=us-east-1
```

salt.modules.boto_asg.**delete_launch_configuration**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete a launch configuration.

CLI example:

```
salt myminion boto_asg.delete_launch_configuration mylc
```

salt.modules.boto_asg.**exists**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check to see if an autoscale group exists.

CLI example:

```
salt myminion boto_asg.exists myasg region=us-east-1
```

salt.modules.boto_asg.**get_cloud_init_mime**(*cloud_init*)

Get a mime multipart encoded string from a cloud-init dict. Currently supports scripts and cloud-config.

CLI Example:

```
salt myminion boto.get_cloud_init_mime <cloud init>
```

salt.modules.boto_asg.**get_config**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get the configuration for an autoscale group.

CLI example:

```
salt myminion boto_asg.get_config myasg region=us-east-1
```

salt.modules.boto_asg.**get_instances**(*name*, *lifecycle_state='InService'*, *health_status='Healthy'*, *attribute='private_ip_address'*, *attributes=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

return attribute of all instances in the named autoscale group.

CLI example:

```
salt-call boto_asg.get_instances my_autoscale_group_name
```

salt.modules.boto_asg.**get_scaling_policy_arn**(*as_group*, *scaling_policy_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Return the arn for a scaling policy in a specific autoscale group or None if not found. Mainly used as a helper method for boto_cloudwatch_alarm, for linking alarms to scaling policies.

CLI Example:

```
salt '*' boto_asg.get_scaling_policy_arn mygroup mypolicy
```

salt.modules.boto_asg.**launch_configuration_exists**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check for a launch configuration's existence.

CLI example:

```
salt myminion boto_asg.launch_configuration_exists mylc
```

salt.modules.boto_asg.**update**(*name*, *launch_config_name*, *availability_zones*, *min_size*, *max_size*, *desired_capacity=None*, *load_balancers=None*, *default_cooldown=None*, *health_check_type=None*, *health_check_period=None*, *placement_group=None*, *vpc_zone_identifier=None*, *tags=None*, *termination_policies=None*, *suspended_processes=None*, *scaling_policies=None*, *scheduled_actions=None*, *notification_arn=None*, *notification_types=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Update an autoscale group.

CLI example:

```
salt myminion boto_asg.update myasg mylc '["us-east-1a", "us-east-1e"]' 1 10 load_
↪balancers='["myelb", "myelb2"]' tags='[{"key": "Name", value="myasg",
↪"propagate_at_launch": True}]'
```

### 13.6.18 salt.modules.boto_cfn

Connection module for Amazon Cloud Formation

New in version 2015.5.0.

**configuration** This module accepts explicit AWS credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-
↪ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
cfn.keyid: GKTADJGHEIQSXMKKRBJ08H
cfn.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

A region may also be specified in the configuration:

```
cfn.region: us-east-1
```

**depends** boto

salt.modules.boto_cfn.**create**(*name*, *template_body=None*, *template_url=None*, *parameters=None*, *notification_arns=None*, *disable_rollback=None*, *timeout_in_minutes=None*, *capabilities=None*, *tags=None*, *on_failure=None*, *stack_policy_body=None*, *stack_policy_url=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create a CFN stack.

CLI example to create a stack:

```
salt myminion boto_cfn.create mystack template_url='https://s3.amazonaws.com/
↪bucket/template.cft'          region=us-east-1
```

salt.modules.boto_cfn.**delete**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete a CFN stack.

CLI example to delete a stack:

```
salt myminion boto_cfn.delete mystack region=us-east-1
```

salt.modules.boto_cfn.**describe**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Describe a stack.

New in version 2015.8.0.

CLI example:

```
salt myminion boto_cfn.describe mystack region=us-east-1
```

salt.modules.boto_cfn.**exists**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check to see if a stack exists.

CLI example:

```
salt myminion boto_cfn.exists mystack region=us-east-1
```

salt.modules.boto_cfn.**get_template**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check to see if attributes are set on a CFN stack.

CLI example:

```
salt myminion boto_cfn.get_template mystack
```

salt.modules.boto_cfn.**update_stack**(*name*, *template_body=None*, *template_url=None*, *parameters=None*, *notification_arns=None*, *disable_rollback=False*, *timeout_in_minutes=None*, *capabilities=None*, *tags=None*, *use_previous_template=None*, *stack_policy_during_update_body=None*, *stack_policy_during_update_url=None*, *stack_policy_body=None*, *stack_policy_url=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Update a CFN stack.

New in version 2015.8.0.

CLI example to update a stack:

```
salt myminion boto_cfn.update_stack mystack template_url='https://s3.amazonaws.
↪com/bucket/template.cft'         region=us-east-1
```

salt.modules.boto_cfn.**validate_template**(*template_body=None*, *template_url=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Validate cloudformation template

New in version 2015.8.0.

CLI example:

```
salt myminion boto_cfn.validate_template mystack-template
```

### 13.6.19 salt.modules.boto_cloudtrail module

Connection module for Amazon CloudTrail

New in version 2016.3.0.

**depends**

- boto
- boto3

The dependencies listed above can be installed via package or pip.

**configuration** This module accepts explicit Lambda credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-
↪ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
cloudtrail.keyid: GKTADJGHEIQSXMKKRBJ08H
cloudtrail.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

A region may also be specified in the configuration:

```
cloudtrail.region: us-east-1
```

If a region is not specified, the default is us-east-1.

It's also possible to specify key, keyid and region via a profile, either as a passed in dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

salt.modules.boto_cloudtrail.**add_tags**(*Name*, *region=None*, *key=None*, *keyid=None*, *profile=None*, ***kwargs*)

Add tags to a trail

Returns {tagged: true} if the trail was tagged and returns {tagged: False} if the trail was not tagged.

CLI Example:

```
salt myminion boto_cloudtrail.add_tags my_trail tag_a=tag_value tag_b=tag_value
```

salt.modules.boto_cloudtrail.**create**(*Name*, *S3BucketName*, *S3KeyPrefix=None*, *SnsTopicName=None*, *IncludeGlobalServiceEvents=None*, *EnableLogFileValidation=None*, *CloudWatchLogsLogGroupArn=None*, *CloudWatchLogsRoleArn=None*, *KmsKeyId=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a valid config, create a trail.

Returns {created: true} if the trail was created and returns {created: False} if the trail was not created.

CLI Example:

```
salt myminion boto_cloudtrail.create my_trail my_bucket
```

salt.modules.boto_cloudtrail.**delete**(*Name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a trail name, delete it.

Returns {deleted: true} if the trail was deleted and returns {deleted: false} if the trail was not deleted.

CLI Example:

```
salt myminion boto_cloudtrail.delete mytrail
```

salt.modules.boto_cloudtrail.**describe**(*Name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a trail name describe its properties.

Returns a dictionary of interesting properties.

CLI Example:

```
salt myminion boto_cloudtrail.describe mytrail
```

salt.modules.boto_cloudtrail.**exists**(*Name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a trail name, check to see if the given trail exists.

Returns True if the given trail exists and returns False if the given trail does not exist.

CLI Example:

```
salt myminion boto_cloudtrail.exists mytrail
```

salt.modules.boto_cloudtrail.**list**(*region=None*, *key=None*, *keyid=None*, *profile=None*)

List all trails

Returns list of trails

CLI Example:

```
policies:
  - {...}
  - {...}
```

salt.modules.boto_cloudtrail.**list_tags**(*Name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

List tags of a trail

**Returns**:

**tags**:

- {...}
- {...}

CLI Example:

```
salt myminion boto_cloudtrail.list_tags my_trail
```

salt.modules.boto_cloudtrail.**remove_tags**(*Name*, *region=None*, *key=None*, *keyid=None*, *profile=None*, ***kwargs*)

Remove tags from a trail

Returns {tagged: true} if the trail was tagged and returns {tagged: False} if the trail was not tagged.

CLI Example:

```
salt myminion boto_cloudtrail.remove_tags my_trail tag_a=tag_value tag_b=tag_value
```

salt.modules.boto_cloudtrail.**start_logging**(*Name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Start logging for a trail

Returns {started: true} if the trail was started and returns {started: False} if the trail was not started.

CLI Example:

```
salt myminion boto_cloudtrail.start_logging my_trail
```

salt.modules.boto_cloudtrail.**status**(*Name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a trail name describe its properties.

Returns a dictionary of interesting properties.

CLI Example:

```
salt myminion boto_cloudtrail.describe mytrail
```

salt.modules.boto_cloudtrail.**stop_logging**(*Name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Stop logging for a trail

Returns {stopped: true} if the trail was stopped and returns {stopped: False} if the trail was not stopped.

CLI Example:

```
salt myminion boto_cloudtrail.stop_logging my_trail
```

salt.modules.boto_cloudtrail.**update**(*Name*, *S3BucketName*, *S3KeyPrefix=None*, *SnsTopicName=None*, *IncludeGlobalServiceEvents=None*, *EnableLogFileValidation=None*, *CloudWatchLogsLogGroupArn=None*, *CloudWatchLogsRoleArn=None*, *KmsKeyId=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a valid config, update a trail.

Returns {created: true} if the trail was created and returns {created: False} if the trail was not created.

CLI Example:

```
salt myminion boto_cloudtrail.update my_trail my_bucket
```

### 13.6.20 salt.modules.boto_cloudwatch

Connection module for Amazon CloudWatch

New in version 2014.7.0.

**configuration** This module accepts explicit credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-
↪ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
cloudwatch.keyid: GKTADJGHEIQSXMKKRBJ08H
cloudwatch.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

A region may also be specified in the configuration:

```
cloudwatch.region: us-east-1
```

If a region is not specified, the default is us-east-1.

It's also possible to specify key, keyid and region via a profile, either as a passed in dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

**depends** boto

salt.modules.boto_cloudwatch.**convert_to_arn**(*arns*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Convert a list of strings into actual arns. Converts convenience names such as `scaling_policy:...'

CLI Example:

```
salt '*' convert_to_arn 'scaling_policy:'
```

salt.modules.boto_cloudwatch.**create_or_update_alarm**(*connection=None*, *name=None*, *metric=None*, *namespace=None*, *statistic=None*, *comparison=None*, *threshold=None*, *period=None*, *evaluation_periods=None*, *unit=None*, *description=''*, *dimensions=None*, *alarm_actions=None*, *insufficient_data_actions=None*, *ok_actions=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create or update a cloudwatch alarm.

**Params are the same as:** http://boto.readthedocs.org/en/latest/ref/cloudwatch.html#boto.ec2.cloudwatch.alarm.MetricAlarm.

Dimensions must be a dict. If the value of Dimensions is a string, it will be json decoded to produce a dict. alarm_actions, insufficient_data_actions, and ok_actions must be lists of string. If the passed-in value is a string, it will be split on "," to produce a list. The strings themselves for alarm_actions, insufficient_data_actions, and ok_actions must be Amazon resource names (ARN's); however, this method also supports an arn lookup notation, as follows:

arn:aws:.... ARN as per http://docs.aws.amazon.com/general/latest/gr/aws-arns-and-namespaces.html scaling_policy:<as_name>:<scaling_policy_name> The named autoscale group scaling policy, for the named group (e.g. scaling_policy:my-asg:ScaleDown)

This is convenient for setting up autoscaling as follows. First specify a boto_asg.present state for an ASG with scaling_policies, and then set up boto_cloudwatch_alarm.present states which have alarm_actions that reference the scaling_policy.

CLI example:

salt myminion boto_cloudwatch.create_alarm name=myalarm ... region=us-east-1

salt.modules.boto_cloudwatch.**delete_alarm**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete a cloudwatch alarm

CLI example to delete a queue:

```
salt myminion boto_cloudwatch.delete_alarm myalarm region=us-east-1
```

salt.modules.boto_cloudwatch.**get_alarm**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get alarm details. Also can be used to check to see if an alarm exists.

CLI example:

```
salt myminion boto_cloudwatch.get_alarm myalarm region=us-east-1
```

salt.modules.boto_cloudwatch.**get_all_alarms**(*region=None*, *prefix=None*, *key=None*, *keyid=None*, *profile=None*)

Get all alarm details. Produces results that can be used to create an sls file.

If prefix parameter is given, alarm names in the output will be prepended with the prefix; alarms that have the prefix will be skipped. This can be used to convert existing alarms to be managed by salt, as follows:

1. **Make a ``backup'' of all existing alarms** $ salt-call boto_cloudwatch.get_all_alarms --out=txt | sed ``s/local: //'' > legacy_alarms.sls

2.**Get all alarms with new prefixed names** $ salt-call boto_cloudwatch.get_all_alarms ``prefix=**MANAGED BY SALT** '' --out=txt | sed ``s/local: //'' > managed_alarms.sls
3.**Insert the managed alarms into cloudwatch** $ salt-call state.template managed_alarms.sls
4.Manually verify that the new alarms look right
5.Delete the original alarms $ sed s/present/absent/ legacy_alarms.sls > remove_legacy_alarms.sls $ salt-call state.template remove_legacy_alarms.sls
6.Get all alarms again, verify no changes $ salt-call boto_cloudwatch.get_all_alarms --out=txt | sed ``s/local: //'' > final_alarms.sls $ diff final_alarms.sls managed_alarms.sls

CLI example:

```
salt myminion boto_cloudwatch.get_all_alarms region=us-east-1 --out=txt
```

### 13.6.21 salt.modules.boto_datapipeline module

Connection module for Amazon Data Pipeline

New in version 2016.3.0.

**depends** boto3

salt.modules.boto_datapipeline.**activate_pipeline**(*pipeline_id*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Start processing pipeline tasks. This function is idempotent.

CLI example:

```
salt myminion boto_datapipeline.activate_pipeline my_pipeline_id
```

salt.modules.boto_datapipeline.**create_pipeline**(*name*, *unique_id*, *description=''*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create a new, empty pipeline. This function is idempotent.

CLI example:

```
salt myminion boto_datapipeline.create_pipeline my_name my_unique_id
```

salt.modules.boto_datapipeline.**delete_pipeline**(*pipeline_id*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete a pipeline, its pipeline definition, and its run history. This function is idempotent.

CLI example:

```
salt myminion boto_datapipeline.delete_pipeline my_pipeline_id
```

salt.modules.boto_datapipeline.**describe_pipelines**(*pipeline_ids*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Retrieve metadata about one or more pipelines.

CLI example:

```
salt myminion boto_datapipeline.describe_pipelines ['my_pipeline_id']
```

salt.modules.boto_datapipeline.**get_pipeline_definition**(*pipeline_id*, *version='latest'*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get the definition of the specified pipeline.

CLI example:

```
salt myminion boto_datapipeline.get_pipeline_definition my_pipeline_id
```

salt.modules.boto_datapipeline.**list_pipelines**(*region=None*, *key=None*, *keyid=None*, *profile=None*)

Get a list of pipeline ids and names for all pipelines.

CLI Example:

```
salt myminion boto_datapipeline.list_pipelines profile=myprofile
```

salt.modules.boto_datapipeline.**pipeline_id_from_name**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get the pipeline id, if it exists, for the given name.

CLI example:

```
salt myminion boto_datapipeline.pipeline_id_from_name my_pipeline_name
```

salt.modules.boto_datapipeline.**put_pipeline_definition**(*pipeline_id*, *pipeline_objects*, *parameter_objects=None*, *parameter_values=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Add tasks, schedules, and preconditions to the specified pipeline. This function is idempotent and will replace an existing definition.

CLI example:

```
salt myminion boto_datapipeline.put_pipeline_definition my_pipeline_id my_
↪pipeline_objects
```

### 13.6.22 salt.modules.boto_dynamodb

Connection module for Amazon DynamoDB

New in version 2015.5.0.

**configuration** This module accepts explicit DynamoDB credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-
↪ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
keyid: GKTADJGHEIQSXMKKRBJ08H
key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

A region may also be specified in the configuration:

```
region: us-east-1
```

If a region is not specified, the default is us-east-1.

It's also possible to specify key, keyid and region via a profile, either as a passed in dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

**depends** boto

salt.modules.boto_dynamodb.**create_table**(*table_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *read_capacity_units=None*, *write_capacity_units=None*, *hash_key=None*, *hash_key_data_type=None*, *range_key=None*, *range_key_data_type=None*, *local_indexes=None*, *global_indexes=None*)

Creates a DynamoDB table.

CLI Example:

```
salt myminion boto_dynamodb.create_table table_name /
region=us-east-1 /
hash_key=id /
hash_key_data_type=N /
range_key=created_at /
range_key_data_type=N /
read_capacity_units=1 /
write_capacity_units=1
```

salt.modules.boto_dynamodb.**delete**(*table_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete a DynamoDB table.

CLI Example:

```
salt myminion boto_dynamodb.delete table_name region=us-east-1
```

salt.modules.boto_dynamodb.**describe**(*table_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Describe a DynamoDB table.

CLI example:

```
salt myminion boto_dynamodb.describe table_name region=us-east-1
```

salt.modules.boto_dynamodb.**exists**(*table_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check to see if a table exists.

CLI Example:

```
salt myminion boto_dynamodb.exists table_name region=us-east-1
```

salt.modules.boto_dynamodb.**update**(*table_name*, *throughput=None*, *global_indexes=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Update a DynamoDB table.

CLI example:

```
salt myminion boto_dynamodb.update table_name region=us-east-1
```

### 13.6.23 salt.modules.boto_ec2

Connection module for Amazon EC2

New in version 2015.8.0.

**configuration** This module accepts explicit EC2 credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-
↪ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
ec2.keyid: GKTADJGHEIQSXMKKRBJ08H
ec2.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

A region may also be specified in the configuration:

```
ec2.region: us-east-1
```

If a region is not specified, the default is us-east-1.

It's also possible to specify key, keyid, and region via a profile, either as a passed in dict, or as a string to pull from pillars or minion config:

```
myprofile:
  keyid: GKTADJGHEIQSXMKKRBJ08H
  key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
  region: us-east-1
```

**depends** boto

`salt.modules.boto_ec2.`**`allocate_eip_address`**(*domain=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Allocate a new Elastic IP address and associate it with your account.

**domain** (string) Optional param - if set to exactly `vpc', the address will be allocated to the VPC. The default simply maps the EIP to your account container.

**returns** (dict) dict of `interesting' information about the newly allocated EIP, with probably the most interesting keys being `public_ip'; and `allocation_id' iff `domain=vpc' was passed.

CLI Example:

```
salt-call boto_ec2.allocate_eip_address domain=vpc
```

New in version 2016.3.0.

`salt.modules.boto_ec2.`**`associate_eip_address`**(*instance_id=None*, *instance_name=None*, *public_ip=None*, *allocation_id=None*, *network_interface_id=None*, *network_interface_name=None*, *private_ip_address=None*, *allow_reassociation=False*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Associate an Elastic IP address with a currently running instance or a network interface. This requires exactly

one of either `public_ip' or `allocation_id', depending on whether you're associating a VPC address or a plain EC2 address.
**instance_id** (string) – ID of the instance to associate with (exclusive with `instance_name')
**instance_name** (string) – Name tag of the instance to associate with (exclusive with `instance_id')
**public_ip** (string) – Public IP address, for standard EC2 based allocations.
**allocation_id** (string) – Allocation ID for a VPC-based EIP.
**network_interface_id** (string) - ID of the network interface to associate the EIP with
**network_interface_name** (string) - Name of the network interface to associate the EIP with
**private_ip_address** (string) – The primary or secondary private IP address to associate with the Elastic IP address.
**allow_reassociation** (bool) – Allow a currently associated EIP to be re-associated with the new instance or interface.
**returns** (bool) - True on success, False otherwise
CLI Example:

```
salt myminion boto_ec2.associate_eip_address instance_name=bubba.ho.tep
 ↪allocation_id=eipalloc-ef382c8a
```

New in version 2016.3.0.

salt.modules.boto_ec2.**attach_network_interface**(*device_index*, *name=None*, *network_interface_id=None*, *instance_name=None*, *instance_id=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Attach an Elastic Network Interface.

New in version 2016.3.0.

CLI Example:

```
salt myminion boto_ec2.attach_network_interface my_eni instance_name=salt-master
 ↪device_index=0
```

salt.modules.boto_ec2.**create_image**(*ami_name*, *instance_id=None*, *instance_name=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *description=None*, *no_reboot=False*, *dry_run=False*)

Given instance properties that define exactly one instance, create AMI and return AMI-id.

CLI Examples:

```
salt myminion boto_ec2.create_image ami_name instance_name=myinstance
salt myminion boto_ec2.create_image another_ami_name tags='{"mytag": "value"}'
 ↪description='this is my ami'
```

salt.modules.boto_ec2.**create_key**(*key_name*, *save_path*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Creates a key and saves it to a given path. Returns the private key.

CLI Example:

```
salt myminion boto_ec2.create_key mykey /root/
```

salt.modules.boto_ec2.**create_network_interface**(*name*, *subnet_id=None*, *subnet_name=None*, *private_ip_address=None*, *description=None*, *groups=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create an Elastic Network Interface.

New in version 2016.3.0.

CLI Example:

```
salt myminion boto_ec2.create_network_interface my_eni subnet-12345
↪description=my_eni groups=['my_group']
```

salt.modules.boto_ec2.**delete_key**(*key_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Deletes a key. Always returns True

CLI Example:

```
salt myminion boto_ec2.delete_key mykey
```

salt.modules.boto_ec2.**delete_network_interface**(*name=None*, *network_interface_id=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create an Elastic Network Interface.

New in version 2016.3.0.

CLI Example:

```
salt myminion boto_ec2.create_network_interface my_eni subnet-12345
↪description=my_eni groups=['my_group']
```

salt.modules.boto_ec2.**detach_network_interface**(*name=None*, *network_interface_id=None*, *attachment_id=None*, *force=False*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Detach an Elastic Network Interface.

New in version 2016.3.0.

CLI Example:

```
salt myminion boto_ec2.detach_network_interface my_eni
```

salt.modules.boto_ec2.**disassociate_eip_address**(*public_ip=None*, *association_id=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Disassociate an Elastic IP address from a currently running instance. This requires exactly one of either `association_id' or `public_ip', depending on whether you're associating a VPC address or a plain EC2 address.
**public_ip** (string) – Public IP address, for standard EC2 based allocations.
**association_id** (string) – Association ID for a VPC-based EIP.
**returns** (bool) - True on success, False otherwise
CLI Example:

```
salt myminion boto_ec2.disassociate_eip_address association_id=eipassoc-e3ba2d16
```

New in version 2016.3.0.

salt.modules.boto_ec2.**exists**(*instance_id=None*, *name=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *in_states=None*)

Given a instance id, check to see if the given instance id exists.

Returns True if the given an instance with the given id, name, or tags exists; otherwise, False is returned.

CLI Example:

```
salt myminion boto_ec2.exists myinstance
```

salt.modules.boto_ec2.**find_images**(*ami_name=None*, *executable_by=None*, *owners=None*, *image_ids=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *return_objs=False*)

Given image properties, find and return matching AMI ids

CLI Examples:

```
salt myminion boto_ec2.find_instances tags='{"mytag": "value"}'
```

salt.modules.boto_ec2.**find_instances**(*instance_id=None*, *name=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *return_objs=False*, *in_states=None*)

Given instance properties, find and return matching instance ids

CLI Examples:

```
salt myminion boto_ec2.find_instances # Lists all instances
salt myminion boto_ec2.find_instances name=myinstance
salt myminion boto_ec2.find_instances tags='{"mytag": "value"}'
```

salt.modules.boto_ec2.**get_all_eip_addresses**(*addresses=None*, *allocation_ids=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get public addresses of some, or all EIPs associated with the current account.

**addresses** (list) - Optional list of addresses. If provided, only the addresses associated with those in the list will be returned.

**allocation_ids** (list) - Optional list of allocation IDs. If provided, only the addresses associated with the given allocation IDs will be returned.

**returns** (list) - A list of the requested EIP addresses

CLI Example:

```
salt-call boto_ec2.get_all_eip_addresses
```

New in version 2016.3.0.

salt.modules.boto_ec2.**get_attribute**(*attribute*, *instance_name=None*, *instance_id=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get an EC2 instance attribute.

CLI Example:

```
salt myminion boto_ec2.get_attribute sourceDestCheck instance_name=my_instance
```

**Available attributes**:

- instanceType
- kernel
- ramdisk
- userData
- disableApiTermination
- instanceInitiatedShutdownBehavior
- rootDeviceName

- blockDeviceMapping
- productCodes
- sourceDestCheck
- groupSet
- ebsOptimized
- sriovNetSupport

salt.modules.boto_ec2.**get_eip_address_info**(*addresses=None*, *allocation_ids=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get `interesting' info about some, or all EIPs associated with the current account.

**addresses** (list) - Optional list of addresses. If provided, only the addresses associated with those in the list will be returned.

**allocation_ids** (list) - Optional list of allocation IDs. If provided, only the addresses associated with the given allocation IDs will be returned.

**returns** (list of dicts) - A list of dicts, each containing the info for one of the requested EIPs.

CLI Example:

```
salt-call boto_ec2.get_eip_address_info addresses=52.4.2.15
```

New in version 2016.3.0.

salt.modules.boto_ec2.**get_id**(*name=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *in_states=None*)

Given instace properties, return the instance id if it exist.

CLI Example:

```
salt myminion boto_ec2.get_id myinstance
```

salt.modules.boto_ec2.**get_key**(*key_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check to see if a key exists. Returns fingerprint and name if it does and False if it doesn't CLI Example:

```
salt myminion boto_ec2.get_key mykey
```

salt.modules.boto_ec2.**get_keys**(*keynames=None*, *filters=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Gets all keys or filters them by name and returns a list. keynames (list):: A list of the names of keypairs to retrieve. If not provided, all key pairs will be returned. filters (dict) :: Optional filters that can be used to limit the results returned. Filters are provided in the form of a dictionary consisting of filter names as the key and filter values as the value. The set of allowable filter names/values is dependent on the request being performed. Check the EC2 API guide for details.

CLI Example:

```
salt myminion boto_ec2.get_keys
```

salt.modules.boto_ec2.**get_network_interface**(*name=None*, *network_interface_id=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get an Elastic Network Interface.

New in version 2016.3.0.

CLI Example:

```
salt myminion boto_ec2.get_network_interface name=my_eni
```

salt.modules.boto_ec2.**get_network_interface_id**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get an Elastic Network Interface id from its name tag.

New in version 2016.3.0.

CLI Example:

```
salt myminion boto_ec2.get_network_interface_id name=my_eni
```

salt.modules.boto_ec2.**get_unassociated_eip_address**(*domain='standard'*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Return the first unassociated EIP
**domain** Indicates whether the address is a EC2 address or a VPC address (standard|vpc).
CLI Example:

```
salt-call boto_ec2.get_unassociated_eip_address
```

New in version 2016.3.0.

salt.modules.boto_ec2.**get_zones**(*region=None*, *key=None*, *keyid=None*, *profile=None*)

Get a list of AZs for the configured region.

CLI Example:

```
salt myminion boto_ec2.get_zones
```

salt.modules.boto_ec2.**import_key**(*key_name*, *public_key_material*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Imports the public key from an RSA key pair that you created with a third-party tool. Supported formats: - OpenSSH public key format (e.g., the format in ~/.ssh/authorized_keys) - Base64 encoded DER format - SSH public key file format as specified in RFC4716 - DSA keys are not supported. Make sure your key generator is set up to create RSA keys. Supported lengths: 1024, 2048, and 4096.

CLI Example:

```
salt myminion boto_ec2.import mykey publickey
```

salt.modules.boto_ec2.**modify_network_interface_attribute**(*name=None*, *network_interface_id=None*, *attr=None*, *value=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Modify an attribute of an Elastic Network Interface.

New in version 2016.3.0.

CLI Example:

```
salt myminion boto_ec2.modify_network_interface_attribute my_eni attr=description
↪value='example description'
```

salt.modules.boto_ec2.**release_eip_address**(*public_ip=None*, *allocation_id=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Free an Elastic IP address. Pass either a public IP address to release a `standard' EC2 Elastic IP address, or an AllocationId to release a VPC Elastic IP address.
**public_ip** (string) - The public IP address - for EC2 elastic IPs.
**allocation_id** (string) - The Allocation ID - for VPC elastic IPs.
**returns** (bool) - True on success, False on failure
CLI Example:

```
salt myminion boto_ec2.release_eip_address allocation_id=eipalloc-ef382c8a
```

New in version 2016.3.0.

salt.modules.boto_ec2.**run**(*image_id*, *name=None*, *tags=None*, *key_name=None*, *security_groups=None*, *user_data=None*, *instance_type='m1.small'*, *placement=None*, *kernel_id=None*, *ramdisk_id=None*, *monitoring_enabled=None*, *vpc_id=None*, *vpc_name=None*, *subnet_id=None*, *subnet_name=None*, *private_ip_address=None*, *block_device_map=None*, *disable_api_termination=None*, *instance_initiated_shutdown_behavior=None*, *placement_group=None*, *client_token=None*, *security_group_ids=None*, *security_group_names=None*, *additional_info=None*, *tenancy=None*, *instance_profile_arn=None*, *instance_profile_name=None*, *ebs_optimized=None*, *network_interface_id=None*, *network_interface_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *network_interfaces=None*)

Create and start an EC2 instance.

Returns True if the instance was created; otherwise False.

CLI Example:

```
salt myminion boto_ec2.run ami-b80c2b87 name=myinstance
```

**image_id** (string) – The ID of the image to run.
**name** (string) - The name of the instance.
**tags** (dict of key: value pairs) - tags to apply to the instance.
**key_name** (string) – The name of the key pair with which to launch instances.
**security_groups** (list of strings) – The names of the EC2 classic security groups with which to associate instances
**user_data** (string) – The Base64-encoded MIME user data to be made available to the instance(s) in this reservation.
**instance_type** (string) – The type of instance to run. Note that some image types (e.g. hvm) only run on some instance types.
**placement** (string) – The Availability Zone to launch the instance into.
**kernel_id** (string) – The ID of the kernel with which to launch the instances.
**ramdisk_id** (string) – The ID of the RAM disk with which to launch the instances.
**monitoring_enabled** (bool) – Enable detailed CloudWatch monitoring on the instance.
**vpc_id** (string) - ID of a VPC to bind the instance to. Exclusive with vpc_name.
**vpc_name** (string) - Name of a VPC to bind the instance to. Exclusive with vpc_id.
**subnet_id** (string) – The subnet ID within which to launch the instances for VPC.
**subnet_name** (string) – The name of a subnet within which to launch the instances for VPC.
**private_ip_address** (string) – If you're using VPC, you can optionally use this parameter to assign the instance a specific available IP address from the subnet (e.g. 10.0.0.25).
**block_device_map** (boto.ec2.blockdevicemapping.BlockDeviceMapping) – A BlockDeviceMapping data structure describing the EBS volumes associated with the Image.
**disable_api_termination** (bool) – If True, the instances will be locked and will not be able to be terminated via the API.

**instance_initiated_shutdown_behavior** (string) – Specifies whether the instance stops or terminates on instance-initiated shutdown. Valid values are: stop, terminate

**placement_group** (string) – If specified, this is the name of the placement group in which the instance(s) will be launched.

**client_token** (string) – Unique, case-sensitive identifier you provide to ensure idempotency of the request. Maximum 64 ASCII characters.

**security_group_ids** (list of strings) – The ID(s) of the VPC security groups with which to associate instances.

**security_group_names** (list of strings) – The name(s) of the VPC security groups with which to associate instances.

**additional_info** (string) – Specifies additional information to make available to the instance(s).

**tenancy** (string) – The tenancy of the instance you want to launch. An instance with a tenancy of 'dedicated' runs on single-tenant hardware and can only be launched into a VPC. Valid values are:"default" or "dedicated". NOTE: To use dedicated tenancy you MUST specify a VPC subnet-ID as well.

**instance_profile_arn** (string) – The Amazon resource name (ARN) of the IAM Instance Profile (IIP) to associate with the instances.

**instance_profile_name** (string) – The name of the IAM Instance Profile (IIP) to associate with the instances.

**ebs_optimized** (bool) – Whether the instance is optimized for EBS I/O. This optimization provides dedicated throughput to Amazon EBS and an optimized configuration stack to provide optimal EBS I/O performance. This optimization isn't available with all instance types.

**network_interfaces** (boto.ec2.networkinterface.NetworkInterfaceCollection) – A NetworkInterfaceCollection data structure containing the ENI specifications for the instance.

**network_interface_id** (string) - ID of the network interface to attach to the instance

**network_interface_name** (string) - Name of the network interface to attach to the instance

`salt.modules.boto_ec2.`**`set_attribute`**(*attribute*, *attribute_value*, *instance_name=None*, *instance_id=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Set an EC2 instance attribute. Returns whether the operation succeeded or not.

CLI Example:

```
salt myminion boto_ec2.set_attribute sourceDestCheck False instance_name=my_
↪instance
```

**Available attributes:**

- instanceType
- kernel
- ramdisk
- userData
- disableApiTermination
- instanceInitiatedShutdownBehavior
- rootDeviceName
- blockDeviceMapping
- productCodes
- sourceDestCheck
- groupSet
- ebsOptimized
- sriovNetSupport

salt.modules.boto_ec2.**terminate**(*instance_id=None*, *name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Terminate the instance described by instance_id or name.

CLI Example:

```
salt myminion boto_ec2.terminate name=myinstance
salt myminion boto_ec2.terminate instance_id=i-a46b9f
```

### 13.6.24 salt.modules.boto_elasticache

Connection module for Amazon Elasticache

New in version 2014.7.0.

**configuration** This module accepts explicit elasticache credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-
↪ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
elasticache.keyid: GKTADJGHEIQSXMKKRBJ08H
elasticache.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

A region may also be specified in the configuration:

```
elasticache.region: us-east-1
```

If a region is not specified, the default is us-east-1.

It's also possible to specify key, keyid and region via a profile, either as a passed in dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

**depends** boto

salt.modules.boto_elasticache.**authorize_cache_security_group_ingress**(*name*, *ec2_security_group_name*, *ec2_security_group_owner_id*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Authorize network ingress from an ec2 security group to a cache security group.

CLI example:

```
salt myminion boto_elasticache.authorize_cache_security_group_ingress
↪myelasticachesg myec2sg 879879
```

salt.modules.boto_elasticache.**create**(*name*, *num_cache_nodes=None*, *engine=None*, *cache_node_type=None*, *replication_group_id=None*, *engine_version=None*, *cache_parameter_group_name=None*, *cache_subnet_group_name=None*, *cache_security_group_names=None*, *security_group_ids=None*, *snapshot_arns=None*, *preferred_availability_zone=None*, *preferred_maintenance_window=None*, *port=None*, *notification_topic_arn=None*, *auto_minor_version_upgrade=None*, *wait=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create a cache cluster.

CLI example:

```
salt myminion boto_elasticache.create myelasticache 1 redis cache.t1.micro
cache_security_group_names='["myelasticachesg"]'
```

salt.modules.boto_elasticache.**create_cache_security_group**(*name*, *description*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create a cache security group.

CLI example:

```
salt myminion boto_elasticache.create_cache_security_group myelasticachesg 'My
↪Cache Security Group'
```

salt.modules.boto_elasticache.**create_replication_group**(*name*, *primary_cluster_id*, *replication_group_description*, *wait=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create replication group.

CLI example:

```
salt myminion boto_elasticache.create_replication_group myelasticache
↪myprimarycluster description
```

salt.modules.boto_elasticache.**create_subnet_group**(*name*, *description*, *subnet_ids*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create an ElastiCache subnet group

CLI example to create an ElastiCache subnet group:

```
salt myminion boto_elasticache.create_subnet_group my-subnet-group
↪"group description" '[subnet-12345678, subnet-87654321]'              region=us-
↪east-1
```

salt.modules.boto_elasticache.**delete**(*name*, *wait=False*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete a cache cluster.

CLI example:

```
salt myminion boto_elasticache.delete myelasticache
```

salt.modules.boto_elasticache.**delete_cache_security_group**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete a cache security group.

CLI example:

```
salt myminion boto_elasticache.delete_cache_security_group myelasticachesg 'My
↪Cache Security Group'
```

salt.modules.boto_elasticache.**delete_subnet_group**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete an ElastiCache subnet group.

CLI example:

```
salt myminion boto_elasticache.delete_subnet_group my-subnet-group
↪region=us-east-1
```

salt.modules.boto_elasticache.**describe_replication_group**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *parameter=None*)

Get replication group information.

CLI example:

```
salt myminion boto_elasticache.describe_replication_group mygroup
```

salt.modules.boto_elasticache.**exists**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check to see if a cache cluster exists.

CLI example:

```
salt myminion boto_elasticache.exists myelasticache
```

salt.modules.boto_elasticache.**get_cache_subnet_group**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get information about a cache subnet group.

CLI example:

```
salt myminion boto_elasticache.get_cache_subnet_group mycache_subnet_group
```

salt.modules.boto_elasticache.**get_config**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get the configuration for a cache cluster.

CLI example:

```
salt myminion boto_elasticache.get_config myelasticache
```

salt.modules.boto_elasticache.**get_group_host**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get hostname from replication cache group

CLI example:

```
salt myminion boto_elasticache.get_group_host myelasticachegroup
```

salt.modules.boto_elasticache.**get_node_host**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get hostname from cache node

CLI example:

```
salt myminion boto_elasticache.get_node_host myelasticache
```

salt.modules.boto_elasticache.**group_exists**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check to see if a replication group exists.

CLI example:

```
salt myminion boto_elasticache.group_exists myelasticache
```

salt.modules.boto_elasticache.**revoke_cache_security_group_ingress**(*name*, *ec2_security_group_name*, *ec2_security_group_owner_id*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Revoke network ingress from an ec2 security group to a cache security group.

CLI example:

```
salt myminion boto_elasticache.revoke_cache_security_group_ingress
 ↪myelasticachesg myec2sg 879879
```

salt.modules.boto_elasticache.**subnet_group_exists**(*name*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check to see if an ElastiCache subnet group exists.

CLI example:

```
salt myminion boto_elasticache.subnet_group_exists my-param-group
 ↪region=us-east-1
```

### 13.6.25 salt.modules.boto_elb

Connection module for Amazon ELB

New in version 2014.7.0.

**configuration** This module accepts explicit elb credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-
 ↪ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
elb.keyid: GKTADJGHEIQSXMKKRBJ08H
elb.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

A region may also be specified in the configuration:

```
elb.region: us-east-1
```

If a region is not specified, the default is us-east-1.

It's also possible to specify key, keyid and region via a profile, either as a passed in dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

**depends** boto >= 2.33.0

`salt.modules.boto_elb.`**`apply_security_groups`**(*name*, *security_groups*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Apply security groups to ELB.

CLI example:

```
salt myminion boto_elb.apply_security_groups myelb '["mysecgroup1"]'
```

`salt.modules.boto_elb.`**`attach_subnets`**(*name*, *subnets*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Attach ELB to subnets.

CLI example:

```
salt myminion boto_elb.attach_subnets myelb '["mysubnet"]'
```

`salt.modules.boto_elb.`**`create`**(*name*, *availability_zones*, *listeners*, *subnets=None*, *security_groups=None*, *scheme='internet-facing'*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create an ELB

CLI example to create an ELB:

```
salt myminion boto_elb.create myelb '["us-east-1a", "us-east-1e"]' '{"elb_port":
↪443, "elb_protocol": "HTTPS", ...}' region=us-east-1
```

`salt.modules.boto_elb.`**`create_listeners`**(*name*, *listeners*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create listeners on an ELB.

CLI example:

```
salt myminion boto_elb.create_listeners myelb '[["HTTPS", "HTTP", 443, 80, "arn:
↪aws:iam::11  11111:server-certificate/mycert"]]'
```

`salt.modules.boto_elb.`**`create_policy`**(*name*, *policy_name*, *policy_type*, *policy*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create an ELB policy.

New in version 2016.3.0.

CLI example:

```
salt myminion boto_elb.create_policy myelb mypolicy LBCookieStickinessPolicyType '
↪{"CookieExpirationPeriod": 3600}'
```

salt.modules.boto_elb.**delete**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete an ELB.

CLI example to delete an ELB:

```
salt myminion boto_elb.delete myelb region=us-east-1
```

salt.modules.boto_elb.**delete_listeners**(*name*, *ports*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete listeners on an ELB.

CLI example:

```
salt myminion boto_elb.delete_listeners myelb '[80,443]'
```

salt.modules.boto_elb.**delete_policy**(*name*, *policy_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete an ELB policy.

New in version 2016.3.0.

CLI example:

```
salt myminion boto_elb.delete_policy myelb mypolicy
```

salt.modules.boto_elb.**delete_tags**(*name*, *tags*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Add the tags on an ELB
**name** name of the ELB
**tags** list of tags to remove
CLI Example:

```
salt myminion boto_elb.delete_tags my-elb-name ['TagToRemove1', 'TagToRemove2']
```

salt.modules.boto_elb.**deregister_instances**(*name*, *instances*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Deregister instances with an ELB. Instances is either a string instance id or a list of string instance id's.

Returns:

- `True`: instance(s) deregistered successfully
- `False`: instance(s) failed to be deregistered
- `None`: instance(s) not valid or not registered, no action taken

CLI example:

```
salt myminion boto_elb.deregister_instances myelb instance_id
salt myminion boto_elb.deregister_instances myelb "[instance_id, instance_id]"
```

salt.modules.boto_elb.**detach_subnets**(*name*, *subnets*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Detach ELB from subnets.

CLI example:

```
salt myminion boto_elb.detach_subnets myelb '["mysubnet"]'
```

salt.modules.boto_elb.**disable_availability_zones**(*name*, *availability_zones*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Disable availability zones for ELB.

CLI example:

```
salt myminion boto_elb.disable_availability_zones myelb '["us-east-1a"]'
```

salt.modules.boto_elb.**enable_availability_zones**(*name*, *availability_zones*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Enable availability zones for ELB.

CLI example:

```
salt myminion boto_elb.enable_availability_zones myelb '["us-east-1a"]'
```

salt.modules.boto_elb.**exists**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check to see if an ELB exists.

CLI example:

```
salt myminion boto_elb.exists myelb region=us-east-1
```

salt.modules.boto_elb.**get_attributes**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check to see if attributes are set on an ELB.

CLI example:

```
salt myminion boto_elb.get_attributes myelb
```

salt.modules.boto_elb.**get_elb_config**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get an ELB configuration.

CLI example:

```
salt myminion boto_elb.exists myelb region=us-east-1
```

salt.modules.boto_elb.**get_health_check**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get the health check configured for this ELB.

CLI example:

```
salt myminion boto_elb.get_health_check myelb
```

salt.modules.boto_elb.**get_instance_health**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *instances=None*)

Get a list of instances and their health state

CLI example:

```
salt myminion boto_elb.get_instance_health myelb
salt myminion boto_elb.get_instance_health myelb region=us-east-1 instances=
↪"[instance_id,instance_id]"
```

salt.modules.boto_elb.**listener_dict_to_tuple**(*listener*)

Convert an ELB listener dict into a listener tuple used by certain parts of the AWS ELB API.

CLI example:

```
salt myminion boto_elb.listener_dict_to_tuple '{"elb_port":80,"instance_port":80,
↪"elb_protocol":"HTTP"}'
```

salt.modules.boto_elb.**register_instances**(*name*, *instances*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Register instances with an ELB. Instances is either a string instance id or a list of string instance id's.

Returns:

- `True`: instance(s) registered successfully
- `False`: instance(s) failed to be registered

CLI example:

```
salt myminion boto_elb.register_instances myelb instance_id
salt myminion boto_elb.register_instances myelb "[instance_id,instance_id]"
```

salt.modules.boto_elb.**set_attributes**(*name*, *attributes*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Set attributes on an ELB.

**name (string)** Name of the ELB instance to set attributes for

**attributes** A dict of attributes to set.

Valid attributes are:

**access_log (dict)**

**enabled (bool)** Enable storage of access logs.

**s3_bucket_name (string)** The name of the S3 bucket to place logs.

**s3_bucket_prefix (string)** Prefix for the log file name.

**emit_interval (int)** Interval for storing logs in S3 in minutes. Valid values are 5 and 60.

**connection_draining (dict)**

**enabled (bool)** Enable connection draining.

**timeout (int)** Maximum allowed time in seconds for sending existing connections to an instance that is deregistering or unhealthy. Default is 300.

**cross_zone_load_balancing (dict)**

**enabled (bool)** Enable cross-zone load balancing.

CLI example to set attributes on an ELB:

```
salt myminion boto_elb.set_attributes myelb '{"access_log": {"enabled": "true",
↪"s3_bucket_name": "mybucket", "s3_bucket_prefix": "mylogs/", "emit_interval": "5
↪"}}' region=us-east-1
```

salt.modules.boto_elb.**set_backend_policy**(*name*, *port*, *policies=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Set the policies of an ELB backend server.

CLI example:

salt myminion boto_elb.set_backend_policy myelb 443 ``[policy1,policy2]"

salt.modules.boto_elb.**set_health_check**(*name*, *health_check*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Set attributes on an ELB.

CLI example to set attributes on an ELB:

```
salt myminion boto_elb.set_health_check myelb '{"target": "HTTP:80/"}'
```

salt.modules.boto_elb.**set_listener_policy**(*name*, *port*, *policies=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Set the policies of an ELB listener.

New in version 2016.3.0.

CLI example:

```
salt myminion boto_elb.set_listener_policy myelb 443 "[policy1,policy2]"
```

salt.modules.boto_elb.**set_tags**(*name*, *tags*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Add the tags on an ELB

New in version 2016.3.0.
**name** name of the ELB
**tags** dict of name/value pair tags
CLI Example:

```
salt myminion boto_elb.set_tags my-elb-name "{'Tag1': 'Value', 'Tag2': 'Another
↪Value'}"
```

### 13.6.26 salt.modules.boto_iam

Connection module for Amazon IAM

New in version 2014.7.0.

**configuration** This module accepts explicit iam credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-
↪ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
iam.keyid: GKTADJGHEIQSXMKKRBJ08H
iam.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
iam.region: us-east-1
```

It's also possible to specify key, keyid and region via a profile, either as a passed in dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

**depends** boto

salt.modules.boto_iam.**add_user_to_group**(*user_name*, *group_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Add user to group.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.add_user_to_group myuser mygroup
```

salt.modules.boto_iam.**associate_profile_to_role**(*profile_name*, *role_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Associate an instance profile with an IAM role.

CLI Example:

```
salt myminion boto_iam.associate_profile_to_role myirole myiprofile
```

salt.modules.boto_iam.**build_policy**(*region=None*, *key=None*, *keyid=None*, *profile=None*)

Build a default assume role policy.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.build_policy
```

salt.modules.boto_iam.**create_access_key**(*user_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create access key id for a user.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.create_access_key myuser
```

salt.modules.boto_iam.**create_group**(*group_name*, *path=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create a group.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.create_group group
```

salt.modules.boto_iam.**create_instance_profile**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create an instance profile.

CLI Example:

```
salt myminion boto_iam.create_instance_profile myiprofile
```

salt.modules.boto_iam.**create_login_profile**(*user_name*, *password*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Creates a login profile for the specified user, give the user the ability to access AWS services and the AWS Management Console.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.create_login_profile user_name password
```

salt.modules.boto_iam.**create_role**(*name*, *policy_document=None*, *path=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create an instance role.

CLI Example:

```
salt myminion boto_iam.create_role myrole
```

salt.modules.boto_iam.**create_role_policy**(*role_name*, *policy_name*, *policy*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create or modify a role policy.

CLI Example:

```
salt myminion boto_iam.create_role_policy myirole mypolicy '{"MyPolicy":
↪"Statement": [{"Action": ["sqs:*"], "Effect": "Allow", "Resource": ["arn:aws:
↪sqs:*:*:*"], "Sid": "MyPolicySqs1"}]}'
```

salt.modules.boto_iam.**create_user**(*user_name*, *path=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create a user.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.create_user myuser
```

salt.modules.boto_iam.**deactivate_mfa_device**(*user_name*, *serial*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Deactivates the specified MFA device and removes it from association with the user.

New in version 2016.3.0.

CLI Example:

```
salt myminion boto_iam.deactivate_mfa_device user_name serial_num
```

salt.modules.boto_iam.**delete_access_key**(*access_key_id*, *user_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete access key id from a user.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.delete_access_key myuser
```

salt.modules.boto_iam.**delete_group_policy**(*group_name*, *policy_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete a group policy.

CLI Example:

```
.. code-block:: bash
```

salt myminion boto_iam.delete_group_policy mygroup mypolicy

salt.modules.boto_iam.**delete_instance_profile**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete an instance profile.

CLI Example:

```
salt myminion boto_iam.delete_instance_profile myiprofile
```

salt.modules.boto_iam.**delete_login_profile**(*user_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Deletes a login profile for the specified user.

New in version 2016.3.0.

CLI Example:

```
salt myminion boto_iam.delete_login_profile user_name
```

salt.modules.boto_iam.**delete_role**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete an IAM role.

CLI Example:

```
salt myminion boto_iam.delete_role myirole
```

salt.modules.boto_iam.**delete_role_policy**(*role_name*, *policy_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete a role policy.

CLI Example:

```
salt myminion boto_iam.delete_role_policy myirole mypolicy
```

salt.modules.boto_iam.**delete_server_cert**(*cert_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Deletes a certificate from Amazon.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.delete_server_cert mycert_name
```

salt.modules.boto_iam.**delete_user**(*user_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete a user.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.delete_user myuser
```

salt.modules.boto_iam.**delete_user_policy**(*user_name*, *policy_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete a user policy.

CLI Example:

```
salt myminion boto_iam.delete_user_policy myuser mypolicy
```

salt.modules.boto_iam.**describe_role**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get information for a role.

CLI Example:

```
salt myminion boto_iam.describe_role myirole
```

salt.modules.boto_iam.**disassociate_profile_from_role**(*profile_name*, *role_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Disassociate an instance profile from an IAM role.

CLI Example:

```
salt myminion boto_iam.disassociate_profile_from_role myirole myiprofile
```

salt.modules.boto_iam.**export_users**(*path_prefix='/'*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get all IAM user details. Produces results that can be used to create an sls file.

New in version 2016.3.0.

CLI Example:

salt-call boto_iam.export_users --out=txt | sed ``s/local: //'' > iam_users.sls

salt.modules.boto_iam.**get_account_id**(*region=None*, *key=None*, *keyid=None*, *profile=None*)

Get a the AWS account id associated with the used credentials.

CLI Example:

```
salt myminion boto_iam.get_account_id
```

salt.modules.boto_iam.**get_account_policy**(*region=None*, *key=None*, *keyid=None*, *profile=None*)

Get account policy for the AWS account.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.get_account_policy
```

salt.modules.boto_iam.**get_all_access_keys**(*user_name*, *marker=None*, *max_items=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get all access keys from a user.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.get_all_access_keys myuser
```

salt.modules.boto_iam.**get_all_group_policies**(*group_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get a list of policy names from a group.

CLI Example:

```
salt myminion boto_iam.get_all_group_policies mygroup
```

salt.modules.boto_iam.**get_all_mfa_devices**(*user_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get all MFA devices associated with an IAM user.

New in version 2016.3.0.

CLI Example:

```
salt myminion boto_iam.get_all_mfa_devices user_name
```

salt.modules.boto_iam.**get_all_user_policies**(*user_name*, *marker=None*, *max_items=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get all user policies.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.get_group mygroup
```

salt.modules.boto_iam.**get_group**(*group_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get group information.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.get_group mygroup
```

salt.modules.boto_iam.**get_group_members**(*group_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get group information.

New in version 2016.3.0.

CLI Example:

```
salt myminion boto_iam.get_group mygroup
```

salt.modules.boto_iam.**get_group_policy**(*group_name*, *policy_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Retrieves the specified policy document for the specified group.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.get_group_policy mygroup policyname
```

salt.modules.boto_iam.**get_role_policy**(*role_name*, *policy_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get a role policy.

CLI Example:

```
salt myminion boto_iam.get_role_policy myirole mypolicy
```

salt.modules.boto_iam.**get_server_certificate**(*cert_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Returns certificate information from Amazon

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.get_server_certificate mycert_name
```

salt.modules.boto_iam.**get_user**(*user_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get user information.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.get_user myuser
```

salt.modules.boto_iam.**get_user_policy**(*user_name*, *policy_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Retrieves the specified policy document for the specified user.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.get_user_policy myuser mypolicyname
```

salt.modules.boto_iam.**instance_profile_exists**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check to see if an instance profile exists.

CLI Example:

```
salt myminion boto_iam.instance_profile_exists myiprofile
```

salt.modules.boto_iam.**list_role_policies**(*role_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get a list of policy names from a role.

CLI Example:

```
salt myminion boto_iam.list_role_policies myirole
```

salt.modules.boto_iam.**profile_associated**(*role_name*, *profile_name*, *region*, *key*, *keyid*, *profile*)

Check to see if an instance profile is associated with an IAM role.

CLI Example:

```
salt myminion boto_iam.profile_associated myirole myiprofile
```

salt.modules.boto_iam.**put_group_policy**(*group_name*, *policy_name*, *policy_json*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Adds or updates the specified policy document for the specified group.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.put_group_policy mygroup policyname policyrules
```

salt.modules.boto_iam.**put_user_policy**(*user_name*, *policy_name*, *policy_json*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Adds or updates the specified policy document for the specified user.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.put_user_policy myuser policyname policyrules
```

salt.modules.boto_iam.**remove_user_from_group**(*group_name*, *user_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Remove user from group.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.remove_user_from_group mygroup myuser
```

salt.modules.boto_iam.**role_exists**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check to see if an IAM role exists.

CLI Example:

```
salt myminion boto_iam.role_exists myirole
```

salt.modules.boto_iam.**update_account_password_policy**(*allow_users_to_change_password=None*, *hard_expiry=None*, *max_password_age=None*, *minimum_password_length=None*, *password_reuse_prevention=None*, *require_lowercase_characters=None*, *require_numbers=None*, *require_symbols=None*, *require_uppercase_characters=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Update the password policy for the AWS account.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.update_account_password_policy True
```

salt.modules.boto_iam.**update_assume_role_policy**(*role_name*, *policy_document*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Update an assume role policy for a role.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.update_assume_role_policy myrole '{"Statement":"..."}'
```

salt.modules.boto_iam.**upload_server_cert**(*cert_name*, *cert_body*, *private_key*, *cert_chain=None*, *path=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Upload a certificate to Amazon.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.upload_server_cert mycert_name crt priv_key
```

**Parameters**

- **cert_name** -- The name for the server certificate. Do not include the path in this value.
- **cert_body** -- The contents of the public key certificate in PEM-encoded format.
- **private_key** -- The contents of the private key in PEM-encoded format.
- **cert_chain** -- The contents of the certificate chain. This is typically a concatenation of the PEM-encoded public key certificates of the chain.
- **path** -- The path for the server certificate.
- **region** -- The name of the region to connect to.
- **key** -- The key to be used in order to connect
- **keyid** -- The keyid to be used in order to connect
- **profile** -- The profile that contains a dict of region, key, keyid

**Returns** True / False

salt.modules.boto_iam.**user_exists_in_group**(*user_name*, *group_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check if user exists in group.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_iam.user_exists_in_group myuser mygroup
```

### 13.6.27 salt.modules.boto_iot module

Connection module for Amazon IoT

New in version 2016.3.0.

**depends**

- boto
- boto3

The dependencies listed above can be installed via package or pip.

**configuration** This module accepts explicit Lambda credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-
↪ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
iot.keyid: GKTADJGHEIQSXMKKRBJ08H
iot.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

A region may also be specified in the configuration:

```
iot.region: us-east-1
```

If a region is not specified, the default is us-east-1.

It's also possible to specify key, keyid and region via a profile, either as a passed in dict, or as a string to pull from pillars or minion config:

```
myprofile:
  keyid: GKTADJGHEIQSXMKKRBJ08H
  key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
  region: us-east-1
```

salt.modules.boto_iot.**attach_principal_policy**(*policyName*, *principal*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Attach the specified policy to the specified principal (certificate or other credential.)

Returns {attached: true} if the policy was attached {attached: False} if the policy was not attached.

CLI Example:

```
salt myminion boto_iot.attach_principal_policy mypolicy mycognitoID
```

salt.modules.boto_iot.**create_policy**(*policyName*, *policyDocument*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a valid config, create a policy.

Returns {created: true} if the policy was created and returns {created: False} if the policy was not created.

CLI Example:

```
salt myminion boto_iot.create_policy my_policy \
      '{"Version":"2015-12-12",\
      "Statement":[{"Effect":"Allow",\
                    "Action":["iot:Publish"],\
                    "Resource":["arn:::::topic/foo/bar"]}]}'
```

salt.modules.boto_iot.**create_policy_version**(*policyName*, *policyDocument*, *setAsDefault=False*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a valid config, create a new version of a policy.

Returns {created: true} if the policy version was created and returns {created: False} if the policy version was not created.

CLI Example:

```
salt myminion boto_iot.create_policy_version my_policy \
       '{"Statement":[{"Effect":"Allow","Action":["iot:Publish"],"Resource":["arn:
↪::::topic/foo/bar"]}]}'
```

salt.modules.boto_iot.**create_topic_rule**(*ruleName*, *sql*, *actions*, *description*, *ruleDisabled=False*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a valid config, create a topic rule.

Returns {created: true} if the rule was created and returns {created: False} if the rule was not created.

CLI Example:

```
salt myminion boto_iot.create_topic_rule my_rule "SELECT * FROM 'some/thing'" \
    '[{"lambda":{"functionArn":"arn:::::something"}},{"sns":{\
    "targetArn":"arn:::::something","roleArn":"arn:::::something"}}]'
```

salt.modules.boto_iot.**delete_policy**(*policyName*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a policy name, delete it.

Returns {deleted: true} if the policy was deleted and returns {deleted: false} if the policy was not deleted.

CLI Example:

```
salt myminion boto_iot.delete_policy mypolicy
```

salt.modules.boto_iot.**delete_policy_version**(*policyName*, *policyVersionId*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a policy name and version, delete it.

Returns {deleted: true} if the policy version was deleted and returns {deleted: false} if the policy version was not deleted.

CLI Example:

```
salt myminion boto_iot.delete_policy_version mypolicy version
```

salt.modules.boto_iot.**delete_topic_rule**(*ruleName*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a rule name, delete it.

Returns {deleted: true} if the rule was deleted and returns {deleted: false} if the rule was not deleted.

CLI Example:

```
salt myminion boto_iot.delete_rule myrule
```

salt.modules.boto_iot.**describe_policy**(*policyName*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a policy name describe its properties.

Returns a dictionary of interesting properties.

CLI Example:

```
salt myminion boto_iot.describe_policy mypolicy
```

salt.modules.boto_iot.**describe_policy_version**(*policyName*, *policyVersionId*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a policy name and version describe its properties.

Returns a dictionary of interesting properties.

CLI Example:

```
salt myminion boto_iot.describe_policy_version mypolicy version
```

salt.modules.boto_iot.**describe_topic_rule**(*ruleName*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a topic rule name describe its properties.

Returns a dictionary of interesting properties.

CLI Example:

```
salt myminion boto_iot.describe_topic_rule myrule
```

salt.modules.boto_iot.**detach_principal_policy**(*policyName*, *principal*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Detach the specified policy from the specified principal (certificate or other credential.)

Returns {detached: true} if the policy was detached {detached: False} if the policy was not detached.

CLI Example:

```
salt myminion boto_iot.detach_principal_policy mypolicy mycognitoID
```

salt.modules.boto_iot.**list_policies**(*region=None*, *key=None*, *keyid=None*, *profile=None*)

List all policies

Returns list of policies

CLI Example:

```
salt myminion boto_iot.list_policies
```

Example Return:

```
policies:
  - {...}
  - {...}
```

salt.modules.boto_iot.**list_policy_versions**(*policyName*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

List the versions available for the given policy.

CLI Example:

```
salt myminion boto_iot.list_policy_versions mypolicy
```

Example Return:

```
policyVersions:
  - {...}
  - {...}
```

salt.modules.boto_iot.**list_principal_policies**(*principal*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

List the policies attached to the given principal.

CLI Example:

```
salt myminion boto_iot.list_principal_policies myprincipal
```

Example Return:

```
policies:
  - {...}
  - {...}
```

salt.modules.boto_iot.**list_topic_rules**(*topic=None*, *ruleDisabled=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

List all rules (for a given topic, if specified)

Returns list of rules

CLI Example:

```
salt myminion boto_iot.list_topic_rules
```

Example Return:

```
rules:
  - {...}
  - {...}
```

salt.modules.boto_iot.**policy_exists**(*policyName*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a policy name, check to see if the given policy exists.

Returns True if the given policy exists and returns False if the given policy does not exist.

CLI Example:

```
salt myminion boto_iot.policy_exists mypolicy
```

salt.modules.boto_iot.**policy_version_exists**(*policyName*, *policyVersionId*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a policy name and version ID, check to see if the given policy version exists.

Returns True if the given policy version exists and returns False if the given policy version does not exist.

CLI Example:

```
salt myminion boto_iot.policy_version_exists mypolicy versionid
```

salt.modules.boto_iot.**replace_topic_rule**(*ruleName*, *sql*, *actions*, *description*, *ruleDisabled=False*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a valid config, replace a topic rule with the new values.

Returns {created: true} if the rule was created and returns {created: False} if the rule was not created.

CLI Example:

```
salt myminion boto_iot.replace_topic_rule my_rule 'SELECT * FROM some.thing' \
    '[{"lambda":{"functionArn":"arn:::::something"}},{"sns":{\
    "targetArn":"arn:::::something","roleArn":"arn:::::something"}}]'
```

salt.modules.boto_iot.**set_default_policy_version**(*policyName*, *policyVersionId*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Sets the specified version of the specified policy as the policy's default (operative) version. This action affects all certificates that the policy is attached to.

Returns {changed: true} if the policy version was set {changed: False} if the policy version was not set.

CLI Example:

```
salt myminion boto_iot.set_default_policy_version mypolicy versionid
```

salt.modules.boto_iot.**topic_rule_exists**(*ruleName*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a rule name, check to see if the given rule exists.

Returns True if the given rule exists and returns False if the given rule does not exist.

CLI Example:

```
salt myminion boto_iot.topic_rule_exists myrule
```

### 13.6.28 salt.modules.boto_kms

Connection module for Amazon KMS

New in version 2015.8.0.

**configuration** This module accepts explicit kms credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-
↪ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
kms.keyid: GKTADJGHEIQSXMKKRBJ08H
kms.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

A region may also be specified in the configuration:

```
kms.region: us-east-1
```

If a region is not specified, the default is us-east-1.

It's also possible to specify key, keyid and region via a profile, either as a passed in dict, or as a string to pull from pillars or minion config:

**myprofile**: keyid: GKTADJGHEIQSXMKKRBJ08H key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs region: us-east-1

**depends** boto

`salt.modules.boto_kms.`**`create_alias`**(*alias_name*, *target_key_id*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create a display name for a key.

CLI example:

```
salt myminion boto_kms.create_alias 'alias/mykey' key_id
```

`salt.modules.boto_kms.`**`create_grant`**(*key_id*, *grantee_principal*, *retiring_principal=None*, *operations=None*, *constraints=None*, *grant_tokens=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Adds a grant to a key to specify who can access the key and under what conditions.

CLI example:

```
salt myminion boto_kms.create_grant 'alias/mykey' 'arn:aws:iam::1111111:/role/
↪myrole' operations='["Encrypt","Decrypt"]'
```

`salt.modules.boto_kms.`**`create_key`**(*policy=None*, *description=None*, *key_usage=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Creates a master key.

CLI example:

```
salt myminion boto_kms.create_key '{"Statement":...}' "My master key"
```

salt.modules.boto_kms.**decrypt**(*ciphertext_blob*, *encryption_context=None*, *grant_tokens=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Decrypt ciphertext.

CLI example:

```
salt myminion boto_kms.decrypt encrypted_ciphertext
```

salt.modules.boto_kms.**describe_key**(*key_id*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get detailed information about a key.

CLI example:

```
salt myminion boto_kms.describe_key 'alias/mykey'
```

salt.modules.boto_kms.**disable_key**(*key_id*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Mark key as disabled.

CLI example:

```
salt myminion boto_kms.disable_key 'alias/mykey'
```

salt.modules.boto_kms.**disable_key_rotation**(*key_id*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Disable key rotation for specified key.

CLI example:

```
salt myminion boto_kms.disable_key_rotation 'alias/mykey'
```

salt.modules.boto_kms.**enable_key**(*key_id*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Mark key as enabled.

CLI example:

```
salt myminion boto_kms.enable_key 'alias/mykey'
```

salt.modules.boto_kms.**enable_key_rotation**(*key_id*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Disable key rotation for specified key.

CLI example:

```
salt myminion boto_kms.enable_key_rotation 'alias/mykey'
```

salt.modules.boto_kms.**encrypt**(*key_id*, *plaintext*, *encryption_context=None*, *grant_tokens=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Encrypt plaintext into cipher text using specified key.

CLI example:

```
salt myminion boto_kms.encrypt 'alias/mykey' 'myplaindata' '{"aws:username":
↪"myuser"}'
```

salt.modules.boto_kms.**generate_data_key**(*key_id*, *encryption_context=None*, *number_of_bytes=None*, *key_spec=None*, *grant_tokens=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Generate a secure data key.

CLI example:

```
salt myminion boto_kms.generate_data_key 'alias/mykey' number_of_bytes=1024 key_
↪spec=AES_128
```

salt.modules.boto_kms.**generate_data_key_without_plaintext**(*key_id*, *encryption_context=None*, *number_of_bytes=None*, *key_spec=None*, *grant_tokens=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Generate a secure data key without a plaintext copy of the key.

CLI example:

```
salt myminion boto_kms.generate_data_key_without_plaintext 'alias/mykey' number_
↪of_bytes=1024 key_spec=AES_128
```

salt.modules.boto_kms.**generate_random**(*number_of_bytes=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Generate a random string.

CLI example:

```
salt myminion boto_kms.generate_random number_of_bytes=1024
```

salt.modules.boto_kms.**get_key_policy**(*key_id*, *policy_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get the policy for the specified key.

CLI example:

```
salt myminion boto_kms.get_key_policy 'alias/mykey' mypolicy
```

salt.modules.boto_kms.**get_key_rotation_status**(*key_id*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get status of whether or not key rotation is enabled for a key.

CLI example:

```
salt myminion boto_kms.get_key_rotation_status 'alias/mykey'
```

salt.modules.boto_kms.**key_exists**(*key_id*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check for the existence of a key.

CLI example:

```
salt myminion boto_kms.key_exists 'alias/mykey'
```

salt.modules.boto_kms.**list_grants**(*key_id*, *limit=None*, *marker=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

List grants for the specified key.

CLI example:

```
salt myminion boto_kms.list_grants 'alias/mykey'
```

salt.modules.boto_kms.**list_key_policies**(*key_id*, *limit=None*, *marker=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

List key_policies for the specified key.

CLI example:

```
salt myminion boto_kms.list_key_policies 'alias/mykey'
```

salt.modules.boto_kms.**put_key_policy**(*key_id*, *policy_name*, *policy*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Attach a key policy to the specified key.

CLI example:

```
salt myminion boto_kms.put_key_policy 'alias/mykey' default '{"Statement":...}'
```

salt.modules.boto_kms.**re_encrypt**(*ciphertext_blob*, *destination_key_id*, *source_encryption_context=None*, *destination_encryption_context=None*, *grant_tokens=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Reencrypt encrypted data with a new master key.

CLI example:

```
salt myminion boto_kms.re_encrypt 'encrypted_data' 'alias/mynewkey' default '{
↪"Statement":...}'
```

salt.modules.boto_kms.**revoke_grant**(*key_id*, *grant_id*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Revoke a grant from a key.

CLI example:

```
salt myminion boto_kms.revoke_grant 'alias/mykey' 8u89hf-j09j...
```

salt.modules.boto_kms.**update_key_description**(*key_id*, *description*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Update a key's description.

CLI example:

```
salt myminion boto_kms.update_key_description 'alias/mykey' 'My key'
```

### 13.6.29 salt.modules.boto_lambda module

Connection module for Amazon Lambda

New in version 2016.3.0.

**depends**

- boto
- boto3

The dependencies listed above can be installed via package or pip.

**configuration** This module accepts explicit Lambda credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-
↪ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
lambda.keyid: GKTADJGHEIQSXMKKRBJ08H
lambda.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

A region may also be specified in the configuration:

```
lambda.region: us-east-1
```

If a region is not specified, the default is us-east-1.

It's also possible to specify key, keyid and region via a profile, either as a passed in dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

Changed in version 2015.8.0: All methods now return a dictionary. Create and delete methods return:

```
created: true
```

or

```
created: false
error:
  message: error message
```

Request methods (e.g., *describe_function*) return:

```
function:
  - {...}
  - {...}
```

or

```
error:
  message: error message
```

salt.modules.boto_lambda.**add_permission**(*FunctionName*, *StatementId*, *Action*, *Principal*, *SourceArn=None*, *SourceAccount=None*, *Qualifier=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Add a permission to a lambda function.

Returns {added: true} if the permission was added and returns {added: False} if the permission was not added.

CLI Example:

```
salt myminion boto_lamba.add_permission my_function my_id "lambda:*" \
                  s3.amazonaws.com aws:arn::::bucket-name \
                  aws-account-id
```

salt.modules.boto_lambda.**alias_exists**(*FunctionName*, *Name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a function name and alias name, check to see if the given alias exists.

Returns True if the given alias exists and returns False if the given alias does not exist.

CLI Example:

```
salt myminion boto_lamba.alias_exists myfunction myalias
```

salt.modules.boto_lambda.**create_alias**(*FunctionName*, *Name*, *FunctionVersion*, *Description=''*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a valid config, create an alias to a function.

Returns {created: true} if the alias was created and returns {created: False} if the alias was not created.

CLI Example:

```
salt myminion boto_lamba.create_alias my_function my_alias $LATEST "An alias"
```

salt.modules.boto_lambda.**create_event_source_mapping**(*EventSourceArn*, *FunctionName*, *StartingPosition*, *Enabled=True*, *BatchSize=100*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Identifies a stream as an event source for a Lambda function. It can be either an Amazon Kinesis stream or an Amazon DynamoDB stream. AWS Lambda invokes the specified function when records are posted to the stream.

Returns {created: true} if the event source mapping was created and returns {created: False} if the event source mapping was not created.

CLI Example:

```
salt myminion boto_lamba.create_event_source_mapping arn::::eventsource
↪myfunction LATEST
```

salt.modules.boto_lambda.**create_function**(*FunctionName*, *Runtime*, *Role*, *Handler*, *ZipFile=None*, *S3Bucket=None*, *S3Key=None*, *S3ObjectVersion=None*, *Description=''*, *Timeout=3*, *MemorySize=128*, *Publish=False*, *WaitForRole=False*, *RoleRetries=5*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a valid config, create a function.

Returns {created: true} if the function was created and returns {created: False} if the function was not created.

CLI Example:

```
salt myminion boto_lamba.create_function my_function python2.7 my_role my_file.my_
↪function my_function.zip
```

salt.modules.boto_lambda.**delete_alias**(*FunctionName*, *Name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a function name and alias name, delete the alias.

Returns {deleted: true} if the alias was deleted and returns {deleted: false} if the alias was not deleted.

CLI Example:

```
salt myminion boto_lambda.delete_alias myfunction myalias
```

salt.modules.boto_lambda.**delete_event_source_mapping**(*UUID=None*, *EventSourceArn=None*, *FunctionName=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given an event source mapping ID or an event source ARN and FunctionName, delete the event source mapping

Returns {deleted: true} if the mapping was deleted and returns {deleted: false} if the mapping was not deleted.

CLI Example:

```
salt myminion boto_lambda.delete_event_source_mapping 260c423d-e8b5-4443-8d6a-
↪5e91b9ecd0fa
```

salt.modules.boto_lambda.**delete_function**(*FunctionName*, *Qualifier=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a function name and optional version qualifier, delete it.

Returns {deleted: true} if the function was deleted and returns {deleted: false} if the function was not deleted.

CLI Example:

```
salt myminion boto_lambda.delete_function myfunction
```

salt.modules.boto_lambda.**describe_alias**(*FunctionName*, *Name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a function name and alias name describe the properties of the alias.

Returns a dictionary of interesting properties.

CLI Example:

```
salt myminion boto_lambda.describe_alias myalias
```

salt.modules.boto_lambda.**describe_event_source_mapping**(*UUID=None*, *EventSourceArn=None*, *FunctionName=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given an event source mapping ID or an event source ARN and FunctionName, obtain the current settings of that mapping.

Returns a dictionary of interesting properties.

CLI Example:

```
salt myminion boto_lambda.describe_event_source_mapping uuid
```

salt.modules.boto_lambda.**describe_function**(*FunctionName*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a function name describe its properties.

Returns a dictionary of interesting properties.

CLI Example:

```
salt myminion boto_lambda.describe_function myfunction
```

salt.modules.boto_lambda.**event_source_mapping_exists**(*UUID=None*, *EventSourceArn=None*, *FunctionName=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given an event source mapping ID or an event source ARN and FunctionName, check whether the mapping exists.

Returns True if the given alias exists and returns False if the given alias does not exist.

CLI Example:

```
salt myminion boto_lambda.alias_exists myfunction myalias
```

salt.modules.boto_lambda.**function_exists**(*FunctionName*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a function name, check to see if the given function name exists.

Returns True if the given function exists and returns False if the given function does not exist.

CLI Example:

```
salt myminion boto_lambda.function_exists myfunction
```

salt.modules.boto_lambda.**get_event_source_mapping_ids**(*EventSourceArn*, *FunctionName*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given an event source and function name, return a list of mapping IDs

CLI Example:

```
salt myminion boto_lambda.get_event_source_mapping_ids arn:::: myfunction
```

salt.modules.boto_lambda.**get_permissions**(*FunctionName*, *Qualifier=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get resource permissions for the given lambda function

Returns dictionary of permissions, by statement ID

CLI Example:

```
salt myminion boto_lamba.get_permissions my_function

permissions: {...}
```

salt.modules.boto_lambda.**list_function_versions**(*FunctionName*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

List the versions available for the given function.

Returns list of function versions

CLI Example:

```
versions:
  - {...}
  - {...}
```

salt.modules.boto_lambda.**remove_permission**(*FunctionName*, *StatementId*, *Qualifier=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Remove a permission from a lambda function.

Returns {removed: true} if the permission was removed and returns {removed: False} if the permission was not removed.

CLI Example:

```
salt myminion boto_lamba.remove_permission my_function my_id
```

salt.modules.boto_lambda.**update_alias**(*FunctionName*, *Name*, *FunctionVersion=None*, *Description=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Update the named alias to the configuration.

Returns {updated: true} if the alias was updated and returns {updated: False} if the alias was not updated.

CLI Example:

```
salt myminion boto_lamba.update_alias my_lambda my_alias $LATEST
```

salt.modules.boto_lambda.**update_event_source_mapping**(*UUID*, *FunctionName=None*, *Enabled=None*, *BatchSize=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Update the event source mapping identified by the UUID.

Returns {updated: true} if the alias was updated and returns {updated: False} if the alias was not updated.

CLI Example:

```
salt myminion boto_lamba.update_event_source_mapping uuid FunctionName=new_
↪function
```

salt.modules.boto_lambda.**update_function_code**(*FunctionName*, *ZipFile=None*, *S3Bucket=None*, *S3Key=None*, *S3ObjectVersion=None*, *Publish=False*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Upload the given code to the named lambda function.

Returns {updated: true} if the function was updated and returns {updated: False} if the function was not updated.

CLI Example:

```
salt myminion boto_lamba.update_function_code my_function ZipFile=function.zip
```

salt.modules.boto_lambda.**update_function_config**(*FunctionName*, *Role=None*, *Handler=None*, *Description=None*, *Timeout=None*, *MemorySize=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Update the named lambda function to the configuration.

Returns {updated: true} if the function was updated and returns {updated: False} if the function was not updated.

CLI Example:

```
salt myminion boto_lamba.update_function_config my_function my_role my_file.my_
 ↪function "my lambda function"
```

### 13.6.30 salt.modules.boto_rds

Connection module for Amazon RDS

New in version 2015.8.0.

**configuration** This module accepts explicit rds credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-
 ↪ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
rds.keyid: GKTADJGHEIQSXMKKRBJ08H
rds.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

A region may also be specified in the configuration:

```
rds.region: us-east-1
```

If a region is not specified, the default is us-east-1.

It's also possible to specify key, keyid and region via a profile, either as a passed in dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

**depends** boto

salt.modules.boto_rds.**create**(*name*, *allocated_storage*, *db_instance_class*, *engine*, *master_username*, *master_user_password*, *db_name=None*, *db_security_groups=None*, *vpc_security_group_ids=None*, *availability_zone=None*, *db_subnet_group_name=None*, *preferred_maintenance_window=None*, *db_parameter_group_name=None*, *backup_retention_period=None*, *preferred_backup_window=None*, *port=None*, *multi_az=None*, *engine_version=None*, *auto_minor_version_upgrade=None*, *license_model=None*, *iops=None*, *option_group_name=None*, *character_set_name=None*, *publicly_accessible=None*, *wait_status=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create an RDS

CLI example to create an RDS:

```
salt myminion boto_rds.create myrds 10 db.t2.micro MySQL sqlusr sqlpassw
```

salt.modules.boto_rds.**create_option_group**(*name*, *engine_name*, *major_engine_version*, *option_group_description*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create an RDS option group

CLI example to create an RDS option group:

```
salt myminion boto_rds.create_option_group my-opt-group mysql 5.6
↪"group description"
```

salt.modules.boto_rds.**create_parameter_group**(*name*, *db_parameter_group_family*, *description*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create an RDS parameter group

CLI example to create an RDS parameter group:

```
salt myminion boto_rds.create_parameter_group my-param-group mysql5.6
↪   "group description"
```

salt.modules.boto_rds.**create_read_replica**(*name*, *source_name*, *db_instance_class=None*, *availability_zone=None*, *port=None*, *auto_minor_version_upgrade=None*, *iops=None*, *option_group_name=None*, *publicly_accessible=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create an RDS read replica

CLI example to create an RDS read replica:

```
salt myminion boto_rds.create_read_replica replicaname source_name
```

salt.modules.boto_rds.**create_subnet_group**(*name*, *description*, *subnet_ids*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create an RDS subnet group

CLI example to create an RDS subnet group:

```
salt myminion boto_rds.create_subnet_group my-subnet-group "group
↪description" '[subnet-12345678, subnet-87654321]' region=us-east-1
```

salt.modules.boto_rds.**delete**(*name*, *skip_final_snapshot=None*, *final_db_snapshot_identifier=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *wait_for_deletion=True*, *timeout=180*)

Delete an RDS instance.

CLI example:

```
salt myminion boto_rds.delete myrds skip_final_snapshot=True
↪region=us-east-1
```

salt.modules.boto_rds.**delete_option_group**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete an RDS option group.

CLI example:

```
salt myminion boto_rds.delete_option_group my-opt-group                    region=us-
↪east-1
```

salt.modules.boto_rds.**delete_parameter_group**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete an RDS parameter group.

CLI example:

```
salt myminion boto_rds.delete_parameter_group my-param-group                
↪region=us-east-1
```

salt.modules.boto_rds.**delete_subnet_group**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete an RDS subnet group.

CLI example:

```
salt myminion boto_rds.delete_subnet_group my-subnet-group                 
↪region=us-east-1
```

salt.modules.boto_rds.**describe**(*name*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Return RDS instance details.

CLI example:

```
salt myminion boto_rds.describe myrds
```

salt.modules.boto_rds.**exists**(*name*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check to see if an RDS exists.

CLI example:

```
salt myminion boto_rds.exists myrds region=us-east-1
```

salt.modules.boto_rds.**get_endpoint**(*name*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Return the enpoint of an RDS instance.

CLI example:

```
salt myminion boto_rds.get_endpoint myrds
```

salt.modules.boto_rds.**option_group_exists**(*name*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check to see if an RDS option group exists.

CLI example:

```
salt myminion boto_rds.option_group_exists myoptiongr region=us-east-1
```

salt.modules.boto_rds.**parameter_group_exists**(*name*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check to see if an RDS parameter group exists.

CLI example:

```
salt myminion boto_rds.parameter_group_exists myparametergroup
 ↪region=us-east-1
```

salt.modules.boto_rds.**subnet_group_exists**(*name*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check to see if an RDS subnet group exists.

CLI example:

```
salt myminion boto_rds.subnet_group_exists my-param-group
 ↪region=us-east-1
```

salt.modules.boto_rds.**update_parameter_group**(*name*, *parameters*, *apply_method='pending-reboot'*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Update an RDS parameter group.

CLI example:

```
salt myminion boto_rds.update_parameter_group my-param-group
 ↪parameters='{"back_log":1, "binlog_cache_size":4096}'
 ↪east-1
```

### 13.6.31 salt.modules.boto_route53

Connection module for Amazon Route53

New in version 2014.7.0.

**configuration** This module accepts explicit route53 credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-
 ↪ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
route53.keyid: GKTADJGHEIQSXMKKRBJ08H
route53.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

A region may also be specified in the configuration:

```
route53.region: us-east-1
```

If a region is not specified, the default is `universal', which is what the boto_route53 library expects, rather than None.

It's also possible to specify key, keyid and region via a profile, either as a passed in dict, or as a string to pull from pillars or minion config:

```
myprofile:
  keyid: GKTADJGHEIQSXMKKRBJ08H
  key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
  region: us-east-1
```

**depends** boto

salt.modules.boto_route53.**add_record**(*name*, *value*, *zone*, *record_type*, *identifier=None*, *ttl=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *wait_for_sync=True*, *split_dns=False*, *private_zone=False*, *retry_on_rate_limit=True*, *rate_limit_retries=5*)

Add a record to a zone.

CLI example:

```
salt myminion boto_route53.add_record test.example.org 1.1.1.1 example.org A
```

salt.modules.boto_route53.**create_zone**(*zone*, *private=False*, *vpc_id=None*, *vpc_region=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create a Route53 hosted zone.

New in version 2015.8.0.
**zone** DNZ zone to create
**private** True/False if the zone will be a private zone
**vpc_id** VPC ID to associate the zone to (required if private is True)
**vpc_region** VPC Region (required if private is True)
**region** region endpoint to connect to
**key** AWS key
**keyid** AWS keyid
**profile** AWS pillar profile
CLI Example:

```
salt myminion boto_route53.create_zone example.org
```

salt.modules.boto_route53.**delete_record**(*name*, *zone*, *record_type*, *identifier=None*, *all_records=False*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *wait_for_sync=True*, *split_dns=False*, *private_zone=False*, *retry_on_rate_limit=True*, *rate_limit_retries=5*)

Modify a record in a zone.

CLI example:

```
salt myminion boto_route53.delete_record test.example.org example.org A
```

salt.modules.boto_route53.**delete_zone**(*zone*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete a Route53 hosted zone.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_route53.delete_zone example.org
```

salt.modules.boto_route53.**get_record**(*name*, *zone*, *record_type*, *fetch_all=False*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *split_dns=False*, *private_zone=False*, *retry_on_rate_limit=True*, *rate_limit_retries=5*)

Get a record from a zone.

CLI example:

```
salt myminion boto_route53.get_record test.example.org example.org A
```

salt.modules.boto_route53.**update_record**(*name*, *value*, *zone*, *record_type*, *identifier=None*, *ttl=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *wait_for_sync=True*, *split_dns=False*, *private_zone=False*, *retry_on_rate_limit=True*, *rate_limit_retries=5*)

Modify a record in a zone.

CLI example:

```
salt myminion boto_route53.modify_record test.example.org 1.1.1.1 example.org A
```

salt.modules.boto_route53.**zone_exists**(*zone*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *retry_on_rate_limit=True*, *rate_limit_retries=5*)

Check for the existence of a Route53 hosted zone.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_route53.zone_exists example.org
```

### 13.6.32 salt.modules.boto_secgroup

Connection module for Amazon Security Groups

New in version 2014.7.0.

**configuration** This module accepts explicit ec2 credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-
↪ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
secgroup.keyid: GKTADJGHEIQSXMKKRBJ08H
secgroup.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

A region may also be specified in the configuration:

```
secgroup.region: us-east-1
```

If a region is not specified, the default is us-east-1.

It's also possible to specify key, keyid and region via a profile, either as a passed in dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

**depends** boto

salt.modules.boto_secgroup.**authorize**(*name=None, source_group_name=None, source_group_owner_id=None, ip_protocol=None, from_port=None, to_port=None, cidr_ip=None, group_id=None, source_group_group_id=None, region=None, key=None, keyid=None, profile=None, vpc_id=None, vpc_name=None, egress=False*)

Add a new rule to an existing security group.

CLI example:

```
salt myminion boto_secgroup.authorize mysecgroup ip_protocol=tcp from_port=80 to_
↪port=80 cidr_ip='['10.0.0.0/8', '192.168.0.0/24']'
```

salt.modules.boto_secgroup.**convert_to_group_ids**(*groups, vpc_id, vpc_name=None, region=None, key=None, keyid=None, profile=None*)

Given a list of security groups and a vpc_id, convert_to_group_ids will convert all list items in the given list to security group ids.

CLI example:

```
salt myminion boto_secgroup.convert_to_group_ids mysecgroup vpc-89yhh7h
```

salt.modules.boto_secgroup.**create**(*name, description, vpc_id=None, vpc_name=None, region=None, key=None, keyid=None, profile=None*)

Create a security group.

CLI example:

```
salt myminion boto_secgroup.create mysecgroup 'My Security Group'
```

salt.modules.boto_secgroup.**delete**(*name=None, group_id=None, region=None, key=None, keyid=None, profile=None, vpc_id=None, vpc_name=None*)

Delete a security group.

CLI example:

```
salt myminion boto_secgroup.delete mysecgroup
```

salt.modules.boto_secgroup.**delete_tags**(*tags, name=None, group_id=None, vpc_name=None, vpc_id=None, region=None, key=None, keyid=None, profile=None*)

deletes tags from a security group

New in version 2016.3.0.
**tags** a list of tags to remove
**name** the name of the security group
**group_id** the group id of the security group (in lie of a name/vpc combo)
**vpc_name** the name of the vpc to search the named group for
**vpc_id** the id of the vpc, in lieu of the vpc_name
**region** the amazon region
**key** amazon key
**keyid** amazon keyid
**profile** amazon profile
CLI example:

```
salt myminion boto_secgroup.delete_tags ['TAG_TO_DELETE1','TAG_TO_DELETE2']
↪security_group_name vpc_id=vpc-13435 profile=my_aws_profile
```

salt.modules.boto_secgroup.**exists**(*name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *vpc_id=None*, *vpc_name=None*, *group_id=None*)

Check to see if a security group exists.

CLI example:

```
salt myminion boto_secgroup.exists mysecgroup
```

salt.modules.boto_secgroup.**get_config**(*name=None*, *group_id=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *vpc_id=None*, *vpc_name=None*)

Get the configuration for a security group.

CLI example:

```
salt myminion boto_secgroup.get_config mysecgroup
```

salt.modules.boto_secgroup.**get_group_id**(*name*, *vpc_id=None*, *vpc_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get a Group ID given a Group Name or Group Name and VPC ID

CLI example:

```
salt myminion boto_secgroup.get_group_id mysecgroup
```

salt.modules.boto_secgroup.**revoke**(*name=None*, *source_group_name=None*, *source_group_owner_id=None*, *ip_protocol=None*, *from_port=None*, *to_port=None*, *cidr_ip=None*, *group_id=None*, *source_group_group_id=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *vpc_id=None*, *vpc_name=None*, *egress=False*)

Remove a rule from an existing security group.

CLI example:

```
salt myminion boto_secgroup.revoke mysecgroup ip_protocol=tcp from_port=80 to_
↪port=80 cidr_ip='10.0.0.0/8'
```

salt.modules.boto_secgroup.**set_tags**(*tags*, *name=None*, *group_id=None*, *vpc_name=None*, *vpc_id=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

sets tags on a security group

New in version 2016.3.0.

**tags** a dict of key:value pair of tags to set on the security group
**name** the name of the security gruop
**group_id** the group id of the security group (in lie of a name/vpc combo)
**vpc_name** the name of the vpc to search the named group for
**vpc_id** the id of the vpc, in lieu of the vpc_name
**region** the amazon region
**key** amazon key
**keyid** amazon keyid
**profile** amazon profile
CLI example:

```
salt myminion boto_secgroup.set_tags "{'TAG1': 'Value1', 'TAG2': 'Value2'}"
↪security_group_name vpc_id=vpc-13435 profile=my_aws_profile
```

### 13.6.33 salt.modules.boto_sns

Connection module for Amazon SNS

**configuration** This module accepts explicit sns credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-
↪ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
sns.keyid: GKTADJGHEIQSXMKKRBJ08H
sns.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

A region may also be specified in the configuration:

```
sns.region: us-east-1
```

If a region is not specified, the default is us-east-1.

It's also possible to specify key, keyid and region via a profile, either as a passed in dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

**depends** boto

salt.modules.boto_sns.**create**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)
Create an SNS topic.

CLI example to create a topic:

```
salt myminion boto_sns.create mytopic region=us-east-1
```

salt.modules.boto_sns.**delete**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)
Delete an SNS topic.

CLI example to delete a topic:

```
salt myminion boto_sns.delete mytopic region=us-east-1
```

salt.modules.boto_sns.**exists**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)
Check to see if an SNS topic exists.

CLI example:

```
salt myminion boto_sns.exists mytopic region=us-east-1
```

salt.modules.boto_sns.**get_all_subscriptions_by_topic**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)
Get list of all subscriptions to a specific topic.

CLI example to delete a topic:

```
salt myminion boto_sns.get_all_subscriptions_by_topic mytopic region=us-east-1
```

salt.modules.boto_sns.**get_all_topics**(*region=None*, *key=None*, *keyid=None*, *profile=None*)
Returns a list of the all topics..

CLI example:

```
salt myminion boto_sns.get_all_topics
```

salt.modules.boto_sns.**get_arn**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)
Returns the full ARN for a given topic name.

CLI example:

```
salt myminion boto_sns.get_arn mytopic
```

salt.modules.boto_sns.**subscribe**(*topic*, *protocol*, *endpoint*, *region=None*, *key=None*, *keyid=None*, *profile=None*)
Subscribe to a Topic.

CLI example to delete a topic:

```
salt myminion boto_sns.subscribe mytopic https https://www.example.com/sns-
↪endpoint region=us-east-1
```

### 13.6.34 salt.modules.boto_sqs

Connection module for Amazon SQS

New in version 2014.7.0.

**configuration** This module accepts explicit sqs credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-
↪ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
sqs.keyid: GKTADJGHEIQSXMKKRBJ08H
sqs.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

A region may also be specified in the configuration:

```
sqs.region: us-east-1
```

If a region is not specified, the default is us-east-1.

It's also possible to specify key, keyid and region via a profile, either as a passed in dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

**depends** boto

salt.modules.boto_sqs.**create**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)
Create an SQS queue.

CLI example to create a queue:

```
salt myminion boto_sqs.create myqueue region=us-east-1
```

salt.modules.boto_sqs.**delete**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)
Delete an SQS queue.

CLI example to delete a queue:

```
salt myminion boto_sqs.delete myqueue region=us-east-1
```

salt.modules.boto_sqs.**exists**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)
Check to see if a queue exists.

CLI example:

```
salt myminion boto_sqs.exists myqueue region=us-east-1
```

salt.modules.boto_sqs.**get_attributes**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)
Check to see if attributes are set on an SQS queue.

CLI example:

```
salt myminion boto_sqs.get_attributes myqueue
```

salt.modules.boto_sqs.**set_attributes**(*name*, *attributes*, *region=None*, *key=None*, *keyid=None*, *profile=None*)
Set attributes on an SQS queue.

CLI example to set attributes on a queue:

```
salt myminion boto_sqs.set_attributes myqueue '{ReceiveMessageWaitTimeSeconds: 20}
↪' region=us-east-1
```

### 13.6.35 salt.modules.boto_vpc

Connection module for Amazon VPC

New in version 2014.7.0.

**configuration** This module accepts explicit VPC credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-
↪ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
vpc.keyid: GKTADJGHEIQSXMKKRBJ08H
vpc.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

A region may also be specified in the configuration:

```
vpc.region: us-east-1
```

If a region is not specified, the default is us-east-1.

It's also possible to specify key, keyid and region via a profile, either as a passed in dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

Changed in version 2015.8.0: All methods now return a dictionary. Create and delete methods return:

```
created: true
```

or

```
created: false
error:
  message: error message
```

Request methods (e.g., *describe_vpc*) return:

```
vpcs:
  - {...}
  - {...}
```

or

```
error:
  message: error message
```

**depends** boto

salt.modules.boto_vpc.**associate_dhcp_options_to_vpc**(*dhcp_options_id*, *vpc_id=None*, *vpc_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given valid DHCP options id and a valid VPC id, associate the DHCP options record with the VPC.

Returns True if the DHCP options record were associated and returns False if the DHCP options record was not associated.

CLI Example:

```
salt myminion boto_vpc.associate_dhcp_options_to_vpc 'dhcp-a0bl34pp' 'vpc-6b1fe402
↪'
```

salt.modules.boto_vpc.**associate_network_acl_to_subnet**(*network_acl_id=None*, *subnet_id=None*, *network_acl_name=None*, *subnet_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a network acl and subnet ids or names, associate a network acl to a subnet.

CLI Example:

```
salt myminion boto_vpc.associate_network_acl_to_subnet \
        network_acl_id='acl-5fb85d36' subnet_id='subnet-6a1fe403'
```

```
salt myminion boto_vpc.associate_network_acl_to_subnet \
        network_acl_id='myacl' subnet_id='mysubnet'
```

salt.modules.boto_vpc.**associate_new_dhcp_options_to_vpc**(*vpc_id*, *domain_name=None*, *domain_name_servers=None*, *ntp_servers=None*, *netbios_name_servers=None*, *netbios_node_type=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

..**deprecated**:: **Carbon** This function has been deprecated in favor of *boto_vpc.create_dhcp_options*, which now takes vpc_id or vpc_name as kwargs.

This function will be removed in the Salt Carbon release.

Given valid DHCP options and a valid VPC id, create and associate the DHCP options record with the VPC.

CLI Example:

```
salt myminion boto_vpc.associate_new_dhcp_options_to_vpc 'vpc-6b1fe402' domain_
↪name='example.com' domain_name_servers='[1.2.3.4]' ntp_servers='[5.6.7.8]'
↪netbios_name_servers='[10.0.0.1]' netbios_node_type=1
```

salt.modules.boto_vpc.**associate_new_network_acl_to_subnet**(*vpc_id*, *subnet_id*, *network_acl_name=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

..**deprecated**:: **Carbon** This function has been deprecated in favor of *boto_vpc.create_network_acl*, which now takes subnet_id or subnet_name as kwargs.

This function will be removed in the Salt Carbon release.

Given a vpc ID and a subnet ID, associates a new network act to a subnet.

Returns a dictionary containing the network acl id and the new association id if successful. If unsuccessful, returns False.

CLI Example:

```
salt myminion boto_vpc.associate_new_network_acl_to_subnet 'vpc-6b1fe402' 'subnet-
↪6a1fe403'
```

salt.modules.boto_vpc.**associate_route_table**(*route_table_id=None*, *subnet_id=None*, *route_table_name=None*, *subnet_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a route table and subnet name or id, associates the route table with the subnet.

CLI Example:

```
salt myminion boto_vpc.associate_route_table 'rtb-1f382e7d' 'subnet-6a1fe403'
```

```
salt myminion boto_vpc.associate_route_table route_table_name='myrtb' \
        subnet_name='mysubnet'
```

```
```

salt.modules.boto_vpc.**check_vpc**(*vpc_id=None*, *vpc_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check whether a VPC with the given name or id exists. Returns the vpc_id or None. Raises SaltInvocationError if both vpc_id and vpc_name are None. Optionally raise a CommandExecutionError if the VPC does not exist.

New in version 2016.3.0.

CLI Example:

```
salt myminion boto_vpc.check_vpc vpc_name=myvpc profile=awsprofile
```

salt.modules.boto_vpc.**create**(*cidr_block*, *instance_tenancy=None*, *vpc_name=None*, *enable_dns_support=None*, *enable_dns_hostnames=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a valid CIDR block, create a VPC.

An optional instance_tenancy argument can be provided. If provided, the valid values are `default' or `dedicated'

An optional vpc_name argument can be provided.

Returns {created: true} if the VPC was created and returns {created: False} if the VPC was not created.

CLI Example:

```
salt myminion boto_vpc.create '10.0.0.0/24'
```

salt.modules.boto_vpc.**create_customer_gateway**(*vpn_connection_type*, *ip_address*, *bgp_asn*, *customer_gateway_name=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a valid VPN connection type, a static IP address and a customer gateway's Border Gateway Protocol (BGP) Autonomous System Number, create a customer gateway.

Returns the customer gateway id if the customer gateway was created and returns False if the customer gateway was not created.

CLI Example:

```
salt myminion boto_vpc.create_customer_gateway 'ipsec.1', '12.1.2.3', 65534
```

salt.modules.boto_vpc.**create_dhcp_options**(*domain_name=None*, *domain_name_servers=None*, *ntp_servers=None*, *netbios_name_servers=None*, *netbios_node_type=None*, *dhcp_options_name=None*, *tags=None*, *vpc_id=None*, *vpc_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given valid DHCP options, create a DHCP options record, optionally associating it with an existing VPC.

Returns True if the DHCP options record was created and returns False if the DHCP options record was not deleted.

Changed in version 2015.8.0: Added vpc_name and vpc_id arguments

CLI Example:

```
salt myminion boto_vpc.create_dhcp_options domain_name='example.com' \
        domain_name_servers='[1.2.3.4]' ntp_servers='[5.6.7.8]' \
```

```
        netbios_name_servers='[10.0.0.1]' netbios_node_type=1 \
        vpc_name='myvpc'
```

salt.modules.boto_vpc.**create_internet_gateway**(*internet_gateway_name=None*, *vpc_id=None*, *vpc_name=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Create an Internet Gateway, optionally attaching it to an existing VPC.

Returns the internet gateway id if the internet gateway was created and returns False if the internet gateways was not created.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_vpc.create_internet_gateway \
        internet_gateway_name=myigw vpc_name=myvpc
```

salt.modules.boto_vpc.**create_network_acl**(*vpc_id=None*, *vpc_name=None*, *network_acl_name=None*, *subnet_id=None*, *subnet_name=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a vpc_id, creates a network acl.

Returns the network acl id if successful, otherwise returns False.

Changed in version 2015.8.0: Added vpc_name, subnet_id, and subnet_name arguments

CLI Example:

```
salt myminion boto_vpc.create_network_acl 'vpc-6b1fe402'
```

salt.modules.boto_vpc.**create_network_acl_entry**(*network_acl_id=None*, *rule_number=None*, *protocol=None*, *rule_action=None*, *cidr_block=None*, *egress=None*, *network_acl_name=None*, *icmp_code=None*, *icmp_type=None*, *port_range_from=None*, *port_range_to=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Creates a network acl entry.

CLI Example:

```
salt myminion boto_vpc.create_network_acl_entry 'acl-5fb85d36' '32767' \
        'all' 'deny' '0.0.0.0/0' egress=true
```

salt.modules.boto_vpc.**create_route**(*route_table_id=None*, *destination_cidr_block=None*, *route_table_name=None*, *gateway_id=None*, *internet_gateway_name=None*, *instance_id=None*, *interface_id=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Creates a route.

CLI Example:

```
salt myminion boto_vpc.create_route 'rtb-1f382e7d' '10.0.0.0/16' gateway_id='vgw-
↪a1b2c3'
```

salt.modules.boto_vpc.**create_route_table**(*vpc_id=None*, *vpc_name=None*, *route_table_name=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Creates a route table.

Changed in version 2015.8.0: Added vpc_name argument

CLI Examples:

```
salt myminion boto_vpc.create_route_table vpc_id='vpc-6b1fe402' \
        route_table_name='myroutetable'
salt myminion boto_vpc.create_route_table vpc_name='myvpc' \
        route_table_name='myroutetable'
```

salt.modules.boto_vpc.**create_subnet**(*vpc_id=None*, *cidr_block=None*, *vpc_name=None*, *availability_zone=None*, *subnet_name=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a valid VPC ID or Name and a CIDR block, create a subnet for the VPC.

An optional availability zone argument can be provided.

Returns True if the VPC subnet was created and returns False if the VPC subnet was not created.

Changed in version 2015.8.0: Added vpc_name argument

CLI Examples:

```
salt myminion boto_vpc.create_subnet vpc_id='vpc-6b1fe402' \
        subnet_name='mysubnet' cidr_block='10.0.0.0/25'
salt myminion boto_vpc.create_subnet vpc_name='myvpc' \
        subnet_name='mysubnet', cidr_block='10.0.0.0/25'
```

salt.modules.boto_vpc.**customer_gateway_exists**(*customer_gateway_id=None*, *customer_gateway_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a customer gateway ID, check if the customer gateway ID exists.

Returns True if the customer gateway ID exists; Returns False otherwise.

CLI Example:

```
salt myminion boto_vpc.customer_gateway_exists cgw-b6a247df
salt myminion boto_vpc.customer_gateway_exists customer_gatway_name=mycgw
```

salt.modules.boto_vpc.**delete**(*vpc_id=None*, *name=None*, *vpc_name=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a VPC ID or VPC name, delete the VPC.

Returns {deleted: true} if the VPC was deleted and returns {deleted: false} if the VPC was not deleted.

CLI Example:

```
salt myminion boto_vpc.delete vpc_id='vpc-6b1fe402'
salt myminion boto_vpc.delete name='myvpc'
```

salt.modules.boto_vpc.**delete_customer_gateway**(*customer_gateway_id=None*, *customer_gateway_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a customer gateway ID or name, delete the customer gateway.

Returns True if the customer gateway was deleted and returns False if the customer gateway was not deleted.

Changed in version 2015.8.0: Added customer_gateway_name argument

CLI Example:

```
salt myminion boto_vpc.delete_customer_gateway 'cgw-b6a247df'
```

salt.modules.boto_vpc.**delete_dhcp_options**(*dhcp_options_id=None*, *dhcp_options_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete dhcp options by id or name.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_vpc.delete_dhcp_options 'dopt-b6a247df'
```

salt.modules.boto_vpc.**delete_internet_gateway**(*internet_gateway_id=None*, *internet_gateway_name=None*, *detach=False*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete an internet gateway (by name or id).

Returns True if the internet gateway was deleted and otherwise False.

New in version 2015.8.0.

CLI Examples:

```
salt myminion boto_vpc.delete_internet_gateway internet_gateway_id=igw-1a2b3c
salt myminion boto_vpc.delete_internet_gateway internet_gateway_name=myigw
```

salt.modules.boto_vpc.**delete_network_acl**(*network_acl_id=None*, *network_acl_name=None*, *disassociate=False*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Delete a network acl based on the network_acl_id or network_acl_name provided.

CLI Examples:

```
salt myminion boto_vpc.delete_network_acl network_acl_id='acl-5fb85d36' \
        disassociate=false
```

```
salt myminion boto_vpc.delete_network_acl network_acl_name='myacl' \
        disassociate=true
```

salt.modules.boto_vpc.**delete_network_acl_entry**(*network_acl_id=None*, *rule_number=None*, *egress=None*, *network_acl_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Deletes a network acl entry.

CLI Example:

```
salt myminion boto_vpc.delete_network_acl_entry 'acl-5fb85d36' '32767'
```

salt.modules.boto_vpc.**delete_route**(*route_table_id=None*, *destination_cidr_block=None*, *route_table_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Deletes a route.

CLI Example:

```
salt myminion boto_vpc.delete_route 'rtb-1f382e7d' '10.0.0.0/16'
```

salt.modules.boto_vpc.**delete_route_table**(*route_table_id=None*, *route_table_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Deletes a route table.

CLI Examples:

```
salt myminion boto_vpc.delete_route_table route_table_id='rtb-1f382e7d'
salt myminion boto_vpc.delete_route_table route_table_name='myroutetable'
```

salt.modules.boto_vpc.**delete_subnet**(*subnet_id=None*, *subnet_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a subnet ID or name, delete the subnet.

Returns True if the subnet was deleted and returns False if the subnet was not deleted.

Changed in version 2015.8.0: Added subnet_name argument

CLI Example:

```
salt myminion boto_vpc.delete_subnet 'subnet-6a1fe403'
```

salt.modules.boto_vpc.**describe**(*vpc_id=None*, *vpc_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a VPC ID describe its properties.

Returns a dictionary of interesting properties.

Changed in version 2015.8.0: Added vpc_name argument

CLI Example:

```
salt myminion boto_vpc.describe vpc_id=vpc-123456
salt myminion boto_vpc.describe vpc_name=myvpc
```

salt.modules.boto_vpc.**describe_route_table**(*route_table_id=None*, *route_table_name=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given route table properties, return route table details if matching table(s) exist.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_vpc.describe_route_table route_table_id='rtb-1f382e7d'
```

salt.modules.boto_vpc.**describe_subnet**(*subnet_id=None*, *subnet_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a subnet id or name, describe its properties.

Returns a dictionary of interesting properties.

New in version 2015.8.0.

CLI Examples:

```
salt myminion boto_vpc.describe_subnet subnet_id=subnet-123456
salt myminion boto_vpc.describe_subnet subnet_name=mysubnet
```

salt.modules.boto_vpc.**describe_subnets**(*subnet_ids=None*, *subnet_names=None*, *vpc_id=None*, *cidr=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a VPC ID or subnet CIDR, returns a list of associated subnets and their details. Return all subnets if VPC ID or CIDR are not provided. If a subnet id or CIDR is provided, only its associated subnet details will be returned.

New in version 2015.8.0.

CLI Examples:

```
salt myminion boto_vpc.describe_subnets
```

```
salt myminion boto_vpc.describe_subnets subnet_ids=['subnet-ba1987ab', 'subnet-
↪ba1987cd']
```

```
salt myminion boto_vpc.describe_subnets vpc_id=vpc-123456
```

```
salt myminion boto_vpc.describe_subnets cidr=10.0.0.0/21
```

salt.modules.boto_vpc.**describe_vpcs**(*vpc_id=None*, *name=None*, *cidr=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Describe all VPCs, matching the filter criteria if provided.

Returns a a list of dictionaries with interesting properties.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_vpc.describe_vpcs
```

salt.modules.boto_vpc.**dhcp_options_exists**(*dhcp_options_id=None*, *name=None*, *dhcp_options_name=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check if a dhcp option exists.

Returns True if the dhcp option exists; Returns False otherwise.

CLI Example:

```
salt myminion boto_vpc.dhcp_options_exists dhcp_options_id='dhcp-a0bl34pp'
```

salt.modules.boto_vpc.**disassociate_network_acl**(*subnet_id=None*, *vpc_id=None*, *subnet_name=None*, *vpc_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a subnet ID, disassociates a network acl.

CLI Example:

```
salt myminion boto_vpc.disassociate_network_acl 'subnet-6a1fe403'
```

salt.modules.boto_vpc.**disassociate_route_table**(*association_id*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Dissassociates a route table.

**association_id** The Route Table Association ID to disassociate

CLI Example:

```
salt myminion boto_vpc.disassociate_route_table 'rtbassoc-d8ccddba'
```

salt.modules.boto_vpc.**exists**(*vpc_id=None*, *name=None*, *cidr=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a VPC ID, check to see if the given VPC ID exists.

Returns True if the given VPC ID exists and returns False if the given VPC ID does not exist.

CLI Example:

```
salt myminion boto_vpc.exists myvpc
```

salt.modules.boto_vpc.**get_dhcp_options**(*dhcp_options_name=None*, *dhcp_options_id=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Return a dict with the current values of the requested DHCP options set

CLI Example:

```
salt myminion boto_vpc.get_dhcp_options 'myfunnydhcpoptionsname'
```

New in version 2016.3.0.

salt.modules.boto_vpc.**get_id**(*name=None*, *cidr=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given VPC properties, return the VPC id if a match is found.

CLI Example:

```
salt myminion boto_vpc.get_id myvpc
```

salt.modules.boto_vpc.**get_resource_id**(*resource*, *name=None*, *resource_id=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Get an AWS id for a VPC resource by type and name.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_vpc.get_resource_id internet_gateway myigw
```

salt.modules.boto_vpc.**get_subnet_association**(*subnets*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a subnet (aka: a vpc zone identifier) or list of subnets, returns vpc association.

Returns a VPC ID if the given subnets are associated with the same VPC ID. Returns False on an error or if the given subnets are associated with different VPC IDs.

CLI Examples:

```
salt myminion boto_vpc.get_subnet_association subnet-61b47516
```

```
salt myminion boto_vpc.get_subnet_association ['subnet-61b47516','subnet-2cb9785b
↪']
```

salt.modules.boto_vpc.**network_acl_exists**(*network_acl_id=None*, *name=None*, *network_acl_name=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Checks if a network acl exists.

Returns True if the network acl exists or returns False if it doesn't exist.

CLI Example:

```
salt myminion boto_vpc.network_acl_exists network_acl_id='acl-5fb85d36'
```

salt.modules.boto_vpc.**replace_network_acl_entry**(*network_acl_id=None*, *rule_number=None*, *protocol=None*, *rule_action=None*, *cidr_block=None*, *egress=None*, *network_acl_name=None*, *icmp_code=None*, *icmp_type=None*, *port_range_from=None*, *port_range_to=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Replaces a network acl entry.

CLI Example:

```
salt myminion boto_vpc.replace_network_acl_entry 'acl-5fb85d36' '32767' \
        'all' 'deny' '0.0.0.0/0' egress=true
```

salt.modules.boto_vpc.**replace_route**(*route_table_id=None*, *destination_cidr_block=None*, *route_table_name=None*, *gateway_id=None*, *instance_id=None*, *interface_id=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Replaces a route.

CLI Example:

```
salt myminion boto_vpc.replace_route 'rtb-1f382e7d' '10.0.0.0/16' gateway_id='vgw-
↪a1b2c3'
```

salt.modules.boto_vpc.**replace_route_table_association**(*association_id*, *route_table_id*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Replaces a route table association.

CLI Example:

```
salt myminion boto_vpc.replace_route_table_association 'rtbassoc-d8ccddba' 'rtb-
↪1f382e7d'
```

salt.modules.boto_vpc.**resource_exists**(*resource*, *name=None*, *resource_id=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Given a resource type and name, return {exists: true} if it exists, {exists: false} if it does not exist, or {error: {message: error text} on error.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_vpc.resource_exists internet_gateway myigw
```

salt.modules.boto_vpc.**route_exists**(*destination_cidr_block*, *route_table_name=None*, *route_table_id=None*, *gateway_id=None*, *instance_id=None*, *interface_id=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Checks if a route exists.

New in version 2015.8.0.

CLI Example:

```
salt myminion boto_vpc.route_exists destination_cidr_block='10.0.0.0/20' gateway_
↪id='local' route_table_name='test'
```

salt.modules.boto_vpc.**route_table_exists**(*route_table_id=None*, *name=None*, *route_table_name=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Checks if a route table exists.

CLI Example:

```
salt myminion boto_vpc.route_table_exists route_table_id='rtb-1f382e7d'
```

salt.modules.boto_vpc.**subnet_exists**(*subnet_id=None*, *name=None*, *subnet_name=None*, *cidr=None*, *tags=None*, *zones=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Check if a subnet exists.

Returns True if the subnet exists, otherwise returns False.

Changed in version 2015.8.0: Added subnet_name argument Deprecated name argument

CLI Example:

```
salt myminion boto_vpc.subnet_exists subnet_id='subnet-6a1fe403'
```

### 13.6.36 salt.modules.bower

#### Manage and query Bower packages

This module manages the installed packages using Bower. Note that npm, git and bower must be installed for this module to be available.

salt.modules.bower.**install**(*pkg*, *dir*, *pkgs=None*, *runas=None*, *env=None*)

Install a Bower package.

If no package is specified, the dependencies (from bower.json) of the package in the given directory will be installed.

**pkg** A package name in any format accepted by Bower, including a version identifier

**dir** The target directory in which to install the package

**pkgs** A list of package names in the same format as the `pkg` parameter

**runas** The user to run Bower with

**env** Environment variables to set when invoking Bower. Uses the same `env` format as the *cmd.run* execution function.

CLI Example:

```
salt '*' bower.install underscore /path/to/project

salt '*' bower.install jquery#2.0 /path/to/project
```

salt.modules.bower.**list**(*dir*, *runas=None*, *env=None*)

List installed Bower packages.

**dir** The directory whose packages will be listed

**runas** The user to run Bower with

**env** Environment variables to set when invoking Bower. Uses the same `env` format as the *cmd.run* execution function.

CLI Example:

```
salt '*' bower.list /path/to/project
```

salt.modules.bower.**uninstall**(*pkg*, *dir*, *runas=None*, *env=None*)

Uninstall a Bower package.

**pkg** A package name in any format accepted by Bower

**dir** The target directory from which to uninstall the package

**runas** The user to run Bower with

**env** Environment variables to set when invoking Bower. Uses the same `env` format as the *cmd.run* execution function.

CLI Example:

```
salt '*' bower.uninstall underscore /path/to/project
```

### 13.6.37 salt.modules.bridge

Module for gathering and managing bridging information

salt.modules.bridge.**add**(*br=None*)

Creates a bridge

CLI Example:

```
salt '*' bridge.add br0
```

salt.modules.bridge.**addif**(*br=None*, *iface=None*)

Adds an interface to a bridge

CLI Example:

```
salt '*' bridge.addif br0 eth0
```

salt.modules.bridge.**delete**(*br=None*)

Deletes a bridge

CLI Example:

```
salt '*' bridge.delete br0
```

salt.modules.bridge.**delif**(*br=None*, *iface=None*)

Removes an interface from a bridge

CLI Example:

```
salt '*' bridge.delif br0 eth0
```

salt.modules.bridge.**find_interfaces**(**args*)

Returns the bridge to which the interfaces are bond to

CLI Example:

```
salt '*' bridge.find_interfaces eth0 [eth1...]
```

salt.modules.bridge.**interfaces**(*br=None*)

Returns interfaces attached to a bridge

CLI Example:

```
salt '*' bridge.interfaces br0
```

salt.modules.bridge.**list**()
Returns the machine's bridges list

CLI Example:

```
salt '*' bridge.list
```

salt.modules.bridge.**show**(*br=None*)
Returns bridges interfaces along with enslaved physical interfaces. If no interface is given, all bridges are shown, else only the specified bridge values are returned.

CLI Example:

```
salt '*' bridge.show
salt '*' bridge.show br0
```

salt.modules.bridge.**stp**(*br=None*, *state='disable'*, *iface=None*)
Sets Spanning Tree Protocol state for a bridge

CLI Example:

```
salt '*' bridge.stp br0 enable
salt '*' bridge.stp br0 disable
```

For BSD-like operating systems, it is required to add the interface on which to enable the STP.

CLI Example:

```
salt '*' bridge.stp bridge0 enable fxp0
salt '*' bridge.stp bridge0 disable fxp0
```

### 13.6.38 salt.modules.bsd_shadow

Manage the password database on BSD systems

---

**Important**: If you feel that Salt should be using this module to manage passwords on a minion, and it is using a different module (or gives an error similar to *`shadow.info' is not available*), see *here*.

---

salt.modules.bsd_shadow.**default_hash**()
Returns the default hash used for unset passwords

CLI Example:

```
salt '*' shadow.default_hash
```

salt.modules.bsd_shadow.**del_password**(*name*)
New in version 2015.8.2.

Delete the password from name user

CLI Example:

```
salt '*' shadow.del_password username
```

salt.modules.bsd_shadow.**info**(*name*)
Return information for the specified user

CLI Example:

```
salt '*' shadow.info someuser
```

salt.modules.bsd_shadow.**set_change**(*name*, *change*)
Sets the time at which the password expires (in seconds since the UNIX epoch). See `man 8 usermod` on NetBSD and OpenBSD or `man 8 pw` on FreeBSD.

A value of `0` sets the password to never expire.

CLI Example:

```
salt '*' shadow.set_change username 1419980400
```

salt.modules.bsd_shadow.**set_expire**(*name*, *expire*)
Sets the time at which the account expires (in seconds since the UNIX epoch). See `man 8 usermod` on NetBSD and OpenBSD or `man 8 pw` on FreeBSD.

A value of `0` sets the account to never expire.

CLI Example:

```
salt '*' shadow.set_expire username 1419980400
```

salt.modules.bsd_shadow.**set_password**(*name*, *password*)
Set the password for a named user. The password must be a properly defined hash. The password hash can be generated with this command:

```
python -c "import crypt; print crypt.crypt('password',ciphersalt)"
```

---

**Note**: When constructing the `ciphersalt` string, you must escape any dollar signs, to avoid them being interpolated by the shell.

---

`'password'` is, of course, the password for which you want to generate a hash.

`ciphersalt` is a combination of a cipher identifier, an optional number of rounds, and the cryptographic salt. The arrangement and format of these fields depends on the cipher and which flavor of BSD you are using. For more information on this, see the manpage for `crpyt(3)`. On NetBSD, additional information is available in `passwd.conf(5)`.

It is important to make sure that a supported cipher is used.

CLI Example:

```
salt '*' shadow.set_password someuser '$1$UYCIxa628.9qXjpQCjM4a..'
```

### 13.6.39 salt.modules.btrfs

Module for managing BTRFS file systems.

salt.modules.btrfs.**add**(*mountpoint*, **devices*, ***kwargs*)
Add a devices to a BTRFS filesystem.

General options:

- **nodiscard**: Do not perform whole device TRIM

•**force**: Force overwrite existing filesystem on the disk

CLI Example:

```
salt '*' btrfs.add /mountpoint /dev/sda1 /dev/sda2
```

salt.modules.btrfs.**convert**(*device*, *permanent=False*, *keeplf=False*)

Convert ext2/3/4 to BTRFS. Device should be mounted.

Filesystem can be converted temporarily so the further processing and rollback is possible, or permanently, where previous extended filesystem image gets deleted. Please note, permanent conversion takes a while as BTRFS filesystem needs to be properly rebalanced afterwards.

General options:

•**permanent**: Specify if the migration should be permanent (false by default)

•**keeplf**: **Keep `lost+found` of the partition (removed by default**, but still in the image, if not permanent migration)

CLI Example:

```
salt '*' btrfs.convert /dev/sda1
salt '*' btrfs.convert /dev/sda1 permanent=True
```

salt.modules.btrfs.**defragment**(*path*)

Defragment mounted BTRFS filesystem. In order to defragment a filesystem, device should be properly mounted and writable.

If passed a device name, then defragmented whole filesystem, mounted on in. If passed a moun tpoint of the filesystem, then only this mount point is defragmented.

CLI Example:

```
salt '*' btrfs.defragment /dev/sda1
salt '*' btrfs.defragment /path/on/filesystem
```

salt.modules.btrfs.**delete**(*mountpoint*, **devices*, ***kwargs*)

Remove devices from a BTRFS filesystem.

CLI Example:

```
salt '*' btrfs.delete /mountpoint /dev/sda1 /dev/sda2
```

salt.modules.btrfs.**devices**()

Get known BTRFS formatted devices on the system.

CLI Example:

```
salt '*' btrfs.devices
```

salt.modules.btrfs.**features**()

List currently available BTRFS features.

CLI Example:

```
salt '*' btrfs.mkfs_features
```

salt.modules.btrfs.**info**(*device*)

Get BTRFS filesystem information.

CLI Example:

```
salt '*' btrfs.info /dev/sda1
```

salt.modules.btrfs.**mkfs**(**devices*, ***kwargs*)

Create a file system on the specified device. By default wipes out with force.

General options:

- **allocsize**: Specify the BTRFS offset from the start of the device.
- **bytecount**: Specify the size of the resultant filesystem.
- **nodesize**: Node size.
- **leafsize**: Specify the nodesize, the tree block size in which btrfs stores data.
- **noforce**: Prevent force overwrite when an existing filesystem is detected on the device.
- **sectorsize**: Specify the sectorsize, the minimum data block allocation unit.
- **nodiscard**: Do not perform whole device TRIM operation by default.
- **uuid**: Pass UUID or pass True to generate one.

Options:

- **dto**: **(raid0|raid1|raid5|raid6|raid10|single|dup)** Specify how the data must be spanned across the devices specified.
- **mto**: **(raid0|raid1|raid5|raid6|raid10|single|dup)** Specify how metadata must be spanned across the devices specified.
- **fts**: Features (call `salt <host> btrfs.features` for full list of available features)

See the `mkfs.btrfs(8)` manpage for a more complete description of corresponding options description.

CLI Example:

```
salt '*' btrfs.mkfs /dev/sda1
salt '*' btrfs.mkfs /dev/sda1 noforce=True
```

salt.modules.btrfs.**properties**(*obj*, *type=None*, *set=None*)

List properties for given btrfs object. The object can be path of BTRFS device, mount point, or any directories/files inside the BTRFS filesystem.

General options:

- **type**: Possible types are s[ubvol], f[ilesystem], i[node] and d[evice].
- **force**: Force overwrite existing filesystem on the disk
- **set**: <key=value,key1=value1...> Options for a filesystem properties.

CLI Example:

```
salt '*' btrfs.properties /mountpoint
salt '*' btrfs.properties /dev/sda1 type=subvol set='ro=false,label="My Storage"'
```

salt.modules.btrfs.**resize**(*mountpoint*, *size*)

Resize filesystem.

General options:

- **mountpoint**: Specify the BTRFS mountpoint to resize.
- **size**: ([+/-]<newsize>[kKmMgGtTpPeE]|max) Specify the new size of the target.

CLI Example:

```
salt '*' btrfs.resize /mountpoint size=+1g
salt '*' btrfs.resize /dev/sda1 size=max
```

salt.modules.btrfs.**usage**(*path*)

Show in which disk the chunks are allocated.

CLI Example:

```
salt '*' btrfs.usage /your/mountpoint
```

salt.modules.btrfs.**version**()
Return BTRFS version.

CLI Example:

```
salt '*' btrfs.version
```

### 13.6.40 salt.modules.cabal

#### Manage and query Cabal packages

New in version 2015.8.0.

salt.modules.cabal.**install**(*pkg=None*, *pkgs=None*, *user=None*, *install_global=False*, *env=None*)
Install a cabal package.
**pkg** A package name in format accepted by cabal-install. See: https://wiki.haskell.org/Cabal-Install
**pkgs** A list of packages names in same format as `pkg`
**user** The user to run cabal install with
**install_global** Install package globally instead of locally
**env** Environment variables to set when invoking cabal. Uses the same `env` format as the *cmd.run* execution function
CLI Example:

```
salt '*' cabal.install shellcheck
salt '*' cabal.install shellcheck-0.3.5
```

salt.modules.cabal.**list**(*pkg=None*, *user=None*, *installed=False*, *env=None*)
List packages matching a search string.
**pkg** Search string for matching package names
**user** The user to run cabal list with
**installed** If True, only return installed packages.
**env** Environment variables to set when invoking cabal. Uses the same `env` format as the *cmd.run* execution function
CLI example:

```
salt '*' cabal.list
salt '*' cabal.list ShellCheck
```

salt.modules.cabal.**uninstall**(*pkg*, *user=None*, *env=None*)
Uninstall a cabal package.
**pkg** The package to uninstall
**user** The user to run ghc-pkg unregister with
**env** Environment variables to set when invoking cabal. Uses the same `env` format as the *cmd.run* execution function

salt.modules.cabal.**update**(*user=None*, *env=None*)
Updates list of known packages.

### 13.6.41 salt.modules.cassandra

Cassandra NoSQL Database Module

**depends**

- pycassa Cassandra Python adapter

**configuration** The location of the `nodetool' command, host, and thrift port needs to be specified via pillar:

```
cassandra.nodetool: /usr/local/bin/nodetool
cassandra.host: localhost
cassandra.thrift_port: 9160
```

salt.modules.cassandra.**column_families**(*keyspace=None*)

Return existing column families for all keyspaces or just the provided one.

CLI Example:

```
salt '*' cassandra.column_families
salt '*' cassandra.column_families <keyspace>
```

salt.modules.cassandra.**column_family_definition**(*keyspace*, *column_family*)

Return a dictionary of column family definitions for the given keyspace/column_family

CLI Example:

```
salt '*' cassandra.column_family_definition <keyspace> <column_family>
```

salt.modules.cassandra.**compactionstats**()

Return compactionstats info

CLI Example:

```
salt '*' cassandra.compactionstats
```

salt.modules.cassandra.**info**()

Return cassandra node info

CLI Example:

```
salt '*' cassandra.info
```

salt.modules.cassandra.**keyspaces**()

Return existing keyspaces

CLI Example:

```
salt '*' cassandra.keyspaces
```

salt.modules.cassandra.**netstats**()

Return netstats info

CLI Example:

```
salt '*' cassandra.netstats
```

salt.modules.cassandra.**ring**()

Return cassandra ring info

CLI Example:

```
salt '*' cassandra.ring
```

salt.modules.cassandra.**tpstats**()
Return tpstats info

CLI Example:

```
salt '*' cassandra.tpstats
```

salt.modules.cassandra.**version**()
Return the cassandra version

CLI Example:

```
salt '*' cassandra.version
```

### 13.6.42 salt.modules.cassandra_cql

Cassandra Database Module

New in version 2015.5.0.

**depends** DataStax Python Driver for Apache Cassandra https://github.com/datastax/python-driver pip install cassandra-driver

**referenced by** Salt's cassandra_cql returner

**configuration** The Cassandra cluster members and connection port can either be specified in the master or minion config, the minion's pillar or be passed to the module.

Example configuration in the config for a single node:

```
cassandra:
  cluster: 192.168.50.10
  port: 9000
```

Example configuration in the config for a cluster:

```
cassandra:
  cluster:
    - 192.168.50.10
    - 192.168.50.11
    - 192.168.50.12
  port: 9000
  username: cas_admin
```

Changed in version Carbon: Added support for `ssl_options` and `protocol_version`.

Example configuration with ssl options:

If `ssl_options` are present in cassandra config the cassandra_cql returner will use SSL. SSL isn't used if `ssl_options` isn't specified.

```
cassandra:
  cluster:
    - 192.168.50.10
    - 192.168.50.11
    - 192.168.50.12
  port: 9000
  username: cas_admin

  ssl_options:
```

```
    ca_certs: /etc/ssl/certs/ca-bundle.trust.crt

    # SSL version should be one from the ssl module
    # This is an optional parameter
    ssl_version: PROTOCOL_TLSv1
```

Additionally you can also specify the `protocol_version` to use.

```
cassandra:
  cluster:
    - 192.168.50.10
    - 192.168.50.11
    - 192.168.50.12
  port: 9000
  username: cas_admin

  # defaults to 4, if not set
  protocol_version: 3
```

`salt.modules.cassandra_cql.`**`cql_query`**(*query*, *contact_points=None*, *port=None*, *cql_user=None*, *cql_pass=None*)

Run a query on a Cassandra cluster and return a dictionary.

**Parameters**

- **query** (*str*) -- The query to execute.
- **contact_points** (*str | list[str]*) -- The Cassandra cluster addresses, can either be a string or a list of IPs.
- **cql_user** (*str*) -- The Cassandra user if authentication is turned on.
- **cql_pass** (*str*) -- The Cassandra user password if authentication is turned on.
- **port** (*int*) -- The Cassandra cluster port, defaults to None.
- **params** (*str*) -- The parameters for the query, optional.

**Returns** A dictionary from the return values of the query

**Return type** list[dict]

`salt.modules.cassandra_cql.`**`cql_query_with_prepare`**(*query*, *statement_name*, *statement_arguments*, *async=False*, *callback_errors=None*, *contact_points=None*, *port=None*, *cql_user=None*, *cql_pass=None*)

Run a query on a Cassandra cluster and return a dictionary.

This function should not be used asynchronously for SELECTs -- it will not return anything and we don't currently have a mechanism for handling a future that will return results.

**Parameters**

- **query** (*str*) -- The query to execute.
- **statement_name** (*str*) -- Name to assign the prepared statement in the __context__ dictionary
- **statement_arguments** (*list[str]*) -- Bind parameters for the SQL statement
- **async** (*bool*) -- Run this query in asynchronous mode
- **callback_errors** (*Function callable*) -- Function to call after query runs if there is an error

- **contact_points** (*str | list[str]*) -- The Cassandra cluster addresses, can either be a string or a list of IPs.
- **cql_user** (*str*) -- The Cassandra user if authentication is turned on.
- **cql_pass** (*str*) -- The Cassandra user password if authentication is turned on.
- **port** (*int*) -- The Cassandra cluster port, defaults to None.
- **params** (*str*) -- The parameters for the query, optional.

**Returns** A dictionary from the return values of the query

**Return type** list[dict]

salt.modules.cassandra_cql.**create_keyspace**(*keyspace*, *replication_strategy='SimpleStrategy'*, *replication_factor=1*, *replication_datacenters=None*, *contact_points=None*, *port=None*, *cql_user=None*, *cql_pass=None*)

Create a new keyspace in Cassandra.

**Parameters**

- **keyspace** (*str*) -- The keyspace name
- **replication_strategy** (*str*) -- either *SimpleStrategy* or *NetworkTopologyStrategy*
- **replication_factor** (*int*) -- number of replicas of data on multiple nodes. not used if using NetworkTopologyStrategy
- **replication_datacenters** (*str | dict[str, int]*) -- string or dict of datacenter names to replication factors, required if using NetworkTopologyStrategy (will be a dict if coming from state file).
- **contact_points** (*str | list[str]*) -- The Cassandra cluster addresses, can either be a string or a list of IPs.
- **cql_user** (*str*) -- The Cassandra user if authentication is turned on.
- **cql_pass** (*str*) -- The Cassandra user password if authentication is turned on.
- **port** (*int*) -- The Cassandra cluster port, defaults to None.

**Returns** The info for the keyspace or False if it does not exist.

**Return type** dict

```
salt 'minion1' cassandra_cql.create_keyspace keyspace=newkeyspace

salt 'minion1' cassandra_cql.create_keyspace keyspace=newkeyspace replication_
↪strategy=NetworkTopologyStrategy         replication_datacenters='{"datacenter_1
↪": 3, "datacenter_2": 2}'
```

salt.modules.cassandra_cql.**create_user**(*username*, *password*, *superuser=False*, *contact_points=None*, *port=None*, *cql_user=None*, *cql_pass=None*)

Create a new cassandra user with credentials and superuser status.

**Parameters**

- **username** (*str*) -- The name of the new user.
- **password** (*str*) -- The password of the new user.
- **superuser** (*bool*) -- Is the new user going to be a superuser? default: False

- **contact_points** (*str | list[str]*) -- The Cassandra cluster addresses, can either be a string or a list of IPs.
- **cql_user** (*str*) -- The Cassandra user if authentication is turned on.
- **cql_pass** (*str*) -- The Cassandra user password if authentication is turned on.
- **port** (*int*) -- The Cassandra cluster port, defaults to None.

**Returns**

**Return type**

```
salt 'minion1' cassandra_cql.create_user username=joe password=secret

salt 'minion1' cassandra_cql.create_user username=joe password=secret
 ↪superuser=True

salt 'minion1' cassandra_cql.create_user username=joe password=secret
 ↪superuser=True contact_points=minion1
```

salt.modules.cassandra_cql.**drop_keyspace**(*keyspace*, *contact_points=None*, *port=None*, *cql_user=None*, *cql_pass=None*)

Drop a keyspace if it exists in a Cassandra cluster.

**Parameters**

- **keyspace** (*str*) -- The keyspace to drop.
- **contact_points** (*str | list[str]*) -- The Cassandra cluster addresses, can either be a string or a list of IPs.
- **cql_user** (*str*) -- The Cassandra user if authentication is turned on.
- **cql_pass** (*str*) -- The Cassandra user password if authentication is turned on.
- **port** (*int*) -- The Cassandra cluster port, defaults to None.

**Returns** The info for the keyspace or False if it does not exist.

**Return type** dict

CLI Example:

```
salt 'minion1' cassandra_cql.drop_keyspace keyspace=test

salt 'minion1' cassandra_cql.drop_keyspace keyspace=test contact_points=minion1
```

salt.modules.cassandra_cql.**grant_permission**(*username*, *resource=None*, *resource_type='keyspace'*, *permission=None*, *contact_points=None*, *port=None*, *cql_user=None*, *cql_pass=None*)

Grant permissions to a user.

**Parameters**

- **username** (*str*) -- The name of the user to grant permissions to.
- **resource** (*str*) -- The resource (keyspace or table), if None, permissions for all resources are granted.
- **resource_type** (*str*) -- The resource_type (keyspace or table), defaults to `keyspace'.
- **permission** (*str*) -- A permission name (e.g. select), if None, all permissions are granted.

- **contact_points** (*str | list[str]*) -- The Cassandra cluster addresses, can either be a string or a list of IPs.
- **cql_user** (*str*) -- The Cassandra user if authentication is turned on.
- **cql_pass** (*str*) -- The Cassandra user password if authentication is turned on.
- **port** (*int*) -- The Cassandra cluster port, defaults to None.

**Returns**

**Return type**

```
salt 'minion1' cassandra_cql.grant_permission

salt 'minion1' cassandra_cql.grant_permission username=joe resource=test_keyspace
↪permission=select

salt 'minion1' cassandra_cql.grant_permission username=joe resource=test_table
↪resource_type=table         permission=select contact_points=minion1
```

salt.modules.cassandra_cql.**info**(*contact_points=None, port=None, cql_user=None, cql_pass=None*)

Show the Cassandra information for this cluster.

**Parameters**

- **contact_points** (*str | list[str]*) -- The Cassandra cluster addresses, can either be a string or a list of IPs.
- **cql_user** (*str*) -- The Cassandra user if authentication is turned on.
- **cql_pass** (*str*) -- The Cassandra user password if authentication is turned on.
- **port** (*int*) -- The Cassandra cluster port, defaults to None.

**Returns** The information for this Cassandra cluster.

**Return type** dict

CLI Example:

```
salt 'minion1' cassandra_cql.info

salt 'minion1' cassandra_cql.info contact_points=minion1
```

salt.modules.cassandra_cql.**keyspace_exists**(*keyspace, contact_points=None, port=None, cql_user=None, cql_pass=None*)

Check if a keyspace exists in a Cassandra cluster.

:param keyspace The keyspace name to check for. :type keyspace: str :param contact_points: The Cassandra cluster addresses, can either be a string or a list of IPs. :type contact_points: str | list[str] :param cql_user: The Cassandra user if authentication is turned on. :type cql_user: str :param cql_pass: The Cassandra user password if authentication is turned on. :type cql_pass: str :param port: The Cassandra cluster port, defaults to None. :type port: int :return: The info for the keyspace or False if it does not exist. :rtype: dict

CLI Example:

```
salt 'minion1' cassandra_cql.keyspace_exists keyspace=system

salt 'minion1' cassandra_cql.list_keyspaces keyspace=system contact_points=minion1
```

salt.modules.cassandra_cql.**list_column_families**(*keyspace=None*, *contact_points=None*, *port=None*, *cql_user=None*, *cql_pass=None*)

List column families in a Cassandra cluster for all keyspaces or just the provided one.

**Parameters**

- **keyspace** (*str*) -- The keyspace to provide the column families for, optional.
- **contact_points** (*str | list[str]*) -- The Cassandra cluster addresses, can either be a string or a list of IPs.
- **cql_user** (*str*) -- The Cassandra user if authentication is turned on.
- **cql_pass** (*str*) -- The Cassandra user password if authentication is turned on.
- **port** (*int*) -- The Cassandra cluster port, defaults to None.

**Returns** The column families in this Cassandra cluster.

**Return type** list[dict]

CLI Example:

```
salt 'minion1' cassandra_cql.list_column_families

salt 'minion1' cassandra_cql.list_column_families contact_points=minion1

salt 'minion1' cassandra_cql.list_column_families keyspace=system
```

salt.modules.cassandra_cql.**list_keyspaces**(*contact_points=None*, *port=None*, *cql_user=None*, *cql_pass=None*)

List keyspaces in a Cassandra cluster.

**Parameters**

- **contact_points** (*str | list[str]*) -- The Cassandra cluster addresses, can either be a string or a list of IPs.
- **cql_user** (*str*) -- The Cassandra user if authentication is turned on.
- **cql_pass** (*str*) -- The Cassandra user password if authentication is turned on.
- **port** (*int*) -- The Cassandra cluster port, defaults to None.

**Returns** The keyspaces in this Cassandra cluster.

**Return type** list[dict]

CLI Example:

```
salt 'minion1' cassandra_cql.list_keyspaces

salt 'minion1' cassandra_cql.list_keyspaces contact_points=minion1 port=9000
```

salt.modules.cassandra_cql.**list_permissions**(*username=None*, *resource=None*, *resource_type='keyspace'*, *permission=None*, *contact_points=None*, *port=None*, *cql_user=None*, *cql_pass=None*)

List permissions.

**Parameters**

- **username** (*str*) -- The name of the user to list permissions for.
- **resource** (*str*) -- The resource (keyspace or table), if None, permissions for all resources are listed.

- **resource_type** (*str*) -- The resource_type (keyspace or table), defaults to `keyspace'.
- **permission** (*str*) -- A permission name (e.g. select), if None, all permissions are listed.
- **contact_points** (*str | list[str]*) -- The Cassandra cluster addresses, can either be a string or a list of IPs.
- **cql_user** (*str*) -- The Cassandra user if authentication is turned on.
- **cql_pass** (*str*) -- The Cassandra user password if authentication is turned on.
- **port** (*int*) -- The Cassandra cluster port, defaults to None.

**Returns** Dictionary of permissions.

**Return type** dict

```
salt 'minion1' cassandra_cql.list_permissions

salt 'minion1' cassandra_cql.list_permissions username=joe resource=test_keyspace
↪permission=select

salt 'minion1' cassandra_cql.list_permissions username=joe resource=test_table
↪resource_type=table         permission=select contact_points=minion1
```

salt.modules.cassandra_cql.**list_users**(*contact_points=None*, *port=None*, *cql_user=None*, *cql_pass=None*)

List existing users in this Cassandra cluster.

**Parameters**

- **contact_points** (*str | list[str]*) -- The Cassandra cluster addresses, can either be a string or a list of IPs.
- **port** (*int*) -- The Cassandra cluster port, defaults to None.
- **cql_user** (*str*) -- The Cassandra user if authentication is turned on.
- **cql_pass** (*str*) -- The Cassandra user password if authentication is turned on.

**Returns** The list of existing users.

**Return type** dict

```
salt 'minion1' cassandra_cql.list_users

salt 'minion1' cassandra_cql.list_users contact_points=minion1
```

salt.modules.cassandra_cql.**version**(*contact_points=None*, *port=None*, *cql_user=None*, *cql_pass=None*)

Show the Cassandra version.

**Parameters**

- **contact_points** (*str | list[str]*) -- The Cassandra cluster addresses, can either be a string or a list of IPs.
- **cql_user** (*str*) -- The Cassandra user if authentication is turned on.
- **cql_pass** (*str*) -- The Cassandra user password if authentication is turned on.
- **port** (*int*) -- The Cassandra cluster port, defaults to None.

**Returns** The version for this Cassandra cluster.

**Return type** str

CLI Example:

```
salt 'minion1' cassandra_cql.version

salt 'minion1' cassandra_cql.version contact_points=minion1
```

### 13.6.43 salt.modules.chassis

Glue execution module to link to the *fx2 proxymodule*.

Depends: *iDRAC Remote execution module (salt.modules.dracr)*

For documentation on commands that you can direct to a Dell chassis via proxy, look in the documentation for *salt.modules.dracr*.

This execution module calls through to a function in the fx2 proxy module called `chconfig`. That function looks up the function passed in the `cmd` parameter in *salt.modules.dracr* and calls it.

New in version 2015.8.2.

`salt.modules.chassis.`**`chassis_credentials`**`()`

`salt.modules.chassis.`**`cmd`**`(`*cmd*, **args*, ***kwargs*`)`

### 13.6.44 salt.modules.chef

Execute chef in server or solo mode

`salt.modules.chef.`**`client`**`(`*whyrun=False*, *localmode=False*, *logfile=None*, ***kwargs*`)`

Execute a chef client run and return a dict with the stderr, stdout, return code, and pid.

CLI Example:

```
salt '*' chef.client server=https://localhost
```

**server** The chef server URL
**client_key** Set the client key file location
**config** The configuration file to use
**config-file-jail** Directory under which config files are allowed to be loaded (no client.rb or knife.rb outside this path will be loaded).
**environment** Set the Chef Environment on the node
**group** Group to set privilege to
**json-attributes** Load attributes from a JSON file or URL
**localmode** Point chef-client at local repository if True
**log_level** Set the log level (debug, info, warn, error, fatal)
**logfile** Set the log file location
**node-name** The node name for this client
**override-runlist** Replace current run list with specified items for a single run
**pid** Set the PID file location, defaults to /tmp/chef-client.pid
**run-lock-timeout** Set maximum duration to wait for another client run to finish, default is indefinitely.
**runlist** Permanently replace current run list with specified items
**user** User to set privilege to
**validation_key** Set the validation key file location, used for registering new clients
**whyrun** Enable whyrun mode when set to True

salt.modules.chef.**solo**(*whyrun=False*, *logfile=None*, ***kwargs*)
Execute a chef solo run and return a dict with the stderr, stdout, return code, and pid.

CLI Example:

```
salt '*' chef.solo override-runlist=test
```

**config** The configuration file to use
**environment** Set the Chef Environment on the node
**group** Group to set privilege to
**json-attributes** Load attributes from a JSON file or URL
**log_level** Set the log level (debug, info, warn, error, fatal)
**logfile** Set the log file location
**node-name** The node name for this client
**override-runlist** Replace current run list with specified items for a single run
**recipe-url** Pull down a remote gzipped tarball of recipes and untar it to the cookbook cache
**run-lock-timeout** Set maximum duration to wait for another client run to finish, default is indefinitely.
**user** User to set privilege to
**whyrun** Enable whyrun mode when set to True

### 13.6.45 salt.modules.chocolatey

A dead simple module wrapping calls to the Chocolatey package manager (http://chocolatey.org)

New in version 2014.1.0.

salt.modules.chocolatey.**add_source**(*name*, *source_location*, *username=None*, *password=None*)
Instructs Chocolatey to add a source.
**name** The name of the source to be added as a chocolatey repository.
**source** Location of the source you want to work with.
**username** Provide username for chocolatey sources that need authentication credentials.
**password** Provide password for chocolatey sources that need authentication credentials.
CLI Example:

```
salt '*' chocolatey.add_source <source name> <source_location>
salt '*' chocolatey.add_source <source name> <source_location> user=<user>
 ↪password=<password>
```

salt.modules.chocolatey.**bootstrap**(*force=False*)
Download and install the latest version of the Chocolatey package manager via the official bootstrap.

Chocolatey requires Windows PowerShell and the .NET v4.0 runtime. Depending on the host's version of Windows, chocolatey.bootstrap will attempt to ensure these prerequisites are met by downloading and executing the appropriate installers from Microsoft.

Note that if PowerShell is installed, you may have to restart the host machine for Chocolatey to work.
**force** Run the bootstrap process even if Chocolatey is found in the path.
CLI Example:

```
salt '*' chocolatey.bootstrap
salt '*' chocolatey.bootstrap force=True
```

salt.modules.chocolatey.**chocolatey_version**()
Returns the version of Chocolatey installed on the minion.

CLI Example:

```
salt '*' chocolatey.chocolatey_version
```

salt.modules.chocolatey.**disable_source**(*name*)

Instructs Chocolatey to disable a source.

**name** Name of the source repository to disable.

CLI Example:

```
salt '*' chocolatey.disable_source <name>
```

salt.modules.chocolatey.**enable_source**(*name*)

Instructs Chocolatey to enable a source.

**name** Name of the source repository to enable.

CLI Example:

```
salt '*' chocolatey.enable_source <name>
```

salt.modules.chocolatey.**install**(*name*, *version=None*, *source=None*, *force=False*, *pre_versions=False*, *install_args=None*, *override_args=False*, *force_x86=False*, *package_args=None*)

Instructs Chocolatey to install a package.

Args:

**name (str)**: The name of the package to be installed. Only accepts a single argument.

**version (str)**: Install a specific version of the package. Defaults to latest version.

**source (str)**: Chocolatey repository (directory, share or remote URL feed) the package comes from. Defaults to the official Chocolatey feed.

Alternative Sources:

- cygwin
- python
- ruby
- webpi
- windowsfeatures

**force (bool)**: Reinstall the current version of an existing package.

**pre_versions (bool)**: Include pre-release packages. Defaults to False.

**install_args (str)**: A list of install arguments you want to pass to the installation process i.e product key or feature list

**override_args (bool)**: Set to true if you want to override the original install arguments (for the native installer) in the package and use your own. When this is set to False install_args will be appended to the end of the default arguments

**force_x86 (str)**: Force x86 (32bit) installation on 64 bit systems. Defaults to false.

**package_args (str)**: A list of arguments you want to pass to the package

**Returns**: str: The output of the `chocolatey` command

CLI Example:

```
salt '*' chocolatey.install <package name>
salt '*' chocolatey.install <package name> version=<package version>
salt '*' chocolatey.install <package name> install_args=<args> override_args=True
```

salt.modules.chocolatey.**install_cygwin**(*name*, *install_args=None*, *override_args=False*)

Instructs Chocolatey to install a package via Cygwin.

**name** The name of the package to be installed. Only accepts a single argument.

**install_args** A list of install arguments you want to pass to the installation process i.e product key or feature list

**override_args**

**Set to true if you want to override the original install arguments (for the native installer)** in the package and use your own. When this is set to False install_args will be appended to the end of the default arguments

CLI Example:

```
salt '*' chocolatey.install_cygwin <package name>
salt '*' chocolatey.install_cygwin <package name> install_args=<args> override_
↪args=True
```

salt.modules.chocolatey.**install_gem**(*name*, *version=None*, *install_args=None*, *override_args=False*)

Instructs Chocolatey to install a package via Ruby's Gems.

**name** The name of the package to be installed. Only accepts a single argument.

**version** Install a specific version of the package. Defaults to latest version available.

**install_args** A list of install arguments you want to pass to the installation process i.e product key or feature list

**override_args**

**Set to true if you want to override the original install arguments (for the native installer)** in the package and use your own. When this is set to False install_args will be appended to the end of the default arguments

CLI Example:

```
salt '*' chocolatey.install_gem <package name>
salt '*' chocolatey.install_gem <package name> version=<package version>
salt '*' chocolatey.install_gem <package name> install_args=<args> override_
↪args=True
```

salt.modules.chocolatey.**install_missing**(*name*, *version=None*, *source=None*)

Instructs Chocolatey to install a package if it doesn't already exist.

Changed in version 2014.7.0: If the minion has Chocolatey >= 0.9.8.24 installed, this function calls *chocolatey.install* instead, as `installmissing` is deprecated as of that version and will be removed in Chocolatey 1.0.

**name** The name of the package to be installed. Only accepts a single argument.

**version** Install a specific version of the package. Defaults to latest version available.

**source** Chocolatey repository (directory, share or remote URL feed) the package comes from. Defaults to the official Chocolatey feed.

CLI Example:

```
salt '*' chocolatey.install_missing <package name>
salt '*' chocolatey.install_missing <package name> version=<package version>
```

salt.modules.chocolatey.**install_python**(*name*, *version=None*, *install_args=None*, *override_args=False*)

Instructs Chocolatey to install a package via Python's easy_install.

**name** The name of the package to be installed. Only accepts a single argument.

**version** Install a specific version of the package. Defaults to latest version available.

**install_args** A list of install arguments you want to pass to the installation process i.e product key or feature list

**override_args**

**Set to true if you want to override the original install arguments (for the native installer)** in the package and use your own. When this is set to False install_args will be appended to the end of the default arguments

CLI Example:

```
salt '*' chocolatey.install_python <package name>
salt '*' chocolatey.install_python <package name> version=<package version>
salt '*' chocolatey.install_python <package name> install_args=<args> override_
↪args=True
```

salt.modules.chocolatey.**install_webpi**(*name*, *install_args=None*, *override_args=False*)

Instructs Chocolatey to install a package via the Microsoft Web PI service.

**name** The name of the package to be installed. Only accepts a single argument.

**install_args** A list of install arguments you want to pass to the installation process i.e product key or feature list

**override_args**

**Set to true if you want to override the original install arguments (for the native installer)** in the package and use your own. When this is set to False install_args will be appended to the end of the default arguments

CLI Example:

```
salt '*' chocolatey.install_webpi <package name>
salt '*' chocolatey.install_webpi <package name> install_args=<args> override_
↪args=True
```

salt.modules.chocolatey.**install_windowsfeatures**(*name*)

Instructs Chocolatey to install a Windows Feature via the Deployment Image Servicing and Management tool.

**name** The name of the feature to be installed. Only accepts a single argument.

CLI Example:

```
salt '*' chocolatey.install_windowsfeatures <package name>
```

salt.modules.chocolatey.**list**(*narrow=None*, *all_versions=False*, *pre_versions=False*, *source=None*, *local_only=False*)

Instructs Chocolatey to pull a vague package list from the repository.

**narrow** Term used to narrow down results. Searches against name/description/tag.

**all_versions** Display all available package versions in results. Defaults to False.

**pre_versions** Display pre-release packages in results. Defaults to False.

**source** Chocolatey repository (directory, share or remote URL feed) the package comes from. Defaults to the official Chocolatey feed.

**local_only** Display packages only installed locally

CLI Example:

```
salt '*' chocolatey.list <narrow>
salt '*' chocolatey.list <narrow> all_versions=True
```

salt.modules.chocolatey.**list_webpi**()

Instructs Chocolatey to pull a full package list from the Microsoft Web PI repository.

**Returns**: str: List of webpi packages

CLI Example:

```
salt '*' chocolatey.list_webpi
```

salt.modules.chocolatey.**list_windowsfeatures**()

Instructs Chocolatey to pull a full package list from the Windows Features list, via the Deployment Image Servicing and Management tool.
**Returns**: str: List of Windows Features
CLI Example:

```
salt '*' chocolatey.list_windowsfeatures
```

salt.modules.chocolatey.**uninstall**(*name*, *version=None*, *uninstall_args=None*, *override_args=False*)

Instructs Chocolatey to uninstall a package.
**name** The name of the package to be uninstalled. Only accepts a single argument.
**version** Uninstalls a specific version of the package. Defaults to latest version installed.
**uninstall_args** A list of uninstall arguments you want to pass to the uninstallation process i.e product key or feature list
**override_args**

**Set to true if you want to override the original uninstall arguments (for the native uninstaller)** in the package and use your own. When this is set to False uninstall_args will be appended to the end of the default arguments

CLI Example:

```
salt '*' chocolatey.uninstall <package name>
salt '*' chocolatey.uninstall <package name> version=<package version>
salt '*' chocolatey.uninstall <package name> version=<package version> uninstall_
↪args=<args> override_args=True
```

salt.modules.chocolatey.**update**(*name*, *source=None*, *pre_versions=False*)

Instructs Chocolatey to update packages on the system.
**name** The name of the package to update, or ``all'' to update everything installed on the system.
**source** Chocolatey repository (directory, share or remote URL feed) the package comes from. Defaults to the official Chocolatey feed.
**pre_versions** Include pre-release packages in comparison. Defaults to False.
CLI Example:

```
salt "*" chocolatey.update all
salt "*" chocolatey.update <package name> pre_versions=True
```

salt.modules.chocolatey.**upgrade**(*name*, *version=None*, *source=None*, *force=False*, *pre_versions=False*, *install_args=None*, *override_args=False*, *force_x86=False*, *package_args=None*)

New in version 2016.3.4.

Instructs Chocolatey to upgrade packages on the system. (update is being deprecated)

Args:

**name (str)**: The name of the package to update, or ``all'' to update everything installed on the system.

**version (str)**: Install a specific version of the package. Defaults to latest version.

**source (str)**: Chocolatey repository (directory, share or remote URL feed) the package comes from. Defaults to the official Chocolatey feed.

**force (bool)**: Reinstall the **same** version already installed

**pre_versions (bool)**: Include pre-release packages in comparison. Defaults to False.

**install_args (str)**: A list of install arguments you want to pass to the installation process i.e product key or feature list

**override_args (str)**: Set to true if you want to override the original install arguments (for the native installer) in the package and use your own. When this is set to False install_args will be appended to the end of the default arguments

**force_x86** Force x86 (32bit) installation on 64 bit systems. Defaults to false.

**package_args** A list of arguments you want to pass to the package

**Returns**: str: Results of the `chocolatey` command

CLI Example:

```
salt "*" chocolatey.upgrade all
salt "*" chocolatey.upgrade <package name> pre_versions=True
```

`salt.modules.chocolatey.`**`version`**(*name*, *check_remote=False*, *source=None*, *pre_versions=False*)

Instructs Chocolatey to check an installed package version, and optionally compare it to one available from a remote feed.

**name** The name of the package to check.

**check_remote** Get the version number of the latest package from the remote feed. Defaults to False.

**source** Chocolatey repository (directory, share or remote URL feed) the package comes from. Defaults to the official Chocolatey feed.

**pre_versions** Include pre-release packages in comparison. Defaults to False.

CLI Example:

```
salt "*" chocolatey.version <package name>
salt "*" chocolatey.version <package name> check_remote=True
```

### 13.6.46 salt.modules.chronos module

Module providing a simple management interface to a chronos cluster.

Currently this only works when run through a proxy minion.

New in version 2015.8.2.

`salt.modules.chronos.`**`has_job`**(*name*)

Return whether the given job is currently configured.

CLI Example:

```
salt chronos-minion-id chronos.has_job my-job
```

`salt.modules.chronos.`**`job`**(*name*)

Return the current server configuration for the specified job.

CLI Example:

```
salt chronos-minion-id chronos.job my-job
```

`salt.modules.chronos.`**`jobs`**()

Return a list of the currently installed job names.

CLI Example:

```
salt chronos-minion-id chronos.jobs
```

`salt.modules.chronos.`**`rm_job`**(*name*)

Remove the specified job from the server.

CLI Example:

```
salt chronos-minion-id chronos.rm_job my-job
```

salt.modules.chronos.**update_job**(*name*, *config*)
Update the specified job with the given configuration.

CLI Example:

```
salt chronos-minion-id chronos.update_job my-job '<config yaml>'
```

### 13.6.47 salt.modules.cloud

Salt-specific interface for calling Salt Cloud directly

salt.modules.cloud.**action**(*fun=None*, *cloudmap=None*, *names=None*, *provider=None*, *instance=None*, ***kwargs*)
Execute a single action on the given provider/instance

CLI Example:

```
salt '*' cloud.action start instance=myinstance
salt '*' cloud.action stop instance=myinstance
salt '*' cloud.action show_image provider=my-ec2-config image=ami-1624987f
```

salt.modules.cloud.**create**(*provider*, *names*, ***kwargs*)
Create an instance using Salt Cloud

CLI Example:

```
salt minionname cloud.create my-ec2-config myinstance image=ami-1624987f size='t1.
↪micro' ssh_username=ec2-user securitygroup=default delvol_on_destroy=True
```

salt.modules.cloud.**destroy**(*names*)
Destroy the named VM(s)

CLI Example:

```
salt '*' cloud.destroy myinstance
```

salt.modules.cloud.**full_query**(*query_type='list_nodes_full'*)
List all available cloud provider data

CLI Example:

```
salt '*' cloud.full_query
```

salt.modules.cloud.**get_instance**(*name*, *provider=None*)
Return details on an instance.

Similar to the cloud action show_instance but returns only the instance details.

CLI Example:

```
salt '*' cloud.get_instance myinstance
```

SLS Example:

```
{{ salt['cloud.get_instance']('myinstance')['mac_address'] }}
```

salt.modules.cloud.**has_instance**(*name*, *provider=None*)
Return true if the instance is found on a provider

CLI Example:

```
salt '*' cloud.has_instance myinstance
```

salt.modules.cloud.**list_images**(*provider='all'*)
List cloud provider images for the given providers

CLI Example:

```
salt '*' cloud.list_images my-gce-config
```

salt.modules.cloud.**list_locations**(*provider='all'*)
List cloud provider locations for the given providers

CLI Example:

```
salt '*' cloud.list_locations my-gce-config
```

salt.modules.cloud.**list_sizes**(*provider='all'*)
List cloud provider sizes for the given providers

CLI Example:

```
salt '*' cloud.list_sizes my-gce-config
```

salt.modules.cloud.**network_create**(*provider*, *names*, ***kwargs*)
Create private network

CLI Example:

```
salt minionname cloud.network_create my-nova names=['salt'] cidr='192.168.100.0/24
↪'
```

salt.modules.cloud.**network_list**(*provider*)
List private networks

CLI Example:

```
salt minionname cloud.network_list my-nova
```

salt.modules.cloud.**profile**(*profile*, *names*, *vm_overrides=None*, ***kwargs*)
Spin up an instance using Salt Cloud

CLI Example:

```
salt '*' cloud.profile my-gce-config myinstance
```

salt.modules.cloud.**query**(*query_type='list_nodes'*)
List cloud provider data for all providers

CLI Examples:

```
salt '*' cloud.query
salt '*' cloud.query list_nodes_full
salt '*' cloud.query list_nodes_select
```

salt.modules.cloud.**select_query**(*query_type='list_nodes_select'*)
List selected nodes

CLI Example:

```
salt '*' cloud.select_query
```

salt.modules.cloud.**virtual_interface_create**(*provider*, *names*, ***kwargs*)
Attach private interfaces to a server

CLI Example:

```
salt minionname cloud.virtual_interface_create my-nova names=['salt-master'] net_
↪name='salt'
```

salt.modules.cloud.**virtual_interface_list**(*provider*, *names*, ***kwargs*)
List virtual interfaces on a server

CLI Example:

```
salt minionname cloud.virtual_interface_list my-nova names=['salt-master']
```

salt.modules.cloud.**volume_attach**(*provider*, *names*, ***kwargs*)
Attach volume to a server

CLI Example:

```
salt minionname cloud.volume_attach my-nova myblock server_name=myserver device='/
↪dev/xvdf'
```

salt.modules.cloud.**volume_create**(*provider*, *names*, ***kwargs*)
Create volume

CLI Example:

```
salt minionname cloud.volume_create my-nova myblock size=100 voltype=SSD
```

salt.modules.cloud.**volume_delete**(*provider*, *names*, ***kwargs*)
Delete volume

CLI Example:

```
salt minionname cloud.volume_delete my-nova myblock
```

salt.modules.cloud.**volume_detach**(*provider*, *names*, ***kwargs*)
Detach volume from a server

CLI Example:

```
salt minionname cloud.volume_detach my-nova myblock server_name=myserver
```

salt.modules.cloud.**volume_list**(*provider*)
List block storage volumes

CLI Example:

```
salt minionname cloud.volume_list my-nova
```

### 13.6.48 salt.modules.cmdmod

A module for shelling out.

Keep in mind that this module is insecure, in that it can give whomever has access to the master root execution access to all salt minions.

`salt.modules.cmdmod.`**`exec_code`**(*lang*, *code*, *cwd=None*)

Pass in two strings, the first naming the executable language, aka - python2, python3, ruby, perl, lua, etc. the second string containing the code you wish to execute. The stdout will be returned.

CLI Example:

```
salt '*' cmd.exec_code ruby 'puts "cheese"'
```

`salt.modules.cmdmod.`**`exec_code_all`**(*lang*, *code*, *cwd=None*)

Pass in two strings, the first naming the executable language, aka - python2, python3, ruby, perl, lua, etc. the second string containing the code you wish to execute. All cmd artifacts (stdout, stderr, retcode, pid) will be returned.

CLI Example:

```
salt '*' cmd.exec_code_all ruby 'puts "cheese"'
```

`salt.modules.cmdmod.`**`has_exec`**(*cmd*)

Returns true if the executable is available on the minion, false otherwise

CLI Example:

```
salt '*' cmd.has_exec cat
```

`salt.modules.cmdmod.`**`powershell`**(*cmd*, *cwd=None*, *stdin=None*, *runas=None*, *shell='/bin/sh'*, *env=None*, *clean_env=False*, *template=None*, *rstrip=True*, *umask=None*, *output_loglevel='debug'*, *quiet=False*, *timeout=None*, *reset_system_locale=True*, *ignore_retcode=False*, *saltenv='base'*, *use_vt=False*, *password=None*, *depth=None*, ***kwargs*)

Execute the passed PowerShell command and return the output as a dictionary.

Other `cmd.*` functions return the raw text output of the command. This function appends `| ConvertTo-JSON` to the command and then parses the JSON into a Python dictionary. If you want the raw textual result of your PowerShell command you should use `cmd.run` with the `shell=powershell` option.

For example:

```
salt '*' cmd.run '$PSVersionTable.CLRVersion' shell=powershell
salt '*' cmd.run 'Get-NetTCPConnection' shell=powershell
```

New in version 2016.3.0.

> **Warning:** This passes the cmd argument directly to PowerShell without any further processing! Be absolutely sure that you have properly sanitized the command passed to this function and do not use untrusted inputs.

Note that `env` represents the environment variables for the command, and should be formatted as a dict, or a YAML string which resolves to a dict.

In addition to the normal `cmd.run` parameters, this command offers the `depth` parameter to change the Windows default depth for the `ConvertTo-JSON` powershell command. The Windows default is 2. If you need more depth, set that here.

---

**Note:** For some commands, setting the depth to a value greater than 4 greatly increases the time it takes for the command to return and in many cases returns useless data.

---

**Parameters**

- **cmd** (*str*) -- The powershell command to run.
- **cwd** (*str*) -- The current working directory to execute the command in
- **stdin** (*str*) -- A string of standard input can be specified for the command to be run using the `stdin` parameter. This can be useful in cases where sensitive information must be read from standard input.:
- **runas** (*str*) -- User to run script as. If running on a Windows minion you must also pass a password
- **password** (*str*) -- Windows only. Required when specifying `runas`. This parameter will be ignored on non-Windows platforms.

  New in version 2016.3.0.
- **shell** (*str*) -- Shell to execute under. Defaults to the system default shell.
- **python_shell** (*bool*) -- If False, let python handle the positional arguments. Set to True to use shell features, such as pipes or redirection
- **env** (*list*) -- A list of environment variables to be set prior to execution.

  Example:

```
salt://scripts/foo.sh:
  cmd.script:
    - env:
      - BATCH: 'yes'
```

> **Warning:** The above illustrates a common PyYAML pitfall, that **yes**, **no**, **on**, **off**, **true**, and **false** are all loaded as boolean `True` and `False` values, and must be enclosed in quotes to be used as strings. More info on this (and other) PyYAML idiosyncrasies can be found *here*.

Variables as values are not evaluated. So $PATH in the following example is a literal `$PATH':

```
salt://scripts/bar.sh:
  cmd.script:
    - env: "PATH=/some/path:$PATH"
```

One can still use the existing $PATH by using a bit of Jinja:

```
{% set current_path = salt['environ.get']('PATH', '/bin:/
↪usr/bin') %}

mycommand:
```

```
  cmd.run:
    - name: ls -l /
    - env:
      - PATH: {{ [current_path, '/my/special/bin']|join(':
↪') }}
```

- **clean_env** (*bool*) -- Attempt to clean out all other shell environment variables and set only those provided in the `env' argument to this function.
- **template** (*str*) -- If this setting is applied then the named templating engine will be used to render the downloaded file. Currently jinja, mako, and wempy are supported
- **rstrip** (*bool*) -- Strip all whitespace off the end of output before it is returned.
- **umask** (*str*) -- The umask (in octal) to use when running the command.
- **output_loglevel** (*str*) -- Control the loglevel at which the output from the command is logged. Note that the command being run will still be logged (loglevel: DEBUG) regardless, unless `quiet` is used for this value.
- **timeout** (*int*) -- A timeout in seconds for the executed process to return.
- **use_vt** (*bool*) -- Use VT utils (saltstack) to stream the command output more interactively to the console and the logs. This is experimental.
- **reset_system_locale** (*bool*) -- Resets the system locale
- **ignore_retcode** (*bool*) -- Ignore the return code
- **saltenv** (*str*) -- The salt environment to use. Default is `base'
- **depth** (*int*) -- The number of levels of contained objects to be included. Default is 2. Values greater than 4 seem to greatly increase the time it takes for the command to complete for some commands. eg: `dir`

  New in version 2016.3.4.

**Returns**

**dict** A dictionary of data returned by the powershell command.

CLI Example:

```
salt '*' cmd.powershell "$PSVersionTable.CLRVersion"
```

salt.modules.cmdmod.**retcode**(*cmd*, *cwd=None*, *stdin=None*, *runas=None*, *shell='/bin/sh'*, *python_shell=None*, *env=None*, *clean_env=False*, *template=None*, *umask=None*, *output_loglevel='debug'*, *log_callback=None*, *timeout=None*, *reset_system_locale=True*, *ignore_retcode=False*, *saltenv='base'*, *use_vt=False*, *password=None*, ***kwargs*)

Execute a shell command and return the command's return code.

**Parameters**

- **cmd** (*str*) -- The command to run. ex: `ls -lart /home'
- **cwd** (*str*) -- The current working directory to execute the command in, defaults to /root
- **stdin** (*str*) -- A string of standard input can be specified for the command to be run using the `stdin` parameter. This can be useful in cases where sensitive information must be read from standard input.:

- **runas** (*str*) -- User to run script as. If running on a Windows minion you must also pass a password
- **password** (*str*) -- Windows only. Required when specifying `runas`. This parameter will be ignored on non-Windows platforms.

  New in version 2016.3.0.
- **shell** (*str*) -- Shell to execute under. Defaults to the system default shell.
- **python_shell** (*bool*) -- If False, let python handle the positional arguments. Set to True to use shell features, such as pipes or redirection
- **env** (`list`) -- A list of environment variables to be set prior to execution.

  Example:

```
salt://scripts/foo.sh:
  cmd.script:
    - env:
      - BATCH: 'yes'
```

  **Warning**: The above illustrates a common PyYAML pitfall, that **yes**, **no**, **on**, **off**, **true**, and **false** are all loaded as boolean `True` and `False` values, and must be enclosed in quotes to be used as strings. More info on this (and other) PyYAML idiosyncrasies can be found *here*.

  Variables as values are not evaluated. So $PATH in the following example is a literal `$PATH':

```
salt://scripts/bar.sh:
  cmd.script:
    - env: "PATH=/some/path:$PATH"
```

  One can still use the existing $PATH by using a bit of Jinja:

```
{% set current_path = salt['environ.get']('PATH', '/bin:/
 ↪usr/bin') %}

mycommand:
  cmd.run:
    - name: ls -l /
    - env:
      - PATH: {{ [current_path, '/my/special/bin']|join(':
 ↪') }}
```

- **clean_env** (*bool*) -- Attempt to clean out all other shell environment variables and set only those provided in the `env' argument to this function.
- **template** (*str*) -- If this setting is applied then the named templating engine will be used to render the downloaded file. Currently jinja, mako, and wempy are supported
- **rstrip** (*bool*) -- Strip all whitespace off the end of output before it is returned.
- **umask** (*str*) -- The umask (in octal) to use when running the command.
- **output_loglevel** (*str*) -- Control the loglevel at which the output from the command is logged. Note that the command being run will still be logged (loglevel: DEBUG) regardless, unless `quiet` is used for this value.

- **timeout** (*int*) -- A timeout in seconds for the executed process to return.
- **use_vt** (*bool*) -- Use VT utils (saltstack) to stream the command output more interactively to the console and the logs. This is experimental.

---

**Note:** `env` represents the environment variables for the command, and should be formatted as a dict, or a YAML string which resolves to a dict.

---

**Return type** int

**Return type** None

**Returns** Return Code as an int or None if there was an exception.

CLI Example:

```
salt '*' cmd.retcode "file /bin/bash"
```

The template arg can be set to `jinja' or another supported template engine to render the command arguments before execution. For example:

```
salt '*' cmd.retcode template=jinja "file {{grains.pythonpath[0]}}/python"
```

A string of standard input can be specified for the command to be run using the `stdin` parameter. This can be useful in cases where sensitive information must be read from standard input.:

```
salt '*' cmd.retcode "grep f" stdin='one\ntwo\nthree\nfour\nfive\n'
```

`salt.modules.cmdmod.`**`run`**(*cmd*, *cwd=None*, *stdin=None*, *runas=None*, *shell='/bin/sh'*, *python_shell=None*, *env=None*, *clean_env=False*, *template=None*, *rstrip=True*, *umask=None*, *output_loglevel='debug'*, *log_callback=None*, *timeout=None*, *reset_system_locale=True*, *ignore_retcode=False*, *saltenv='base'*, *use_vt=False*, *bg=False*, *password=None*, ***kwargs*)

Execute the passed command and return the output as a string

Note that `env` represents the environment variables for the command, and should be formatted as a dict, or a YAML string which resolves to a dict.

**Parameters**

- **cmd** (*str*) -- The command to run. ex: `ls -lart /home`
- **cwd** (*str*) -- The current working directory to execute the command in, defaults to `/root` (`C:\` in windows)
- **stdin** (*str*) -- A string of standard input can be specified for the command to be run using the `stdin` parameter. This can be useful in cases where sensitive information must be read from standard input.
- **runas** (*str*) -- User to run script as. If running on a Windows minion you must also pass a password.
- **password** (*str*) -- Windows only. Required when specifying `runas`. This parameter will be ignored on non-Windows platforms.

  New in version 2016.3.0.
- **shell** (*str*) -- Shell to execute under. Defaults to the system default shell.
- **python_shell** (*bool*) -- If `False`, let python handle the positional arguments. Set to `True` to use shell features, such as pipes or redirection.

- **bg** (*bool*) -- If `True`, run command in background and do not await or deliver it's results

  New in version 2016.3.0.

- **env** (`list`) -- A list of environment variables to be set prior to execution.

  Example:

  ```
  salt://scripts/foo.sh:
    cmd.script:
      - env:
        - BATCH: 'yes'
  ```

  **Warning**: The above illustrates a common PyYAML pitfall, that **yes**, **no**, **on**, **off**, **true**, and **false** are all loaded as boolean `True` and `False` values, and must be enclosed in quotes to be used as strings. More info on this (and other) PyYAML idiosyncrasies can be found *here*.

  Variables as values are not evaluated. So $PATH in the following example is a literal `$PATH':

  ```
  salt://scripts/bar.sh:
    cmd.script:
      - env: "PATH=/some/path:$PATH"
  ```

  One can still use the existing $PATH by using a bit of Jinja:

  ```
  {% set current_path = salt['environ.get']('PATH', '/bin:/
  ↪usr/bin') %}

  mycommand:
    cmd.run:
      - name: ls -l /
      - env:
        - PATH: {{ [current_path, '/my/special/bin']|join(':
  ↪') }}
  ```

- **clean_env** (*bool*) -- Attempt to clean out all other shell environment variables and set only those provided in the `env' argument to this function.

- **template** (*str*) -- If this setting is applied then the named templating engine will be used to render the downloaded file. Currently jinja, mako, and wempy are supported

- **rstrip** (*bool*) -- Strip all whitespace off the end of output before it is returned.

- **umask** (*str*) -- The umask (in octal) to use when running the command.

- **output_loglevel** (*str*) -- Control the loglevel at which the output from the command is logged. Note that the command being run will still be logged (loglevel: DEBUG) regardless, unless `quiet` is used for this value.

- **timeout** (*int*) -- A timeout in seconds for the executed process to return.

- **use_vt** (*bool*) -- Use VT utils (saltstack) to stream the command output more interactively to the console and the logs. This is experimental.

> **Warning:** This function does not process commands through a shell unless the python_shell flag is set to True. This means that any shell-specific functionality such as `echo' or the use of pipes, redirection or &&, should either be migrated to cmd.shell or have the python_shell=True flag set here.
>
> The use of python_shell=True means that the shell will accept _any_ input including potentially malicious commands such as `good_command;rm -rf /'. Be absolutely certain that you have sanitized your input prior to using python_shell=True

CLI Example:

```
salt '*' cmd.run "ls -l | awk '/foo/{print \\$2}'"
```

The template arg can be set to `jinja' or another supported template engine to render the command arguments before execution. For example:

```
salt '*' cmd.run template=jinja "ls -l /tmp/{{grains.id}} | awk '/foo/{print \\$2}
↪'"
```

Specify an alternate shell with the shell parameter:

```
salt '*' cmd.run "Get-ChildItem C:\\ " shell='powershell'
```

A string of standard input can be specified for the command to be run using the `stdin` parameter. This can be useful in cases where sensitive information must be read from standard input.:

```
salt '*' cmd.run "grep f" stdin='one\\ntwo\\nthree\\nfour\\nfive\\n'
```

If an equal sign (`=`) appears in an argument to a Salt command it is interpreted as a keyword argument in the format `key=val`. That processing can be bypassed in order to pass an equal sign through to the remote shell command by manually specifying the kwarg:

```
salt '*' cmd.run cmd='sed -e s/=/:/g'
```

`salt.modules.cmdmod.`**`run_all`**(*cmd*, *cwd=None*, *stdin=None*, *runas=None*, *shell='/bin/sh'*, *python_shell=None*, *env=None*, *clean_env=False*, *template=None*, *rstrip=True*, *umask=None*, *output_loglevel='debug'*, *log_callback=None*, *timeout=None*, *reset_system_locale=True*, *ignore_retcode=False*, *saltenv='base'*, *use_vt=False*, *redirect_stderr=False*, *password=None*, ***kwargs*)

Execute the passed command and return a dict of return data

**Parameters**

- **`cmd`** (*str*) -- The command to run. ex: `ls -lart /home'
- **`cwd`** (*str*) -- The current working directory to execute the command in, defaults to /root
- **`stdin`** (*str*) -- A string of standard input can be specified for the command to be run using the `stdin` parameter. This can be useful in cases where sensitive information must be read from standard input.:
- **`runas`** (*str*) -- User to run script as. If running on a Windows minion you must also pass a password
- **`password`** (*str*) -- Windows only. Required when specifying `runas`. This parameter will be ignored on non-Windows platforms.

  New in version 2016.3.0.

- **shell** (*str*) -- Shell to execute under. Defaults to the system default shell.
- **python_shell** (*bool*) -- If False, let python handle the positional arguments. Set to True to use shell features, such as pipes or redirection
- **env** (*list*) -- A list of environment variables to be set prior to execution.

  Example:

  ```
  salt://scripts/foo.sh:
    cmd.script:
      - env:
        - BATCH: 'yes'
  ```

  **Warning**: The above illustrates a common PyYAML pitfall, that **yes**, **no**, **on**, **off**, **true**, and **false** are all loaded as boolean `True` and `False` values, and must be enclosed in quotes to be used as strings. More info on this (and other) PyYAML idiosyncrasies can be found *here*.

  Variables as values are not evaluated. So $PATH in the following example is a literal `$PATH':

  ```
  salt://scripts/bar.sh:
    cmd.script:
      - env: "PATH=/some/path:$PATH"
  ```

  One can still use the existing $PATH by using a bit of Jinja:

  ```
  {% set current_path = salt['environ.get']('PATH', '/bin:/
  ↪usr/bin') %}

  mycommand:
    cmd.run:
      - name: ls -l /
      - env:
        - PATH: {{ [current_path, '/my/special/bin']|join(':
  ↪') }}
  ```

- **clean_env** (*bool*) -- Attempt to clean out all other shell environment variables and set only those provided in the `env' argument to this function.
- **template** (*str*) -- If this setting is applied then the named templating engine will be used to render the downloaded file. Currently jinja, mako, and wempy are supported
- **rstrip** (*bool*) -- Strip all whitespace off the end of output before it is returned.
- **umask** (*str*) -- The umask (in octal) to use when running the command.
- **output_loglevel** (*str*) -- Control the loglevel at which the output from the command is logged. Note that the command being run will still be logged (loglevel: DEBUG) regardless, unless `quiet` is used for this value.
- **timeout** (*int*) -- A timeout in seconds for the executed process to return.
- **use_vt** (*bool*) -- Use VT utils (saltstack) to stream the command output more interactively to the console and the logs. This is experimental.

**Note:** `env` represents the environment variables for the command, and should be formatted as a dict, or a YAML string which resolves to a dict.

**Parameters**

- **`redirect_stderr`** (*`bool`*) -- If set to `True`, then stderr will be redirected to stdout. This is helpful for cases where obtaining both the retcode and output is desired, but it is not desired to have the output separated into both stdout and stderr.

  New in version 2015.8.2.

- **`password`** (*`str`*) -- Windows only. Required when specifying `runas`. This parameter will be ignored on non-Windows platforms.

  New in version 2016.3.0.

- **`bg`** (*`bool`*) -- If `True`, run command in background and do not await or deliver it's results

  New in version 2016.3.6.

CLI Example:

```
salt '*' cmd.run_all "ls -l | awk '/foo/{print \$2}'"
```

The template arg can be set to `jinja' or another supported template engine to render the command arguments before execution. For example:

```
salt '*' cmd.run_all template=jinja "ls -l /tmp/{{grains.id}} | awk '/foo/{print \
↪$2}'"
```

A string of standard input can be specified for the command to be run using the `stdin` parameter. This can be useful in cases where sensitive information must be read from standard input.:

```
salt '*' cmd.run_all "grep f" stdin='one\ntwo\nthree\nfour\nfive\n'
```

`salt.modules.cmdmod.`**`run_bg`**(*cmd*, *cwd=None*, *runas=None*, *shell='/bin/sh'*, *python_shell=None*, *env=None*, *clean_env=False*, *template=None*, *umask=None*, *timeout=None*, *output_loglevel='debug'*, *log_callback=None*, *reset_system_locale=True*, *ignore_retcode=False*, *saltenv='base'*, *password=None*, ***kwargs*)

Execute the passed command in the background and return it's PID

Note that `env` represents the environment variables for the command, and should be formatted as a dict, or a YAML string which resolves to a dict.

**Parameters**

- **`cmd`** (*`str`*) -- The command to run. ex: `ls -lart /home'
- **`cwd`** (*`str`*) -- The current working directory to execute the command in, defaults to */root* (`C:` in windows)
- **`output_loglevel`** (*`str`*) -- Control the loglevel at which the output from the command is logged. Note that the command being run will still be logged (loglevel: DEBUG) regardless, unless `quiet` is used for this value.
- **`runas`** (*`str`*) -- User to run script as. If running on a Windows minion you must also pass a password

- **password** (*str*) -- Windows only. Required when specifying `runas`. This parameter will be ignored on non-Windows platforms.

  New in version 2016.3.0.

- **shell** (*str*) -- Shell to execute under. Defaults to the system default shell.

- **python_shell** (*bool*) -- If False, let python handle the positional arguments. Set to True to use shell features, such as pipes or redirection

- **env** (*list*) -- A list of environment variables to be set prior to execution.

  Example:

  ```
  salt://scripts/foo.sh:
    cmd.script:
      - env:
        - BATCH: 'yes'
  ```

  **Warning**: The above illustrates a common PyYAML pitfall, that **yes**, **no**, **on**, **off**, **true**, and **false** are all loaded as boolean `True` and `False` values, and must be enclosed in quotes to be used as strings. More info on this (and other) PyYAML idiosyncrasies can be found *here*.

  Variables as values are not evaluated. So $PATH in the following example is a literal `$PATH':

  ```
  salt://scripts/bar.sh:
    cmd.script:
      - env: "PATH=/some/path:$PATH"
  ```

  One can still use the existing $PATH by using a bit of Jinja:

  ```
  {% set current_path = salt['environ.get']('PATH', '/bin:/
   ↪usr/bin') %}

  mycommand:
    cmd.run:
      - name: ls -l /
      - env:
        - PATH: {{ [current_path, '/my/special/bin']|join(':
   ↪') }}
  ```

- **clean_env** (*bool*) -- Attempt to clean out all other shell environment variables and set only those provided in the `env' argument to this function.

- **template** (*str*) -- If this setting is applied then the named templating engine will be used to render the downloaded file. Currently jinja, mako, and wempy are supported

- **umask** (*str*) -- The umask (in octal) to use when running the command.

- **timeout** (*int*) -- A timeout in seconds for the executed process to return.

**Warning**: This function does not process commands through a shell unless the python_shell flag is set to True. This means that any shell-specific functionality such as `echo' or the use of pipes, redirection or &&, should either be migrated to cmd.shell or have the python_shell=True flag set here.

> The use of python_shell=True means that the shell will accept _any_ input including potentially malicious commands such as `good_command;rm -rf /'. Be absolutely certain that you have sanitized your input prior to using python_shell=True

CLI Example:

```
salt '*' cmd.run_bg "fstrim-all"
```

The template arg can be set to `jinja' or another supported template engine to render the command arguments before execution. For example:

```
salt '*' cmd.run_bg template=jinja "ls -l /tmp/{{grains.id}} | awk '/foo/{print \\
↪$2}'"
```

Specify an alternate shell with the shell parameter:

```
salt '*' cmd.run_bg "Get-ChildItem C:\\ " shell='powershell'
```

If an equal sign (=) appears in an argument to a Salt command it is interpreted as a keyword argument in the format `key=val`. That processing can be bypassed in order to pass an equal sign through to the remote shell command by manually specifying the kwarg:

```
salt '*' cmd.run_bg cmd='ls -lR / | sed -e s/=/:/g > /tmp/dontwait'
```

`salt.modules.cmdmod.`**`run_chroot`**(*root*, *cmd*, *cwd=None*, *stdin=None*, *runas=None*, *shell='/bin/sh'*, *python_shell=True*, *env=None*, *clean_env=False*, *template=None*, *rstrip=True*, *umask=None*, *output_loglevel='quiet'*, *log_callback=None*, *quiet=False*, *timeout=None*, *reset_system_locale=True*, *ignore_retcode=False*, *saltenv='base'*, *use_vt=False*, *bg=False*, ***kwargs*)

New in version 2014.7.0.

This function runs *`cmd.run_all`* wrapped within a chroot, with dev and proc mounted in the chroot

**root** Path to the root of the jail to use.

**cmd** The command to run. ex: `ls -lart /home'

**cwd** The current working directory to execute the command in, defaults to /root

**stdin** A string of standard input can be specified for the command to be run using the `stdin` parameter. This can be useful in cases where sensitive information must be read from standard input.:

**runas** User to run script as.

**shell** Shell to execute under. Defaults to the system default shell.

**python_shell** If False, let python handle the positional arguments. Set to True to use shell features, such as pipes or redirection

**env**

A list of environment variables to be set prior to execution. Example:

```
salt://scripts/foo.sh:
  cmd.script:
    - env:
      - BATCH: 'yes'
```

> **Warning**: The above illustrates a common PyYAML pitfall, that **yes**, **no**, **on**, **off**, **true**, and **false** are all loaded as boolean `True` and `False` values, and must be enclosed in

quotes to be used as strings. More info on this (and other) PyYAML idiosyncrasies can be found *here*.

Variables as values are not evaluated. So $PATH in the following example is a literal `$PATH':

```
salt://scripts/bar.sh:
  cmd.script:
    - env: "PATH=/some/path:$PATH"
```

One can still use the existing $PATH by using a bit of Jinja:

```
{% set current_path = salt['environ.get']('PATH', '/bin:/usr/bin') %}

mycommand:
  cmd.run:
    - name: ls -l /
    - env:
      - PATH: {{ [current_path, '/my/special/bin']|join(':') }}
```

**clean_env**: Attempt to clean out all other shell environment variables and set only those provided in the `env' argument to this function.

**template** If this setting is applied then the named templating engine will be used to render the downloaded file. Currently jinja, mako, and wempy are supported

**rstrip** Strip all whitespace off the end of output before it is returned.

**umask** The umask (in octal) to use when running the command.

**output_loglevel** Control the loglevel at which the output from the command is logged. Note that the command being run will still be logged (loglevel: DEBUG) regardless, unless `quiet` is used for this value.

**timeout** A timeout in seconds for the executed process to return.

**use_vt** Use VT utils (saltstack) to stream the command output more interactively to the console and the logs. This is experimental.

CLI Example:

```
salt '*' cmd.run_chroot /var/lib/lxc/container_name/rootfs 'sh /tmp/bootstrap.sh'
```

salt.modules.cmdmod.**run_stderr**(*cmd*, *cwd=None*, *stdin=None*, *runas=None*, *shell='/bin/sh'*, *python_shell=None*, *env=None*, *clean_env=False*, *template=None*, *rstrip=True*, *umask=None*, *output_loglevel='debug'*, *log_callback=None*, *timeout=None*, *reset_system_locale=True*, *ignore_retcode=False*, *saltenv='base'*, *use_vt=False*, *password=None*, ***kwargs*)

Execute a command and only return the standard error

**Parameters**

- **cmd** (*str*) -- The command to run. ex: `ls -lart /home'
- **cwd** (*str*) -- The current working directory to execute the command in, defaults to /root
- **stdin** (*str*) -- A string of standard input can be specified for the command to be run using the `stdin` parameter. This can be useful in cases where sensitive information must be read from standard input.:
- **runas** (*str*) -- User to run script as. If running on a Windows minion you must also pass a password

- **password** (*str*) -- Windows only. Required when specifying `runas`. This parameter will be ignored on non-Windows platforms.

  New in version 2016.3.0.

- **shell** (*str*) -- Shell to execute under. Defaults to the system default shell.

- **python_shell** (*bool*) -- If False, let python handle the positional arguments. Set to True to use shell features, such as pipes or redirection

- **env** (`list`) -- A list of environment variables to be set prior to execution.

  Example:

  ```
  salt://scripts/foo.sh:
    cmd.script:
      - env:
        - BATCH: 'yes'
  ```

  **Warning**: The above illustrates a common PyYAML pitfall, that **yes**, **no**, **on**, **off**, **true**, and **false** are all loaded as boolean `True` and `False` values, and must be enclosed in quotes to be used as strings. More info on this (and other) PyYAML idiosyncrasies can be found *here*.

  Variables as values are not evaluated. So $PATH in the following example is a literal `$PATH':

  ```
  salt://scripts/bar.sh:
    cmd.script:
      - env: "PATH=/some/path:$PATH"
  ```

  One can still use the existing $PATH by using a bit of Jinja:

  ```
  {% set current_path = salt['environ.get']('PATH', '/bin:/
  ↪usr/bin') %}

  mycommand:
    cmd.run:
      - name: ls -l /
      - env:
        - PATH: {{ [current_path, '/my/special/bin']|join(':
  ↪') }}
  ```

- **clean_env** (*bool*) -- Attempt to clean out all other shell environment variables and set only those provided in the `env' argument to this function.

- **template** (*str*) -- If this setting is applied then the named templating engine will be used to render the downloaded file. Currently jinja, mako, and wempy are supported

- **rstrip** (*bool*) -- Strip all whitespace off the end of output before it is returned.

- **umask** (*str*) -- The umask (in octal) to use when running the command.

- **output_loglevel** (*str*) -- Control the loglevel at which the output from the command is logged. Note that the command being run will still be logged (loglevel: DEBUG) regardless, unless `quiet` is used for this value.

- **timeout** (*int*) -- A timeout in seconds for the executed process to return.

- **use_vt** (*bool*) -- Use VT utils (saltstack) to stream the command output more interactively to the console and the logs. This is experimental.

---

**Note:** `env` represents the environment variables for the command, and should be formatted as a dict, or a YAML string which resolves to a dict.

---

CLI Example:

```
salt '*' cmd.run_stderr "ls -l | awk '/foo/{print \$2}'"
```

The template arg can be set to `jinja' or another supported template engine to render the command arguments before execution. For example:

```
salt '*' cmd.run_stderr template=jinja "ls -l /tmp/{{grains.id}} | awk '/foo/
↪{print \$2}'"
```

A string of standard input can be specified for the command to be run using the `stdin` parameter. This can be useful in cases where sensitive information must be read from standard input.:

```
salt '*' cmd.run_stderr "grep f" stdin='one\ntwo\nthree\nfour\nfive\n'
```

`salt.modules.cmdmod.`**`run_stdout`**(*cmd*, *cwd=None*, *stdin=None*, *runas=None*, *shell='/bin/sh'*, *python_shell=None*, *env=None*, *clean_env=False*, *template=None*, *rstrip=True*, *umask=None*, *output_loglevel='debug'*, *log_callback=None*, *timeout=None*, *reset_system_locale=True*, *ignore_retcode=False*, *saltenv='base'*, *use_vt=False*, *password=None*, ***kwargs*)

Execute a command, and only return the standard out

**Parameters**

- **cmd** (*str*) -- The command to run. ex: `ls -lart /home'
- **cwd** (*str*) -- The current working directory to execute the command in, defaults to /root
- **stdin** (*str*) -- A string of standard input can be specified for the command to be run using the `stdin` parameter. This can be useful in cases where sensitive information must be read from standard input.:
- **runas** (*str*) -- User to run script as. If running on a Windows minion you must also pass a password
- **password** (*str*) -- Windows only. Required when specifying `runas`. This parameter will be ignored on non-Windows platforms.

  New in version 2016.3.0.
- **shell** (*str*) -- Shell to execute under. Defaults to the system default shell.
- **python_shell** (*bool*) -- If False, let python handle the positional arguments. Set to True to use shell features, such as pipes or redirection
- **env** (*list*) -- A list of environment variables to be set prior to execution.

  Example:

  ```
  salt://scripts/foo.sh:
    cmd.script:
      - env:
        - BATCH: 'yes'
  ```

> **Warning**: The above illustrates a common PyYAML pitfall, that **yes**, **no**, **on**, **off**, **true**, and **false** are all loaded as boolean `True` and `False` values, and must be enclosed in quotes to be used as strings. More info on this (and other) PyYAML idiosyncrasies can be found *here*.

Variables as values are not evaluated. So $PATH in the following example is a literal `$PATH':

```
salt://scripts/bar.sh:
  cmd.script:
    - env: "PATH=/some/path:$PATH"
```

One can still use the existing $PATH by using a bit of Jinja:

```
{% set current_path = salt['environ.get']('PATH', '/bin:/
 ↪usr/bin') %}

mycommand:
  cmd.run:
    - name: ls -l /
    - env:
      - PATH: {{ [current_path, '/my/special/bin']|join(':
 ↪') }}
```

- **clean_env** (*bool*) -- Attempt to clean out all other shell environment variables and set only those provided in the `env' argument to this function.
- **template** (*str*) -- If this setting is applied then the named templating engine will be used to render the downloaded file. Currently jinja, mako, and wempy are supported
- **rstrip** (*bool*) -- Strip all whitespace off the end of output before it is returned.
- **umask** (*str*) -- The umask (in octal) to use when running the command.
- **output_loglevel** (*str*) -- Control the loglevel at which the output from the command is logged. Note that the command being run will still be logged (loglevel: DEBUG) regardless, unless `quiet` is used for this value.
- **timeout** (*int*) -- A timeout in seconds for the executed process to return.
- **use_vt** (*bool*) -- Use VT utils (saltstack) to stream the command output more interactively to the console and the logs. This is experimental.

---

**Note**: `env` represents the environment variables for the command, and should be formatted as a dict, or a YAML string which resolves to a dict.

---

CLI Example:

```
salt '*' cmd.run_stdout "ls -l | awk '/foo/{print \$2}'"
```

The template arg can be set to `jinja' or another supported template engine to render the command arguments before execution. For example:

```
salt '*' cmd.run_stdout template=jinja "ls -l /tmp/{{grains.id}} | awk '/foo/
 ↪{print \$2}'"
```

A string of standard input can be specified for the command to be run using the `stdin` parameter. This can be useful in cases where sensitive information must be read from standard input.:

```
salt '*' cmd.run_stdout "grep f" stdin='one\ntwo\nthree\nfour\nfive\n'
```

salt.modules.cmdmod.**script**(*source*, *args=None*, *cwd=None*, *stdin=None*, *runas=None*, *shell='/bin/sh'*, *python_shell=None*, *env=None*, *template=None*, *umask=None*, *output_loglevel='debug'*, *log_callback=None*, *quiet=False*, *timeout=None*, *reset_system_locale=True*, *__env__=None*, *saltenv='base'*, *use_vt=False*, *bg=False*, *password=None*, ***kwargs*)

Download a script from a remote location and execute the script locally. The script can be located on the salt master file server or on an HTTP/FTP server.

The script will be executed directly, so it can be written in any available programming language.

**Parameters**

- **source** (*str*) -- The location of the script to download. If the file is located on the master in the directory named spam, and is called eggs, the source string is salt://spam/eggs
- **args** (*str*) -- String of command line args to pass to the script. Only used if no args are specified as part of the *name* argument. To pass a string containing spaces in YAML, you will need to doubly-quote it: ``arg1 `arg two' arg3''
- **cwd** (*str*) -- The current working directory to execute the command in, defaults to /root
- **stdin** (*str*) -- A string of standard input can be specified for the command to be run using the `stdin` parameter. This can be useful in cases where sensitive information must be read from standard input.:
- **runas** (*str*) -- User to run script as. If running on a Windows minion you must also pass a password
- **password** (*str*) -- Windows only. Required when specifying `runas`. This parameter will be ignored on non-Windows platforms.

  New in version 2016.3.0.
- **shell** (*str*) -- Shell to execute under. Defaults to the system default shell.
- **python_shell** (*bool*) -- If False, let python handle the positional arguments. Set to True to use shell features, such as pipes or redirection
- **bg** (*bool*) -- If True, run script in background and do not await or deliver it's results
- **env** (*list*) -- A list of environment variables to be set prior to execution.

  Example:

  ```
  salt://scripts/foo.sh:
    cmd.script:
      - env:
        - BATCH: 'yes'
  ```

  **Warning**: The above illustrates a common PyYAML pitfall, that **yes**, **no**, **on**, **off**, **true**, and **false** are all loaded as boolean `True` and `False` values, and must be enclosed in quotes to be used as strings. More info on this (and other) PyYAML idiosyncrasies can be found *here*.

Variables as values are not evaluated. So $PATH in the following example is a literal `$PATH':

```
salt://scripts/bar.sh:
  cmd.script:
    - env: "PATH=/some/path:$PATH"
```

One can still use the existing $PATH by using a bit of Jinja:

```
{% set current_path = salt['environ.get']('PATH', '/bin:/
↪usr/bin') %}

mycommand:
  cmd.run:
    - name: ls -l /
    - env:
      - PATH: {{ [current_path, '/my/special/bin']|join(':
↪') }}
```

- **template** (*str*) -- If this setting is applied then the named templating engine will be used to render the downloaded file. Currently jinja, mako, and wempy are supported
- **umask** (*str*) -- The umask (in octal) to use when running the command.
- **output_loglevel** (*str*) -- Control the loglevel at which the output from the command is logged. Note that the command being run will still be logged (loglevel: DEBUG)regardless, unless `quiet` is used for this value.
- **quiet** (*bool*) -- The command will be executed quietly, meaning no log entries of the actual command or its return data. This is deprecated as of the **2014.1.0** release, and is being replaced with `output_loglevel: quiet`.
- **timeout** (*int*) -- If the command has not terminated after timeout seconds, send the subprocess sigterm, and if sigterm is ignored, follow up with sigkill
- **use_vt** (*bool*) -- Use VT utils (saltstack) to stream the command output more interactively to the console and the logs. This is experimental.

CLI Example:

```
salt '*' cmd.script salt://scripts/runme.sh
salt '*' cmd.script salt://scripts/runme.sh 'arg1 arg2 "arg 3"'
salt '*' cmd.script salt://scripts/windows_task.ps1 args=' -Input c:\tmp\infile.
↪txt' shell='powershell'
```

```
salt '*' cmd.script salt://scripts/runme.sh stdin='one\ntwo\nthree\nfour\nfive\n'
```

`salt.modules.cmdmod.`**`script_retcode`**(*source*, *args=None*, *cwd=None*, *stdin=None*, *runas=None*, *shell='/bin/sh'*, *python_shell=None*, *env=None*, *template='jinja'*, *umask=None*, *timeout=None*, *reset_system_locale=True*, *__env__=None*, *saltenv='base'*, *output_loglevel='debug'*, *log_callback=None*, *use_vt=False*, *password=None*, ***kwargs*)

Download a script from a remote location and execute the script locally. The script can be located on the salt master file server or on an HTTP/FTP server.

The script will be executed directly, so it can be written in any available programming language.

The script can also be formatted as a template, the default is jinja.

Only evaluate the script return code and do not block for terminal output

**Parameters**

- **source** (*str*) -- The location of the script to download. If the file is located on the master in the directory named spam, and is called eggs, the source string is salt://spam/eggs
- **args** (*str*) -- String of command line args to pass to the script. Only used if no args are specified as part of the *name* argument. To pass a string containing spaces in YAML, you will need to doubly-quote it: ``arg1 `arg two' arg3''
- **cwd** (*str*) -- The current working directory to execute the command in, defaults to /root
- **stdin** (*str*) -- A string of standard input can be specified for the command to be run using the `stdin` parameter. This can be useful in cases where sensitive information must be read from standard input.:
- **runas** (*str*) -- User to run script as. If running on a Windows minion you must also pass a password
- **password** (*str*) -- Windows only. Required when specifying `runas`. This parameter will be ignored on non-Windows platforms.

  New in version 2016.3.0.
- **shell** (*str*) -- Shell to execute under. Defaults to the system default shell.
- **python_shell** (*bool*) -- If False, let python handle the positional arguments. Set to True to use shell features, such as pipes or redirection
- **env** (*list*) -- A list of environment variables to be set prior to execution.

  Example:

```
salt://scripts/foo.sh:
  cmd.script:
    - env:
      - BATCH: 'yes'
```

  **Warning**: The above illustrates a common PyYAML pitfall, that **yes**, **no**, **on**, **off**, **true**, and **false** are all loaded as boolean `True` and `False` values, and must be enclosed in quotes to be used as strings. More info on this (and other) PyYAML idiosyncrasies can be found *here*.

  Variables as values are not evaluated. So $PATH in the following example is a literal `$PATH':

```
salt://scripts/bar.sh:
  cmd.script:
    - env: "PATH=/some/path:$PATH"
```

  One can still use the existing $PATH by using a bit of Jinja:

```
{% set current_path = salt['environ.get']('PATH', '/bin:/
 ↪usr/bin') %}

mycommand:
  cmd.run:
    - name: ls -l /
```

```
    - env:
      - PATH: {{ [current_path, '/my/special/bin']|join(':
↪') }}
```

- **template** (*str*) -- If this setting is applied then the named templating engine will be used to render the downloaded file. Currently jinja, mako, and wempy are supported
- **umask** (*str*) -- The umask (in octal) to use when running the command.
- **output_loglevel** (*str*) -- Control the loglevel at which the output from the command is logged. Note that the command being run will still be logged (loglevel: DEBUG) regardless, unless `quiet` is used for this value.
- **quiet** (*bool*) -- The command will be executed quietly, meaning no log entries of the actual command or its return data. This is deprecated as of the **2014.1.0** release, and is being replaced with `output_loglevel: quiet`.
- **timeout** (*int*) -- If the command has not terminated after timeout seconds, send the subprocess sigterm, and if sigterm is ignored, follow up with sigkill
- **use_vt** (*bool*) -- Use VT utils (saltstack) to stream the command output more interactively to the console and the logs. This is experimental.

CLI Example:

```
salt '*' cmd.script_retcode salt://scripts/runme.sh
salt '*' cmd.script_retcode salt://scripts/runme.sh 'arg1 arg2 "arg 3"'
salt '*' cmd.script_retcode salt://scripts/windows_task.ps1 args=' -Input c:
↪\tmp\infile.txt' shell='powershell'
```

A string of standard input can be specified for the command to be run using the `stdin` parameter. This can be useful in cases where sensitive information must be read from standard input.:

```
salt '*' cmd.script_retcode salt://scripts/runme.sh stdin=
↪'one\ntwo\nthree\nfour\nfive\n'
```

`salt.modules.cmdmod.`**`shell`**(*cmd*, *cwd=None*, *stdin=None*, *runas=None*, *shell='/bin/sh'*, *env=None*, *clean_env=False*, *template=None*, *rstrip=True*, *umask=None*, *output_loglevel='debug'*, *log_callback=None*, *quiet=False*, *timeout=None*, *reset_system_locale=True*, *ignore_retcode=False*, *saltenv='base'*, *use_vt=False*, *bg=False*, *password=None*, ***kwargs*)

Execute the passed command and return the output as a string.

New in version 2015.5.0.

**Parameters**

- **cmd** (*str*) -- The command to run. ex: `ls -lart /home'
- **cwd** (*str*) -- The current working directory to execute the command in, defaults to /root
- **stdin** (*str*) -- A string of standard input can be specified for the command to be run using the `stdin` parameter. This can be useful in cases where sensitive information must be read from standard input.
- **runas** (*str*) -- User to run script as. If running on a Windows minion you must also pass a password
- **password** (*str*) -- Windows only. Required when specifying `runas`. This parameter will be ignored on non-Windows platforms.

  New in version 2016.3.0.

- **shell** (*int*) -- Shell to execute under. Defaults to the system default shell.
- **bg** (*bool*) -- If True, run command in background and do not await or deliver its results
- **env** (*list*) -- A list of environment variables to be set prior to execution.

  Example:

  ```
  salt://scripts/foo.sh:
    cmd.script:
      - env:
        - BATCH: 'yes'
  ```

  **Warning**: The above illustrates a common PyYAML pitfall, that **yes**, **no**, **on**, **off**, **true**, and **false** are all loaded as boolean `True` and `False` values, and must be enclosed in quotes to be used as strings. More info on this (and other) PyYAML idiosyncrasies can be found *here*.

  Variables as values are not evaluated. So $PATH in the following example is a literal `$PATH':

  ```
  salt://scripts/bar.sh:
    cmd.script:
      - env: "PATH=/some/path:$PATH"
  ```

  One can still use the existing $PATH by using a bit of Jinja:

  ```
  {% set current_path = salt['environ.get']('PATH', '/bin:/
  ↪usr/bin') %}

  mycommand:
    cmd.run:
      - name: ls -l /
      - env:
        - PATH: {{ [current_path, '/my/special/bin']|join(':
  ↪') }}
  ```

- **clean_env** (*bool*) -- Attempt to clean out all other shell environment variables and set only those provided in the `env' argument to this function.
- **template** (*str*) -- If this setting is applied then the named templating engine will be used to render the downloaded file. Currently jinja, mako, and wempy are supported
- **rstrip** (*bool*) -- Strip all whitespace off the end of output before it is returned.
- **umask** (*str*) -- The umask (in octal) to use when running the command.
- **output_loglevel** (*str*) -- Control the loglevel at which the output from the command is logged. Note that the command being run will still be logged (loglevel: DEBUG) regardless, unless `quiet` is used for this value.
- **timeout** (*int*) -- A timeout in seconds for the executed process to return.
- **use_vt** (*bool*) -- Use VT utils (saltstack) to stream the command output more interactively to the console and the logs. This is experimental.

**Warning:** This passes the cmd argument directly to the shell without any further processing! Be absolutely sure that you have properly sanitized the command passed to this function and do not use untrusted inputs.

**Note:** `env` represents the environment variables for the command, and should be formatted as a dict, or a YAML string which resolves to a dict.

CLI Example:

```
salt '*' cmd.shell "ls -l | awk '/foo/{print \$2}'"
```

The template arg can be set to `jinja' or another supported template engine to render the command arguments before execution. For example:

```
salt '*' cmd.shell template=jinja "ls -l /tmp/{{grains.id}} | awk '/foo/{print \
↪$2}'"
```

Specify an alternate shell with the shell parameter:

```
salt '*' cmd.shell "Get-ChildItem C:\ " shell='powershell'
```

A string of standard input can be specified for the command to be run using the `stdin` parameter. This can be useful in cases where sensitive information must be read from standard input.:

```
salt '*' cmd.shell "grep f" stdin='one\ntwo\nthree\nfour\nfive\n'
```

If an equal sign (=) appears in an argument to a Salt command it is interpreted as a keyword argument in the format `key=val`. That processing can be bypassed in order to pass an equal sign through to the remote shell command by manually specifying the kwarg:

```
salt '*' cmd.shell cmd='sed -e s/=/:/g'
```

`salt.modules.cmdmod.`**`shells`**`()`

Lists the valid shells on this system via the /etc/shells file

New in version 2015.5.0.

CLI Example:

```
salt '*' cmd.shells
```

`salt.modules.cmdmod.`**`tty`**`(`*device*, *echo=None*`)`

Echo a string to a specific tty

CLI Example:

```
salt '*' cmd.tty tty0 'This is a test'
salt '*' cmd.tty pts3 'This is a test'
```

`salt.modules.cmdmod.`**`which`**`(`*cmd*`)`

Returns the path of an executable available on the minion, None otherwise

CLI Example:

```
salt '*' cmd.which cat
```

salt.modules.cmdmod.**which_bin**(*cmds*)
Returns the first command found in a list of commands

CLI Example:

```
salt '*' cmd.which_bin '[pip2, pip, pip-python]'
```

### 13.6.49 salt.modules.composer

Use composer to install PHP dependencies for a directory

salt.modules.composer.**did_composer_install**(*dir*)
Test to see if the vendor directory exists in this directory
**dir** Directory location of the composer.json file
CLI Example:

```
salt '*' composer.did_composer_install /var/www/application
```

salt.modules.composer.**install**(*directory*, *composer=None*, *php=None*, *runas=None*, *prefer_source=None*, *prefer_dist=None*, *no_scripts=None*, *no_plugins=None*, *optimize=None*, *no_dev=None*, *quiet=False*, *composer_home='/root'*)
Install composer dependencies for a directory.

If composer has not been installed globally making it available in the system PATH & making it executable, the `composer` and `php` parameters will need to be set to the location of the executables.
**directory** Directory location of the composer.json file.
**composer** Location of the composer.phar file. If not set composer will just execute ``composer'' as if it is installed globally. (i.e. /path/to/composer.phar)
**php** Location of the php executable to use with composer. (i.e. /usr/bin/php)
**runas** Which system user to run composer as.
**prefer_source** --prefer-source option of composer.
**prefer_dist** --prefer-dist option of composer.
**no_scripts** --no-scripts option of composer.
**no_plugins** --no-plugins option of composer.
**optimize** --optimize-autoloader option of composer. Recommended for production.
**no_dev** --no-dev option for composer. Recommended for production.
**quiet** --quiet option for composer. Whether or not to return output from composer.
**composer_home** $COMPOSER_HOME environment variable
CLI Example:

```
salt '*' composer.install /var/www/application

salt '*' composer.install /var/www/application            no_dev=True optimize=True
```

salt.modules.composer.**selfupdate**(*composer=None*, *php=None*, *runas=None*, *quiet=False*, *composer_home='/root'*)
Update composer itself.

If composer has not been installed globally making it available in the system PATH & making it executable, the `composer` and `php` parameters will need to be set to the location of the executables.
**composer** Location of the composer.phar file. If not set composer will just execute ``composer'' as if it is installed globally. (i.e. /path/to/composer.phar)
**php** Location of the php executable to use with composer. (i.e. /usr/bin/php)
**runas** Which system user to run composer as.
**quiet** --quiet option for composer. Whether or not to return output from composer.

**composer_home** $COMPOSER_HOME environment variable
CLI Example:

```
salt '*' composer.selfupdate
```

salt.modules.composer.**update**(*directory*, *composer=None*, *php=None*, *runas=None*, *prefer_source=None*, *prefer_dist=None*, *no_scripts=None*, *no_plugins=None*, *optimize=None*, *no_dev=None*, *quiet=False*, *composer_home='/root'*)

Update composer dependencies for a directory.

If *composer install* has not yet been run, this runs *composer install* instead.

If composer has not been installed globally making it available in the system PATH & making it executable, the `composer` and `php` parameters will need to be set to the location of the executables.
**directory** Directory location of the composer.json file.
**composer** Location of the composer.phar file. If not set composer will just execute ``composer'' as if it is installed globally. (i.e. /path/to/composer.phar)
**php** Location of the php executable to use with composer. (i.e. /usr/bin/php)
**runas** Which system user to run composer as.
**prefer_source** --prefer-source option of composer.
**prefer_dist** --prefer-dist option of composer.
**no_scripts** --no-scripts option of composer.
**no_plugins** --no-plugins option of composer.
**optimize** --optimize-autoloader option of composer. Recommended for production.
**no_dev** --no-dev option for composer. Recommended for production.
**quiet** --quiet option for composer. Whether or not to return output from composer.
**composer_home** $COMPOSER_HOME environment variable
CLI Example:

```
salt '*' composer.update /var/www/application

salt '*' composer.update /var/www/application            no_dev=True optimize=True
```

### 13.6.50 salt.modules.config

Return config information

salt.modules.config.**backup_mode**(*backup=''*)

Return the backup mode

CLI Example:

```
salt '*' config.backup_mode
```

salt.modules.config.**dot_vals**(*value*)

Pass in a configuration value that should be preceded by the module name and a dot, this will return a list of all read key/value pairs

CLI Example:

```
salt '*' config.dot_vals host
```

salt.modules.config.**gather_bootstrap_script**(*bootstrap=None*)

Download the salt-bootstrap script, and return its location
**bootstrap** URL of alternate bootstrap script

CLI Example:

```
salt '*' config.gather_bootstrap_script
```

salt.modules.config.**get**(*key*, *default=''*, *delimiter=':'*, *merge=None*)

Attempt to retrieve the named value from the minion config file, pillar, grains or the master config. If the named value is not available, return the value specified by `default`. If not specified, the default is an empty string.

Values can also be retrieved from nested dictionaries. Assume the below data structure:

```
{'pkg': {'apache': 'httpd'}}
```

To retrieve the value associated with the `apache` key, in the sub-dictionary corresponding to the `pkg` key, the following command can be used:

```
salt myminion config.get pkg:apache
```

The `:` (colon) is used to represent a nested dictionary level.

Changed in version 2015.5.0: The `delimiter` argument was added, to allow delimiters other than `:` to be used.

This function traverses these data stores in this order, returning the first match found:

- Minion configuration
- Minion's grains
- Minion's pillar data
- Master configuration (requires `pillar_opts` to be set to `True` in Minion config file in order to work)

This means that if there is a value that is going to be the same for the majority of minions, it can be configured in the Master config file, and then overridden using the grains, pillar, or Minion config file.

Adding config options to the Master or Minion configuration file is easy:

```
my-config-option: value
cafe-menu:
  - egg and bacon
  - egg sausage and bacon
  - egg and spam
  - egg bacon and spam
  - egg bacon sausage and spam
  - spam bacon sausage and spam
  - spam egg spam spam bacon and spam
  - spam sausage spam spam bacon spam tomato and spam
```

---

**Note**: Minion configuration options built into Salt (like those defined *here*) will *always* be defined in the Minion configuration and thus *cannot be overridden by grains or pillar data.* However, additional (user-defined) configuration options (as in the above example) will not be in the Minion configuration by default and thus can be overridden using grains/pillar data by leaving the option out of the minion config file.

---

**Arguments**

**delimiter** New in version 2015.5.0.

Override the delimiter used to separate nested levels of a data structure.

**merge** New in version 2015.5.0.

If passed, this parameter will change the behavior of the function so that, instead of traversing each data store above in order and returning the first match, the data stores are first merged together and then

searched. The pillar data is merged into the master config data, then the grains are merged, followed by the Minion config data. The resulting data structure is then searched for a match. This allows for configurations to be more flexible.

---

**Note:** The merging described above does not mean that grain data will end up in the Minion's pillar data, or pillar data will end up in the master config data, etc. The data is just combined for the purposes of searching an amalgam of the different data stores.

---

The supported merge strategies are as follows:

- **recurse** - If a key exists in both dictionaries, and the new value is not a dictionary, it is replaced. Otherwise, the sub-dictionaries are merged together into a single dictionary, recursively on down, following the same criteria. For example:

```
>>> dict1 = {'foo': {'bar': 1, 'qux': True},
             'hosts': ['a', 'b', 'c'],
             'only_x': None}
>>> dict2 = {'foo': {'baz': 2, 'qux': False},
             'hosts': ['d', 'e', 'f'],
             'only_y': None}
>>> merged
{'foo': {'bar': 1, 'baz': 2, 'qux': False},
 'hosts': ['d', 'e', 'f'],
 'only_dict1': None,
 'only_dict2': None}
```

- **overwrite** - If a key exists in the top level of both dictionaries, the new value completely overwrites the old. For example:

```
>>> dict1 = {'foo': {'bar': 1, 'qux': True},
             'hosts': ['a', 'b', 'c'],
             'only_x': None}
>>> dict2 = {'foo': {'baz': 2, 'qux': False},
             'hosts': ['d', 'e', 'f'],
             'only_y': None}
>>> merged
{'foo': {'baz': 2, 'qux': False},
 'hosts': ['d', 'e', 'f'],
 'only_dict1': None,
 'only_dict2': None}
```

CLI Example:

```
salt '*' config.get pkg:apache
salt '*' config.get lxc.container_profile:centos merge=recurse
```

`salt.modules.config.`**`manage_mode`**(*mode*)

Return a mode value, normalized to a string

CLI Example:

```
salt '*' config.manage_mode
```

`salt.modules.config.`**`merge`**(*value*, *default=''*, *omit_opts=False*, *omit_master=False*, *omit_pillar=False*)

Retrieves an option based on key, merging all matches.

Same as `option()` except that it merges all matches, rather than taking the first match.

CLI Example:

```
salt '*' config.merge schedule
```

salt.modules.config.**option**(*value*, *default=''*, *omit_opts=False*, *omit_master=False*, *omit_pillar=False*)

Pass in a generic option and receive the value that will be assigned

CLI Example:

```
salt '*' config.option redis.host
```

salt.modules.config.**valid_fileproto**(*uri*)

Returns a boolean value based on whether or not the URI passed has a valid remote file protocol designation

CLI Example:

```
salt '*' config.valid_fileproto salt://path/to/file
```

### 13.6.51 salt.modules.consul

Interact with Consul

https://www.consul.io

salt.modules.consul.**acl_clone**(*consul_url=None*, ***kwargs*)

Information about an ACL token.

**Parameters**

- **consul_url** -- The Consul server URL.
- **id** -- Unique identifier for the ACL to update.

**Returns** Boolean, message of success or failure, and new ID of cloned ACL.

CLI Example:

```
salt '*' consul.acl_info id='c1c4d223-91cb-3d1f-1ee8-f2af9e7b6716'
```

salt.modules.consul.**acl_create**(*consul_url=None*, ***kwargs*)

Create a new ACL token.

**Parameters**

- **consul_url** -- The Consul server URL.
- **name** -- Meaningful indicator of the ACL's purpose.
- **type** -- Type is either client or management. A management token is comparable to a root user and has the ability to perform any action including creating, modifying, and deleting ACLs.
- **rules** -- The Consul server URL.

**Returns** Boolean & message of success or failure.

CLI Example:

```
salt '*' consul.acl_create
```

salt.modules.consul.**acl_delete**(*consul_url=None*, ***kwargs*)

Delete an ACL token.

**Parameters**

- **consul_url** -- The Consul server URL.
- **id** -- Unique identifier for the ACL to update.

**Returns** Boolean & message of success or failure.

CLI Example:

```
salt '*' consul.acl_delete id='c1c4d223-91cb-3d1f-1ee8-f2af9e7b6716'
```

salt.modules.consul.**acl_info**(*consul_url=None*, ***kwargs*)

Information about an ACL token.

**Parameters**

- **consul_url** -- The Consul server URL.
- **id** -- Unique identifier for the ACL to update.

**Returns** Information about the ACL requested.

CLI Example:

```
salt '*' consul.acl_info id='c1c4d223-91cb-3d1f-1ee8-f2af9e7b6716'
```

salt.modules.consul.**acl_list**(*consul_url=None*, ***kwargs*)

List the ACL tokens.

**Parameters** **consul_url** -- The Consul server URL.

**Returns** List of ACLs

CLI Example:

```
salt '*' consul.acl_list
```

salt.modules.consul.**acl_update**(*consul_url=None*, ***kwargs*)

Update an ACL token.

**Parameters**

- **consul_url** -- The Consul server URL.
- **name** -- Meaningful indicator of the ACL's purpose.
- **id** -- Unique identifier for the ACL to update.
- **type** -- Type is either client or management. A management token is comparable to a root user and has the ability to perform any action including creating, modifying, and deleting ACLs.
- **rules** -- The Consul server URL.

**Returns** Boolean & message of success or failure.

CLI Example:

```
salt '*' consul.acl_update
```

salt.modules.consul.**agent_check_deregister**(*consul_url=None*, *checkid=None*)

The agent will take care of deregistering the check from the Catalog.

**Parameters**

- **consul_url** -- The Consul server URL.
- **checkid** -- The ID of the check to deregister from Consul.

**Returns** Boolean and message indicating success or failure.

CLI Example:

```
salt '*' consul.agent_check_deregister checkid='Memory Utilization'
```

salt.modules.consul.**agent_check_fail**(*consul_url=None*, *checkid=None*, ***kwargs*)

This endpoint is used with a check that is of the TTL type. When this is called, the status of the check is set to critical and the TTL clock is reset.

**Parameters**

- **consul_url** -- The Consul server URL.
- **checkid** -- The ID of the check to deregister from Consul.
- **note** -- A human-readable message with the status of the check.

**Returns** Boolean and message indicating success or failure.

CLI Example:

```
salt '*' consul.agent_check_fail checkid='redis_check1'
       note='Forcing check into critical state.'
```

salt.modules.consul.**agent_check_pass**(*consul_url=None*, *checkid=None*, ***kwargs*)

This endpoint is used with a check that is of the TTL type. When this is called, the status of the check is set to passing and the TTL clock is reset.

**Parameters**

- **consul_url** -- The Consul server URL.
- **checkid** -- The ID of the check to mark as passing.
- **note** -- A human-readable message with the status of the check.

**Returns** Boolean and message indicating success or failure.

CLI Example:

```
salt '*' consul.agent_check_pass checkid='redis_check1'
       note='Forcing check into passing state.'
```

salt.modules.consul.**agent_check_register**(*consul_url=None*, ***kwargs*)

The register endpoint is used to add a new check to the local agent.

**Parameters**

- **consul_url** -- The Consul server URL.
- **name** -- The description of what the check is for.
- **id** -- The unique name to use for the check, if not provided `name' is used.
- **notes** -- Human readable description of the check.
- **script** -- If script is provided, the check type is a script, and Consul will evaluate that script based on the interval parameter.
- **http** -- Check will perform an HTTP GET request against the value of HTTP (expected to be a URL) based on the interval parameter.
- **ttl** -- If a TTL type is used, then the TTL update endpoint must be used periodically to update the state of the check.
- **interval** -- Interval at which the check should run.

**Returns** Boolean and message indicating success or failure.

CLI Example:

```
salt '*' consul.agent_check_register name='Memory Utilization'
        script='/usr/local/bin/check_mem.py' interval='15s'
```

salt.modules.consul.**agent_check_warn**(*consul_url=None*, *checkid=None*, ***kwargs*)

This endpoint is used with a check that is of the TTL type. When this is called, the status of the check is set to warning and the TTL clock is reset.

**Parameters**

- **consul_url** -- The Consul server URL.
- **checkid** -- The ID of the check to deregister from Consul.
- **note** -- A human-readable message with the status of the check.

**Returns** Boolean and message indicating success or failure.

CLI Example:

```
salt '*' consul.agent_check_warn checkid='redis_check1'
        note='Forcing check into warning state.'
```

salt.modules.consul.**agent_checks**(*consul_url=None*)

Returns the checks the local agent is managing

**Parameters** **consul_url** -- The Consul server URL.

**Returns** Returns the checks the local agent is managing

CLI Example:

```
salt '*' consul.agent_checks
```

salt.modules.consul.**agent_join**(*consul_url=None*, *address=None*, ***kwargs*)

Triggers the local agent to join a node

**Parameters**

- **consul_url** -- The Consul server URL.
- **address** -- The address for the agent to connect to.
- **wan** -- Causes the agent to attempt to join using the WAN pool.

**Returns** Boolean and message indicating success or failure.

CLI Example:

```
salt '*' consul.agent_join address='192.168.1.1'
```

salt.modules.consul.**agent_leave**(*consul_url=None*, *node=None*)

Used to instruct the agent to force a node into the left state.

**Parameters**

- **consul_url** -- The Consul server URL.
- **node** -- The node the agent will force into left state

**Returns** Boolean and message indicating success or failure.

CLI Example:

```
salt '*' consul.agent_leave node='web1.example.com'
```

salt.modules.consul.**agent_maintenance**(*consul_url=None*, ***kwargs*)

Manages node maintenance mode

**Parameters**

- **consul_url** -- The Consul server URL.
- **enable** -- The enable flag is required. Acceptable values are either true (to enter maintenance mode) or false (to resume normal operation).
- **reason** -- If provided, its value should be a text string explaining the reason for placing the node into maintenance mode.

**Returns** Boolean and message indicating success or failure.

CLI Example:

```
salt '*' consul.agent_maintenance enable='False' reason='Upgrade in progress'
```

salt.modules.consul.**agent_members**(*consul_url=None*, ***kwargs*)

Returns the members as seen by the local serf agent

**Parameters** **consul_url** -- The Consul server URL.

**Returns** Returns the members as seen by the local serf agent

CLI Example:

```
salt '*' consul.agent_members
```

salt.modules.consul.**agent_self**(*consul_url=None*)

Returns the local node configuration

**Parameters** **consul_url** -- The Consul server URL.

**Returns** Returns the local node configuration

CLI Example:

```
salt '*' consul.agent_self
```

salt.modules.consul.**agent_service_deregister**(*consul_url=None*, *serviceid=None*)

Used to remove a service.

**Parameters**

- **consul_url** -- The Consul server URL.
- **serviceid** -- A serviceid describing the service.

**Returns** Boolean and message indicating success or failure.

CLI Example:

```
salt '*' consul.agent_service_deregister serviceid='redis'
```

salt.modules.consul.**agent_service_maintenance**(*consul_url=None*, *serviceid=None*, ***kwargs*)

Used to place a service into maintenance mode.

**Parameters**

- **consul_url** -- The Consul server URL.
- **serviceid** -- A name of the service.
- **enable** -- Whether the service should be enabled or disabled.
- **reason** -- A human readable message of why the service was enabled or disabled.

**Returns** Boolean and message indicating success or failure.

CLI Example:

```
salt '*' consul.agent_service_deregister serviceid='redis'
        enable='True' reason='Down for upgrade'
```

salt.modules.consul.**agent_service_register**(*consul_url=None*, ***kwargs*)

The used to add a new service, with an optional health check, to the local agent.

**Parameters**

- **consul_url** -- The Consul server URL.
- **name** -- A name describing the service.
- **address** -- The address used by the service, defaults to the address of the agent.
- **port** -- The port used by the service.
- **id** -- Unique ID to identify the service, if not provided the value of the name parameter is used.
- **tags** -- Identifying tags for service, string or list.
- **script** -- If script is provided, the check type is a script, and Consul will evaluate that script based on the interval parameter.
- **http** -- Check will perform an HTTP GET request against the value of HTTP (expected to be a URL) based on the interval parameter.
- **check_ttl** -- If a TTL type is used, then the TTL update endpoint must be used periodically to update the state of the check.
- **check_interval** -- Interval at which the check should run.

**Returns** Boolean and message indicating success or failure.

CLI Example:

```
salt '*' consul.agent_service_register name='redis'
    tags='["master", "v1"]' address="127.0.0.1" port="8080"
    check_script="/usr/local/bin/check_redis.py" interval="10s"
```

salt.modules.consul.**agent_services**(*consul_url=None*)

Returns the services the local agent is managing

**Parameters** **consul_url** -- The Consul server URL.

**Returns** Returns the services the local agent is managing

CLI Example:

```
salt '*' consul.agent_services
```

salt.modules.consul.**catalog_datacenters**(*consul_url=None*)

Return list of available datacenters from catalog.

**Parameters** **consul_url** -- The Consul server URL.

**Returns** The list of available datacenters.

CLI Example:

```
salt '*' consul.catalog_datacenters
```

salt.modules.consul.**catalog_deregister**(*consul_url=None*, ***kwargs*)

Deregisters a node, service, or check

**Parameters**

- **consul_url** -- The Consul server URL.
- **node** -- The node to deregister.
- **datacenter** -- By default, the datacenter of the agent is queried; however, the dc can be provided using the ``dc'' parameter.

- **checkid** -- The ID of the health check to deregister.
- **serviceid** -- The ID of the service to deregister.

**Returns** Boolean & message of success or failure.

CLI Example:

```
salt '*' consul.catalog_register node='node1'
    serviceid='redis_server1' checkid='redis_check1'
```

salt.modules.consul.**catalog_node**(*consul_url=None*, *node=None*, ***kwargs*)

Information about the registered node.

**Parameters**

- **consul_url** -- The Consul server URL.
- **node** -- The node to request information about.
- **dc** -- By default, the datacenter of the agent is queried; however, the dc can be provided using the ``dc'' parameter.

**Returns** Information about the requested node.

CLI Example:

```
salt '*' consul.catalog_service service='redis'
```

salt.modules.consul.**catalog_nodes**(*consul_url=None*, ***kwargs*)

Return list of available nodes from catalog.

**Parameters**

- **consul_url** -- The Consul server URL.
- **dc** -- By default, the datacenter of the agent is queried; however, the dc can be provided using the ``dc'' parameter.

**Returns** The list of available nodes.

CLI Example:

```
salt '*' consul.catalog_nodes
```

salt.modules.consul.**catalog_register**(*consul_url=None*, ***kwargs*)

Registers a new node, service, or check

**Parameters**

- **consul_url** -- The Consul server URL.
- **dc** -- By default, the datacenter of the agent is queried; however, the dc can be provided using the ``dc'' parameter.
- **node** -- The node to register.
- **address** -- The address of the node.
- **service** -- The service that will be registered.
- **service_address** -- The address that the service listens on.
- **service_port** -- The port for the service.
- **service_id** -- A unique identifier for the service, if this is not provided ``name'' will be used.
- **service_tags** -- Any tags associated with the service.

- **check** -- The name of the health check to register
- **check_status** -- The initial status of the check, must be one of unknown, passing, warning, or critical.
- **check_service** -- The service that the check is performed against.
- **check_id** -- Unique identifier for the service.
- **check_notes** -- An opaque field that is meant to hold human-readable text.

**Returns** Boolean & message of success or failure.

CLI Example:

```
salt '*' consul.catalog_register node='node1' address='192.168.1.1'
    service='redis' service_address='127.0.0.1' service_port='8080'
    service_id='redis_server1'
```

salt.modules.consul.**catalog_service**(*consul_url=None*, *service=None*, ***kwargs*)

Information about the registered service.

**Parameters**

- **consul_url** -- The Consul server URL.
- **dc** -- By default, the datacenter of the agent is queried; however, the dc can be provided using the ``dc'' parameter.
- **tag** -- Filter returned services with tag parameter.

**Returns** Information about the requested service.

CLI Example:

```
salt '*' consul.catalog_service service='redis'
```

salt.modules.consul.**catalog_services**(*consul_url=None*, ***kwargs*)

Return list of available services rom catalog.

**Parameters**

- **consul_url** -- The Consul server URL.
- **dc** -- By default, the datacenter of the agent is queried; however, the dc can be provided using the ``dc'' parameter.

**Returns** The list of available services.

CLI Example:

```
salt '*' consul.catalog_services
```

salt.modules.consul.**delete**(*consul_url=None*, *key=None*, ***kwargs*)

Delete values from Consul

**Parameters**

- **consul_url** -- The Consul server URL.
- **key** -- The key to use as the starting point for the list.
- **recurse** -- Delete values recursively beginning at the value of key.
- **cas** -- This flag is used to turn the DELETE into a Check-And-Set operation.

**Returns** Boolean & message of success or failure.

CLI Example:

```
salt '*' consul.delete key='web'

salt '*' consul.delete key='web' recurse='True'
```

salt.modules.consul.**event_fire**(*consul_url=None*, *name=None*, ***kwargs*)

List the ACL tokens.

**Parameters**

- **consul_url** -- The Consul server URL.
- **name** -- The name of the event to fire.
- **dc** -- By default, the datacenter of the agent is queried; however, the dc can be provided using the ``dc'' parameter.
- **node** -- Filter by node name.
- **service** -- Filter by service name.
- **tag** -- Filter by tag name.

**Returns** List of ACLs

CLI Example:

```
salt '*' consul.event_fire name='deploy'
```

salt.modules.consul.**event_list**(*consul_url=None*, ***kwargs*)

List the recent events.

**Parameters**

- **consul_url** -- The Consul server URL.
- **name** -- The name of the event to fire.

**Returns** List of ACLs

CLI Example:

```
salt '*' consul.event_list
```

salt.modules.consul.**get**(*consul_url=None*, *key=None*, *recurse=False*, *decode=False*, *raw=False*)

Get key from Consul

**Parameters**

- **consul_url** -- The Consul server URL.
- **key** -- The key to use as the starting point for the list.
- **recurse** -- Return values recursively beginning at the value of key.
- **decode** -- By default values are stored as Base64 encoded values, decode will return the whole key with the value decoded.
- **raw** -- Simply return the decoded value of the key.

**Returns** The keys in Consul.

CLI Example:

```
salt '*' consul.get key='web/key1'

salt '*' consul.list key='web' recurse='True

salt '*' consul.list key='web' recurse='True' decode='True'
```

By default values stored in Consul are base64 encoded, passing the decode option will show them as the decoded values.

```
salt '*' consul.list key='web' recurse='True' decode='True' raw='True'
```

By default Consult will return other information about the key, the raw option will return only the raw value.

salt.modules.consul.**health_checks**(*consul_url=None*, *service=None*, ***kwargs*)

Health information about the registered service.

**Parameters**

- **consul_url** -- The Consul server URL.
- **service** -- The service to request health information about.
- **dc** -- By default, the datacenter of the agent is queried; however, the dc can be provided using the ``dc'' parameter.

**Returns** Health information about the requested node.

CLI Example:

```
salt '*' consul.health_checks service='redis1'
```

salt.modules.consul.**health_node**(*consul_url=None*, *node=None*, ***kwargs*)

Health information about the registered node.

**Parameters**

- **consul_url** -- The Consul server URL.
- **node** -- The node to request health information about.
- **dc** -- By default, the datacenter of the agent is queried; however, the dc can be provided using the ``dc'' parameter.

**Returns** Health information about the requested node.

CLI Example:

```
salt '*' consul.health_node node='node1'
```

salt.modules.consul.**health_service**(*consul_url=None*, *service=None*, ***kwargs*)

Health information about the registered service.

**Parameters**

- **consul_url** -- The Consul server URL.
- **service** -- The service to request health information about.
- **dc** -- By default, the datacenter of the agent is queried; however, the dc can be provided using the ``dc'' parameter.
- **tag** -- Filter returned services with tag parameter.
- **passing** -- Filter results to only nodes with all checks in the passing state.

**Returns** Health information about the requested node.

CLI Example:

```
salt '*' consul.health_service service='redis1'

salt '*' consul.health_service service='redis1' passing='True'
```

salt.modules.consul.**health_state**(*consul_url=None*, *state=None*, ***kwargs*)

Returns the checks in the state provided on the path.

**Parameters**

- **consul_url** -- The Consul server URL.
- **state** -- The state to show checks for. The supported states are any, unknown, passing, warning, or critical. The any state is a wildcard that can be used to return all checks.
- **dc** -- By default, the datacenter of the agent is queried; however, the dc can be provided using the ``dc'' parameter.

**Returns** The checks in the provided state.

CLI Example:

```
salt '*' consul.health_state state='redis1'

salt '*' consul.health_state service='redis1' passing='True'
```

salt.modules.consul.**list**(*consul_url=None*, *key=None*, ***kwargs*)

List keys in Consul

**Parameters**

- **consul_url** -- The Consul server URL.
- **key** -- The key to use as the starting point for the list.

**Returns** The list of keys.

CLI Example:

```
salt '*' consul.list

salt '*' consul.list key='web'
```

salt.modules.consul.**put**(*consul_url=None*, *key=None*, *value=None*, ***kwargs*)

Put values into Consul

**Parameters**

- **consul_url** -- The Consul server URL.
- **key** -- The key to use as the starting point for the list.
- **value** -- The value to set the key to.
- **flags** -- This can be used to specify an unsigned value between 0 and 2^64-1. Clients can choose to use this however makes sense for their application.
- **cas** -- This flag is used to turn the PUT into a Check-And-Set operation.
- **acquire** -- This flag is used to turn the PUT into a lock acquisition operation.
- **release** -- This flag is used to turn the PUT into a lock release operation.

**Returns** Boolean & message of success or failure.

CLI Example:

```
salt '*' consul.put key='web/key1' value="Hello there"

salt '*' consul.put key='web/key1' value="Hello there"
                        acquire='d5d371f4-c380-5280-12fd-8810be175592'

salt '*' consul.put key='web/key1' value="Hello there"
                        release='d5d371f4-c380-5280-12fd-8810be175592'
```

salt.modules.consul.**session_create**(*consul_url=None*, ***kwargs*)

Used to create a session.

**Parameters**

- **consul_url** -- The Consul server URL.
- **lockdelay** -- Duration string using a ``s'' suffix for seconds. The default is 15s.
- **node** -- Must refer to a node that is already registered, if specified. By default, the agent's own node name is used.
- **name** -- A human-readable name for the session
- **checks** -- A list of associated health checks. It is highly recommended that, if you override this list, you include the default ``serfHealth''.
- **behavior** -- Can be set to either release or delete. This controls the behavior when a session is invalidated. By default, this is release, causing any locks that are held to be released. Changing this to delete causes any locks that are held to be deleted. delete is useful for creating ephemeral key/value entries.
- **ttl** -- Session is invalidated if it is not renewed before the TTL expires

**Returns** Boolean and message indicating success or failure.

CLI Example:

```
salt '*' consul.session_create node='node1' name='my-session'
       behavior='delete' ttl='3600s'
```

salt.modules.consul.**session_destroy**(*consul_url=None*, *session=None*, ***kwargs*)

Destroy session

**Parameters**

- **consul_url** -- The Consul server URL.
- **session** -- The ID of the session to destroy.
- **dc** -- By default, the datacenter of the agent is queried; however, the dc can be provided using the ``dc'' parameter.

**Returns** Boolean & message of success or failure.

CLI Example:

```
salt '*' consul.session_destroy session='c1c4d223-91cb-3d1f-1ee8-f2af9e7b6716'
```

salt.modules.consul.**session_info**(*consul_url=None*, *session=None*, ***kwargs*)

Information about a session

**Parameters**

- **consul_url** -- The Consul server URL.
- **session** -- The ID of the session to return information about.
- **dc** -- By default, the datacenter of the agent is queried; however, the dc can be provided using the ``dc'' parameter.

**Returns** Boolean & message of success or failure.

CLI Example:

```
salt '*' consul.session_info session='c1c4d223-91cb-3d1f-1ee8-f2af9e7b6716'
```

salt.modules.consul.**session_list**(*consul_url=None*, *return_list=False*, ***kwargs*)

Used to list sessions.

**Parameters**

- **consul_url** -- The Consul server URL.
- **dc** -- By default, the datacenter of the agent is queried; however, the dc can be provided using the ``dc'' parameter.
- **return_list** -- By default, all information about the sessions is returned, using the return_list parameter will return a list of session IDs.

**Returns** A list of all available sessions.

CLI Example:

```
salt '*' consul.session_list
```

salt.modules.consul.**status_leader**(*consul_url=None*)

Returns the current Raft leader

**Parameters** **consul_url** -- The Consul server URL.

**Returns** The address of the Raft leader.

CLI Example:

```
salt '*' consul.status_leader
```

salt.modules.consul.**status_peers**(*consul_url*)

Returns the current Raft peer set

**Parameters** **consul_url** -- The Consul server URL.

**Returns** Retrieves the Raft peers for the datacenter in which the the agent is running.

CLI Example:

```
salt '*' consul.status_peers
```

### 13.6.52 salt.modules.container_resource

Common resources for LXC and systemd-nspawn containers

New in version 2015.8.0.

These functions are not designed to be called directly, but instead from the *lxc*, *nspawn*, and *dockerng* execution modules. They provide for common logic to be re-used for common actions.

salt.modules.container_resource.**cache_file**(*source*)

Wrapper for cp.cache_file which raises an error if the file was unable to be cached.

CLI Example:

```
salt myminion container_resource.cache_file salt://foo/bar/baz.txt
```

salt.modules.container_resource.**copy_to**(**args*, ***kwargs*)

Common logic for copying files to containers

**path** path to the container parent (for LXC only) default: /var/lib/lxc (system default)

CLI Example:

```
salt myminion container_resource.copy_to mycontainer /local/file/path /container/
↪file/path container_type=docker exec_driver=nsenter
```

salt.modules.container_resource.**run**(**args*, ***kwargs*)

Common logic for running shell commands in containers

**path** path to the container parent (for LXC only) default: /var/lib/lxc (system default)
CLI Example:

```
salt myminion container_resource.run mycontainer 'ps aux' container_type=docker
 ↪exec_driver=nsenter output=stdout
```

### 13.6.53 salt.modules.cp

Minion side functions for salt-cp

`salt.modules.cp.`**`cache_dir`**(*path*, *saltenv='base'*, *include_empty=False*, *include_pat=None*, *exclude_pat=None*, *env=None*)

Download and cache everything under a directory from the master

**include_pat** [None] Glob or regex to narrow down the files cached from the given path. If matching with a regex, the regex must be prefixed with `E@`, otherwise the expression will be interpreted as a glob.

New in version 2014.7.0.

**exclude_pat** [None] Glob or regex to exclude certain files from being cached from the given path. If matching with a regex, the regex must be prefixed with `E@`, otherwise the expression will be interpreted as a glob.

---

**Note:** If used with `include_pat`, files matching this pattern will be excluded from the subset of files defined by `include_pat`.

---

New in version 2014.7.0.

CLI Examples:

```
salt '*' cp.cache_dir salt://path/to/dir
salt '*' cp.cache_dir salt://path/to/dir include_pat='E@*.py$'
```

`salt.modules.cp.`**`cache_file`**(*path*, *saltenv='base'*, *env=None*)

Used to cache a single file on the Minion

Returns the location of the new cached file on the Minion.

CLI Example:

```
salt '*' cp.cache_file salt://path/to/file
```

There are two ways of defining the fileserver environment (a.k.a. `saltenv`) from which to cache the file. One is to use the `saltenv` parameter, and the other is to use a querystring syntax in the `salt://` URL. The below two examples are equivalent:

```
salt '*' cp.cache_file salt://foo/bar.conf saltenv=config
salt '*' cp.cache_file salt://foo/bar.conf?saltenv=config
```

If the path being cached is a `salt://` URI, and the path does not exist, then `False` will be returned.

---

**Note:** It may be necessary to quote the URL when using the querystring method, depending on the shell being used to run the command.

---

`salt.modules.cp.`**`cache_files`**(*paths*, *saltenv='base'*, *env=None*)

Used to gather many files from the Master, the gathered files will be saved in the minion cachedir reflective to the paths retrieved from the Master

CLI Example:

```
salt '*' cp.cache_files salt://pathto/file1,salt://pathto/file1
```

There are two ways of defining the fileserver environment (a.k.a. `saltenv`) from which to cache the files. One is to use the `saltenv` parameter, and the other is to use a querystring syntax in the `salt://` URL. The below two examples are equivalent:

```
salt '*' cp.cache_files salt://foo/bar.conf,salt://foo/baz.conf saltenv=config
salt '*' cp.cache_files salt://foo/bar.conf?saltenv=config,salt://foo/baz.conf?
 ↪saltenv=config
```

The querystring method is less useful when all files are being cached from the same environment, but is a good way of caching files from multiple different environments in the same command. For example, the below command will cache the first file from the `config1` environment, and the second one from the `config2` environment.

```
salt '*' cp.cache_files salt://foo/bar.conf?saltenv=config1,salt://foo/bar.conf?
 ↪saltenv=config2
```

---

**Note:** It may be necessary to quote the URL when using the querystring method, depending on the shell being used to run the command.

---

`salt.modules.cp.`**`cache_local_file`**(*path*)

Cache a local file on the minion in the localfiles cache

CLI Example:

```
salt '*' cp.cache_local_file /etc/hosts
```

`salt.modules.cp.`**`cache_master`**(*saltenv='base'*, *env=None*)

Retrieve all of the files on the master and cache them locally

CLI Example:

```
salt '*' cp.cache_master
```

`salt.modules.cp.`**`get_dir`**(*path*, *dest*, *saltenv='base'*, *template=None*, *gzip=None*, *env=None*, ***kwargs*)

Used to recursively copy a directory from the salt master

CLI Example:

```
salt '*' cp.get_dir salt://path/to/dir/ /minion/dest
```

get_dir supports the same template and gzip arguments as get_file.

`salt.modules.cp.`**`get_file`**(*path*, *dest*, *saltenv='base'*, *makedirs=False*, *template=None*, *gzip=None*, *env=None*, ***kwargs*)

Used to get a single file from the salt master

CLI Example:

```
salt '*' cp.get_file salt://path/to/file /minion/dest
```

Template rendering can be enabled on both the source and destination file names like so:

```
salt '*' cp.get_file "salt://{{grains.os}}/vimrc" /etc/vimrc template=jinja
```

This example would instruct all Salt minions to download the vimrc from a directory with the same name as their os grain and copy it to /etc/vimrc

For larger files, the cp.get_file module also supports gzip compression. Because gzip is CPU-intensive, this should only be used in scenarios where the compression ratio is very high (e.g. pretty-printed JSON or YAML files).

Use the *gzip* named argument to enable it. Valid values are 1..9, where 1 is the lightest compression and 9 the heaviest. 1 uses the least CPU on the master (and minion), 9 uses the most.

There are two ways of defining the fileserver environment (a.k.a. `saltenv`) from which to retrieve the file. One is to use the `saltenv` parameter, and the other is to use a querystring syntax in the `salt://` URL. The below two examples are equivalent:

```
salt '*' cp.get_file salt://foo/bar.conf /etc/foo/bar.conf saltenv=config
salt '*' cp.get_file salt://foo/bar.conf?saltenv=config /etc/foo/bar.conf
```

**Note**: It may be necessary to quote the URL when using the querystring method, depending on the shell being used to run the command.

`salt.modules.cp.`**`get_file_str`**(*path*, *saltenv='base'*, *env=None*)

Download a file from a URL to the Minion cache directory and return the contents of that file

Returns `False` if Salt was unable to cache a file from a URL.

CLI Example:

```
salt '*' cp.get_file_str salt://my/file
```

`salt.modules.cp.`**`get_template`**(*path*, *dest*, *template='jinja'*, *saltenv='base'*, *env=None*, *makedirs=False*, ***kwargs*)

Render a file as a template before setting it down. Warning, order is not the same as in fileclient.cp for non breaking old API.

CLI Example:

```
salt '*' cp.get_template salt://path/to/template /minion/dest
```

`salt.modules.cp.`**`get_url`**(*path*, *dest=''*, *saltenv='base'*, *env=None*)

Used to get a single file from a URL

**path** A URL to download a file from. Supported URL schemes are: `salt://`, `http://`, `https://`, `ftp://`, `s3://`, `swift://` and `file://` (local filesystem). If no scheme was specified, this is equivalent of using `file://`. If a `file://` URL is given, the function just returns absolute path to that file on a local filesystem. The function returns `False` if Salt was unable to fetch a file from a `salt://` URL.

**dest** The default behaviour is to write the fetched file to the given destination path. If this parameter is omitted or set as empty string (`''`), the function places the remote file on the local filesystem inside the Minion cache directory and returns the path to that file.

**Note**: To simply return the file contents instead, set destination to `None`. This works with `salt://`, `http://`, `https://` and `file://` URLs. The files fetched by `http://` and `https://` will not be cached.

**saltenv** [base] Salt fileserver envrionment from which to retrieve the file. Ignored if `path` is not a `salt://` URL.

CLI Example:

```
salt '*' cp.get_url salt://my/file /tmp/this_file_is_mine
salt '*' cp.get_url http://www.slashdot.org /tmp/index.html
```

salt.modules.cp.**hash_file**(*path*, *saltenv='base'*, *env=None*)
Return the hash of a file, to get the hash of a file on the salt master file server prepend the path with salt://<file on server> otherwise, prepend the file with / for a local file.

CLI Example:

```
salt '*' cp.hash_file salt://path/to/file
```

salt.modules.cp.**is_cached**(*path*, *saltenv='base'*, *env=None*)
Return a boolean if the given path on the master has been cached on the minion

CLI Example:

```
salt '*' cp.is_cached salt://path/to/file
```

salt.modules.cp.**list_master**(*saltenv='base'*, *prefix=''*, *env=None*)
List all of the files stored on the master

CLI Example:

```
salt '*' cp.list_master
```

salt.modules.cp.**list_master_dirs**(*saltenv='base'*, *prefix=''*, *env=None*)
List all of the directories stored on the master

CLI Example:

```
salt '*' cp.list_master_dirs
```

salt.modules.cp.**list_master_symlinks**(*saltenv='base'*, *prefix=''*, *env=None*)
List all of the symlinks stored on the master

CLI Example:

```
salt '*' cp.list_master_symlinks
```

salt.modules.cp.**list_minion**(*saltenv='base'*, *env=None*)
List all of the files cached on the minion

CLI Example:

```
salt '*' cp.list_minion
```

salt.modules.cp.**list_states**(*saltenv='base'*, *env=None*)
List all of the available state modules in an environment

CLI Example:

```
salt '*' cp.list_states
```

salt.modules.cp.**push**(*path*, *keep_symlinks=False*, *upload_path=None*, *remove_source=False*)
Push a file from the minion up to the master, the file will be saved to the salt master in the master's minion files cachedir (defaults to `/var/cache/salt/master/minions/minion-id/files`)

Since this feature allows a minion to push a file up to the master server it is disabled by default for security purposes. To enable, set `file_recv` to `True` in the master configuration file, and restart the master.
**keep_symlinks** Keep the path value without resolving its canonical form

**upload_path** Provide a different path inside the master's minion files cachedir
**remove_source** Remove the source file on the minion

New in version 2016.3.0.

CLI Example:

```
salt '*' cp.push /etc/fstab
salt '*' cp.push /etc/system-release keep_symlinks=True
salt '*' cp.push /etc/fstab upload_path='/new/path/fstab'
salt '*' cp.push /tmp/filename remove_source=True
```

salt.modules.cp.**push_dir**(*path*, *glob=None*, *upload_path=None*)

Push a directory from the minion up to the master, the files will be saved to the salt master in the master's minion files cachedir (defaults to `/var/cache/salt/master/minions/minion-id/files`). It also has a glob for matching specific files using globbing.

New in version 2014.7.0.

Since this feature allows a minion to push files up to the master server it is disabled by default for security purposes. To enable, set `file_recv` to `True` in the master configuration file, and restart the master.
**upload_path** Provide a different path and directory name inside the master's minion files cachedir
CLI Example:

```
salt '*' cp.push /usr/lib/mysql
salt '*' cp.push /usr/lib/mysql upload_path='/newmysql/path'
salt '*' cp.push_dir /etc/modprobe.d/ glob='*.conf'
```

salt.modules.cp.**recv**(*files*, *dest*)

Used with salt-cp, pass the files dict, and the destination.

This function receives small fast copy files from the master via salt-cp. It does not work via the CLI.

### 13.6.54 salt.modules.cpan

Manage Perl modules using CPAN

New in version 2015.5.0.

salt.modules.cpan.**install**(*module*)

Install a Perl module from CPAN

CLI Example:

```
salt '*' cpan.install Template::Alloy
```

salt.modules.cpan.**list**()

List installed Perl modules, and the version installed

CLI Example:

```
salt '*' cpan.list
```

salt.modules.cpan.**remove**(*module*, *details=False*)

Attempt to remove a Perl module that was installed from CPAN. Because the `cpan` command doesn't actually support ``uninstall''-like functionality, this function will attempt to do what it can, with what it has from CPAN.

Until this function is declared stable, USE AT YOUR OWN RISK!

CLI Example:

```
salt '*' cpan.remove Old::Package
```

salt.modules.cpan.**show**(*module*)
Show information about a specific Perl module

CLI Example:

```
salt '*' cpan.show Template::Alloy
```

salt.modules.cpan.**show_config**()
Return a dict of CPAN configuration values

CLI Example:

```
salt '*' cpan.show_config
```

### 13.6.55 salt.modules.cron

Work with cron

**Note:** Salt does not escape cron metacharacters automatically. You should backslash-escape percent characters and any other metacharacters that might be interpreted incorrectly by the shell.

salt.modules.cron.**list_tab**(*user*)
Return the contents of the specified user's crontab

CLI Example:

```
salt '*' cron.list_tab root
```

salt.modules.cron.**ls**(*user*)
This function is an alias of `list_tab`.
Return the contents of the specified user's crontab

CLI Example:

```
salt '*' cron.list_tab root
```

salt.modules.cron.**raw_cron**(*user*)
Return the contents of the user's crontab

CLI Example:

```
salt '*' cron.raw_cron root
```

salt.modules.cron.**rm**(*user*, *cmd*, *minute=None*, *hour=None*, *daymonth=None*, *month=None*, *dayweek=None*, *identifier=None*)
This function is an alias of `rm_job`.
Remove a cron job for a specified user. If any of the day/time params are specified, the job will only be removed if the specified params match.

CLI Example:

```
salt '*' cron.rm_job root /usr/local/weekly
salt '*' cron.rm_job root /usr/bin/foo dayweek=1
```

salt.modules.cron.**rm_env**(*user*, *name*)
Remove cron environment variable for a specified user.

CLI Example:

```
salt '*' cron.rm_env root MAILTO
```

salt.modules.cron.**rm_job**(*user*, *cmd*, *minute=None*, *hour=None*, *daymonth=None*, *month=None*, *dayweek=None*, *identifier=None*)
Remove a cron job for a specified user. If any of the day/time params are specified, the job will only be removed if the specified params match.

CLI Example:

```
salt '*' cron.rm_job root /usr/local/weekly
salt '*' cron.rm_job root /usr/bin/foo dayweek=1
```

salt.modules.cron.**rm_special**(*user*, *special*, *cmd*)
Remove a special cron job for a specified user.

CLI Example:

```
salt '*' cron.rm_job root @hourly /usr/bin/foo
```

salt.modules.cron.**set_env**(*user*, *name*, *value=None*)
Set up an environment variable in the crontab.

CLI Example:

```
salt '*' cron.set_env root MAILTO user@example.com
```

salt.modules.cron.**set_job**(*user*, *minute*, *hour*, *daymonth*, *month*, *dayweek*, *cmd*, *commented=False*, *comment=None*, *identifier=None*)
Sets a cron job up for a specified user.

CLI Example:

```
salt '*' cron.set_job root '*' '*' '*' '*' 1 /usr/local/weekly
```

salt.modules.cron.**set_special**(*user*, *special*, *cmd*)
Set up a special command in the crontab.

CLI Example:

```
salt '*' cron.set_special root @hourly 'echo foobar'
```

salt.modules.cron.**write_cron_file**(*user*, *path*)
Writes the contents of a file to a user's crontab

CLI Example:

```
salt '*' cron.write_cron_file root /tmp/new_cron
```

Changed in version 2015.8.9.

---

**Note:** Solaris and AIX require that *path* is readable by *user*

---

salt.modules.cron.**write_cron_file_verbose**(*user*, *path*)
Writes the contents of a file to a user's crontab and return error message on error

CLI Example:

```
salt '*' cron.write_cron_file_verbose root /tmp/new_cron
```

Changed in version 2015.8.9.

---

**Note**: Solaris and AIX require that *path* is readable by *user*

---

### 13.6.56 salt.modules.cyg

Manage cygwin packages.

Module file to accompany the cyg state.

`salt.modules.cyg.`**`check_valid_package`**(*package*, *cyg_arch='x86_64'*, *mirrors=None*)

Check if the package is valid on the given mirrors.

`salt.modules.cyg.`**`install`**(*packages=None*, *cyg_arch='x86_64'*, *mirrors=None*)

Install one or several packages.

**packages** [None] The packages to install

**cyg_arch** [x86_64] Specify the architecture to install the package under Current options are x86 and x86_64

CLI Example:

```
salt '*' cyg.install dos2unix
salt '*' cyg.install dos2unix mirrors=[{'http://mirror': 'http://url/to/public/
↪key}]
```

`salt.modules.cyg.`**`list`**(*package=''*, *cyg_arch='x86_64'*)

List locally installed packages.

**package** [''] package name to check. else all

**cyg_arch** : Cygwin architecture to use Options are x86 and x86_64

CLI Example:

```
salt '*' cyg.list
```

`salt.modules.cyg.`**`uninstall`**(*packages*, *cyg_arch='x86_64'*, *mirrors=None*)

Uninstall one or several packages.

**packages** The packages to uninstall.

**cyg_arch** [x86_64] Specify the architecture to remove the package from Current options are x86 and x86_64

CLI Example:

```
salt '*' cyg.uninstall dos2unix
salt '*' cyg.uninstall dos2unix mirrors=[{'http://mirror': 'http://url/to/public/
↪key}]
```

`salt.modules.cyg.`**`update`**(*cyg_arch='x86_64'*, *mirrors=None*)

Update all packages.

**cyg_arch** [x86_64] Specify the cygwin architecture update Current options are x86 and x86_64

CLI Example:

```
salt '*' cyg.update
salt '*' cyg.update dos2unix mirrors=[{'http://mirror': 'http://url/to/public/key}
↪]
```

### 13.6.57 salt.modules.daemontools

daemontools service module. This module will create daemontools type service watcher.

This module is compatible with the *service* states, so it can be used to maintain services using the `provider` argument:

```
myservice:
  service.running:
    - provider: daemontools
```

salt.modules.daemontools.**available**(*name*)
Returns `True` if the specified service is available, otherwise returns `False`.

CLI Example:

```
salt '*' daemontools.available foo
```

salt.modules.daemontools.**disabled**(*name*)
Return True if the named service is enabled, false otherwise

New in version 2015.5.6.

CLI Example:

```
salt '*' daemontools.disabled <service name>
```

salt.modules.daemontools.**enabled**(*name*, ***kwargs*)
Return True if the named service is enabled, false otherwise A service is considered enabled if in your service directory: - an executable ./run file exist - a file named ``down'' does not exist

New in version 2015.5.7.
**name** Service name
CLI Example:

```
salt '*' daemontools.enabled <service name>
```

salt.modules.daemontools.**full_restart**(*name*)
Calls daemontools.restart() function

CLI Example:

```
salt '*' daemontools.full_restart <service name>
```

salt.modules.daemontools.**get_all**()
Return a list of all available services

CLI Example:

```
salt '*' daemontools.get_all
```

salt.modules.daemontools.**missing**(*name*)
The inverse of daemontools.available. Returns `True` if the specified service is not available, otherwise returns `False`.

CLI Example:

```
salt '*' daemontools.missing foo
```

salt.modules.daemontools.**reload**(*name*)
Wrapper for term()

CLI Example:

```
salt '*' daemontools.reload <service name>
```

salt.modules.daemontools.**restart**(*name*)
Restart service via daemontools. This will stop/start service

CLI Example:

```
salt '*' daemontools.restart <service name>
```

salt.modules.daemontools.**start**(*name*)
Starts service via daemontools

CLI Example:

```
salt '*' daemontools.start <service name>
```

salt.modules.daemontools.**status**(*name*, *sig=None*)
Return the status for a service via daemontools, return pid if running

CLI Example:

```
salt '*' daemontools.status <service name>
```

salt.modules.daemontools.**stop**(*name*)
Stops service via daemontools

CLI Example:

```
salt '*' daemontools.stop <service name>
```

salt.modules.daemontools.**term**(*name*)
Send a TERM to service via daemontools

CLI Example:

```
salt '*' daemontools.term <service name>
```

### 13.6.58 salt.modules.data

Manage a local persistent data structure that can hold any arbitrary data specific to the minion

salt.modules.data.**cas**(*key*, *value*, *old_value*)
Check and set a value in the minion datastore

CLI Example:

```
salt '*' data.cas <key> <value> <old_value>
```

salt.modules.data.**clear**()
Clear out all of the data in the minion datastore, this function is destructive!

CLI Example:

```
salt '*' data.clear
```

salt.modules.data.**dump**(*new_data*)
Replace the entire datastore with a passed data structure

CLI Example:

```
salt '*' data.dump '{'eggs': 'spam'}'
```

salt.modules.data.**get**(*key*, *default=None*)
Get a (list of) value(s) from the minion datastore

New in version 2015.8.0.

CLI Example:

```
salt '*' data.get <key(s)>
```

salt.modules.data.**getval**(*key*)
Get a value from the minion datastore

Deprecated since version Carbon: Use `get` instead

CLI Example:

```
salt '*' data.getval <key>
```

salt.modules.data.**getvals**(**keylist*)
Get values from the minion datastore

Deprecated since version Carbon: Use `get` instead

CLI Example:

```
salt '*' data.getvals <key> [<key> ...]
```

salt.modules.data.**has_key**(*key*)
Check if key is in the minion datastore

New in version 2015.8.0.

CLI Example:

```
salt '*' data.has_key <mykey>
```

salt.modules.data.**items**()
Get items from the minion datastore

New in version 2015.8.0.

CLI Example:

```
salt '*' data.items
```

salt.modules.data.**keys**()
Get all keys from the minion datastore

New in version 2015.8.0.

CLI Example:

```
salt '*' data.keys
```

salt.modules.data.**load**()
Return all of the data in the minion datastore

CLI Example:

```
salt '*' data.load
```

salt.modules.data.**pop**(*key*, *default=None*)
Pop (return & delete) a value from the minion datastore

New in version 2015.5.2.

CLI Example:

```
salt '*' data.pop <key> "there was no val"
```

salt.modules.data.**update**(*key*, *value*)
Update a key with a value in the minion datastore

CLI Example:

```
salt '*' data.update <key> <value>
```

salt.modules.data.**values**()
Get values from the minion datastore

New in version 2015.8.0.

CLI Example:

```
salt '*' data.values
```

### 13.6.59 salt.modules.ddns

Support for RFC 2136 dynamic DNS updates.

**depends**

- dnspython Python module

**configuration** If you want to use TSIG authentication for the server, there are a couple of optional configuration parameters made available to support this (the keyname is only needed if the keyring contains more than one key):

```
keyfile: keyring file (default=None)
keyname: key name in file (default=None)
keyalgorithm: algorithm used to create the key
              (default='HMAC-MD5.SIG-ALG.REG.INT').
    Other possible values: hmac-sha1, hmac-sha224, hmac-sha256,
        hmac-sha384, hmac-sha512
```

The keyring file needs to be in json format and the key name needs to end with an extra period in the file, similar to this:

```
{"keyname.": "keycontent"}
```

salt.modules.ddns.**add_host**(*zone*, *name*, *ttl*, *ip*, *nameserver=`127.0.0.1'*, *replace=True*, ***kwargs*)
Add, replace, or update the A and PTR (reverse) records for a host.

CLI Example:

```
salt ns1 ddns.add_host example.com host1 60 10.1.1.1
```

salt.modules.ddns.**delete**(*zone*, *name*, *rdtype=None*, *data=None*, *nameserver=`127.0.0.1'*, ***kwargs*)
Delete a DNS record.

CLI Example:

```
salt ns1 ddns.delete example.com host1 A
```

salt.modules.ddns.**delete_host**(*zone*, *name*, *nameserver=`127.0.0.1'*, ***kwargs*)
Delete the forward and reverse records for a host.

Returns true if any records are deleted.

CLI Example:

```
salt ns1 ddns.delete_host example.com host1
```

salt.modules.ddns.**update**(*zone*, *name*, *ttl*, *rdtype*, *data*, *nameserver=`127.0.0.1'*, *replace=False*, ***kwargs*)
Add, replace, or update a DNS record. nameserver must be an IP address and the minion running this module must have update privileges on that server. If replace is true, first deletes all records for this name and type.

CLI Example:

```
salt ns1 ddns.update example.com host1 60 A 10.0.0.1
```

### 13.6.60 salt.modules.deb_apache

Support for Apache

Please note: The functions in here are Debian-specific. Placing them in this separate file will allow them to load only on Debian-based systems, while still loading under the `apache` namespace.

salt.modules.deb_apache.**a2disconf**(*conf*)
New in version 2016.3.0.

Runs a2disconf for the given conf.

This will only be functional on Debian-based operating systems (Ubuntu, Mint, etc).

CLI Examples:

```
salt '*' apache.a2disconf security
```

salt.modules.deb_apache.**a2dismod**(*mod*)
Runs a2dismod for the given mod.

This will only be functional on Debian-based operating systems (Ubuntu, Mint, etc).

CLI Examples:

```
salt '*' apache.a2dismod vhost_alias
```

salt.modules.deb_apache.**a2dissite**(*site*)
Runs a2dissite for the given site.

This will only be functional on Debian-based operating systems (Ubuntu, Mint, etc).

CLI Examples:

```
salt '*' apache.a2dissite example.com
```

salt.modules.deb_apache.**a2enconf**(*conf*)
New in version 2016.3.0.

Runs a2enconf for the given conf.

This will only be functional on Debian-based operating systems (Ubuntu, Mint, etc).

CLI Examples:

```
salt '*' apache.a2enconf security
```

salt.modules.deb_apache.**a2enmod**(*mod*)
Runs a2enmod for the given mod.

This will only be functional on Debian-based operating systems (Ubuntu, Mint, etc).

CLI Examples:

```
salt '*' apache.a2enmod vhost_alias
```

salt.modules.deb_apache.**a2ensite**(*site*)
Runs a2ensite for the given site.

This will only be functional on Debian-based operating systems (Ubuntu, Mint, etc).

CLI Examples:

```
salt '*' apache.a2ensite example.com
```

salt.modules.deb_apache.**check_conf_enabled**(*conf*)
New in version 2016.3.0.

Checks to see if the specific conf symlink is in /etc/apache2/conf-enabled.

This will only be functional on Debian-based operating systems (Ubuntu, Mint, etc).

CLI Examples:

```
salt '*' apache.check_conf_enabled security
salt '*' apache.check_conf_enabled security.conf
```

salt.modules.deb_apache.**check_mod_enabled**(*mod*)
Checks to see if the specific mod symlink is in /etc/apache2/mods-enabled.

This will only be functional on Debian-based operating systems (Ubuntu, Mint, etc).

CLI Examples:

```
salt '*' apache.check_mod_enabled status
salt '*' apache.check_mod_enabled status.load
salt '*' apache.check_mod_enabled status.conf
```

salt.modules.deb_apache.**check_site_enabled**(*site*)
Checks to see if the specific site symlink is in /etc/apache2/sites-enabled.

This will only be functional on Debian-based operating systems (Ubuntu, Mint, etc).

CLI Examples:

```
salt '*' apache.check_site_enabled example.com
salt '*' apache.check_site_enabled example.com.conf
```

### 13.6.61 salt.modules.deb_postgres

Module to provide Postgres compatibility to salt for debian family specific tools.

salt.modules.deb_postgres.**cluster_create**(*version*, *name='main'*, *port=None*, *locale=None*, *encoding=None*, *datadir=None*)
Adds a cluster to the Postgres server.

CLI Example:

```
salt '*' postgres.cluster_create '9.3'

salt '*' postgres.cluster_create '9.3' 'main'

salt '*' postgres.cluster_create '9.3' locale='fr_FR'
```

salt.modules.deb_postgres.**cluster_exists**(*version*, *name='main'*)
Checks if a given version and name of a cluster exists.

CLI Example:

```
salt '*' postgres.cluster_exists '9.3'

salt '*' postgres.cluster_exists '9.3' 'main'
```

salt.modules.deb_postgres.**cluster_list**(*verbose=False*)
Return a list of cluster of Postgres server (tuples of version and name).

CLI Example:

```
salt '*' postgres.cluster_list

salt '*' postgres.cluster_list verbose=True
```

salt.modules.deb_postgres.**cluster_remove**(*version*, *name='main'*, *stop=False*)
Remove a cluster on a Postgres server. By default it doesn't try to stop the cluster.

CLI Example:

```
salt '*' postgres.cluster_remove '9.3'

salt '*' postgres.cluster_remove '9.3' 'main'

salt '*' postgres.cluster_remove '9.3' 'main' stop=True
```

### 13.6.62 salt.modules.debbuild

Debian Package builder system

New in version 2015.8.0.

This system allows for all of the components to build debs safely in chrooted environments. This also provides a function to generate debian repositories

This module implements the pkgbuild interface

salt.modules.debbuild.**build**(*runas*, *tgt*, *dest_dir*, *spec*, *sources*, *deps*, *env*, *template*, *saltenv='base'*, *log_dir='/var/log/salt/pkgbuild'*)

Given the package destination directory, the tarball containing debian files (e.g. control) and package sources, use pbuilder to safely build the platform package

CLI Example:

**Debian**

```
salt '*' pkgbuild.make_src_pkg deb-8-x86_64 /var/www/html https://raw.
↪githubusercontent.com/saltstack/libnacl/master/pkg/deb/python-libnacl.control
↪https://pypi.python.org/packages/source/l/libnacl/libnacl-1.3.5.tar.gz
```

This example command should build the libnacl package for Debian using pbuilder and place it in /var/www/html/ on the minion

salt.modules.debbuild.**make_repo**(*repodir*, *keyid=None*, *env=None*, *use_passphrase=False*, *gnupghome='/etc/salt/gpgkeys'*, *runas='root'*, *timeout=15.0*)

Make a package repository and optionally sign it and packages present

Given the repodir (directory to create repository in), create a Debian repository and optionally sign it and packages present. This state is best used with onchanges linked to your package building states.
**repodir** The directory to find packages that will be in the repository.
**keyid** Changed in version 2016.3.0.

Optional Key ID to use in signing packages and repository. Utilizes Public and Private keys associated with keyid which have been loaded into the minion's Pillar data. Leverages gpg-agent and gpg-preset-passphrase for caching keys, etc.

For example, contents from a Pillar data file with named Public and Private keys as follows:

```
gpg_pkg_priv_key: |
  -----BEGIN PGP PRIVATE KEY BLOCK-----
  Version: GnuPG v1

  lQO+BFciIfQBCADAPCtzx7I5Rl32escCMZsPzaEKWe7bIX1em4KCKkBoX47IG54b
  w82PCE8Y1jF/9Uk2m3RKVWp3YcLlc7Ap3gj6VO4ysvVz28UbnhPxsIkOlf2cq8qc
  .
  .
  Ebe+8JCQTwqSXPRTzXmy/b5WXDeM79CkLWvuGpXFor76D+ECMRPv/rawukEcNptn
  R5OmgHqvydEnO4pWbn8JzQO9YX/Us0SMHBVzLC8eIi5ZIopzalvX
  =JvW8
  -----END PGP PRIVATE KEY BLOCK-----

gpg_pkg_priv_keyname: gpg_pkg_key.pem

gpg_pkg_pub_key: |
  -----BEGIN PGP PUBLIC KEY BLOCK-----
  Version: GnuPG v1

  mQENBFciIfQBCADAPCtzx7I5Rl32escCMZsPzaEKWe7bIX1em4KCKkBoX47IG54b
  w82PCE8Y1jF/9Uk2m3RKVWp3YcLlc7Ap3gj6VO4ysvVz28UbnhPxsIkOlf2cq8qc
  .
  .
```

```
  bYP7t5iwJmQzRMyFInYRt77wkJBPCpJc9FPNebL9vlZcN4zv0KQta+4alcWivvoP
  4QIxE+/+trC6QRw2m2dHk6aAeq/J0Sc7ilZufwnNA71hf9SzRIwcFXMsLx4iLlki
  inNqW9c=
  =s1CX
  -----END PGP PUBLIC KEY BLOCK-----

gpg_pkg_pub_keyname: gpg_pkg_key.pub
```

**env** Changed in version 2016.3.0.

A dictionary of environment variables to be utilized in creating the repository.

**use_passphrase** [False] New in version 2016.3.0.

Use a passphrase with the signing key presented in `keyid`. Passphrase is received from Pillar data which could be passed on the command line with `pillar` parameter. For example:

```
pillar='{ "gpg_passphrase" : "my_passphrase" }'
```

**gnupghome** [/etc/salt/gpgkeys] New in version 2016.3.0.

Location where GPG related files are stored, used with `keyid`.

**runas** [root] New in version 2016.3.0.

User to create the repository as, and optionally sign packages.

---

**Note:** Ensure the user has correct permissions to any files and directories which are to be utilized.

---

**timeout** [15.0] New in version 2016.3.4.

Timeout in seconds to wait for the prompt for inputting the passphrase.

CLI Example:

```
salt '*' pkgbuild.make_repo /var/www/html
```

`salt.modules.debbuild.`**`make_src_pkg`**(*dest_dir*, *spec*, *sources*, *env=None*, *template=None*, *saltenv='base'*)

Create a platform specific source package from the given platform spec/control file and sources

CLI Example:

**Debian**

```
salt '*' pkgbuild.make_src_pkg /var/www/html/ https://raw.githubusercontent.com/
↪saltstack/libnacl/master/pkg/deb/python-libnacl.control.tar.xz https://pypi.
↪python.org/packages/source/l/libnacl/libnacl-1.3.5.tar.gz
```

This example command should build the libnacl SOURCE package and place it in /var/www/html/ on the minion

### 13.6.63 salt.modules.debconfmod

Support for Debconf

`salt.modules.debconfmod.`**`get_selections`**(*fetchempty=True*)

Answers to debconf questions for all packages in the following format:

```
{'package': [['question', 'type', 'value'], ...]}
```

CLI Example:

```
salt '*' debconf.get_selections
```

salt.modules.debconfmod.**set**(*package*, *question*, *type*, *value*, **extra*)
Set answers to debconf questions for a package.

CLI Example:

```
salt '*' debconf.set <package> <question> <type> <value> [<value> ...]
```

salt.modules.debconfmod.**set_file**(*path*, *saltenv='base'*, ***kwargs*)
Set answers to debconf questions from a file.

CLI Example:

```
salt '*' debconf.set_file salt://pathto/pkg.selections
```

salt.modules.debconfmod.**set_template**(*path*, *template*, *context*, *defaults*, *saltenv='base'*, ***kwargs*)
Set answers to debconf questions from a template.
**path** location of the file containing the package selections
**template** template format
**context** variables to add to the template environment
**default** default values for the template environment
CLI Example:

```
salt '*' debconf.set_template salt://pathto/pkg.selections.jinja jinja None None
```

salt.modules.debconfmod.**show**(*name*)
Answers to debconf questions for a package in the following format:

```
[['question', 'type', 'value'], ...]
```

If debconf doesn't know about a package, we return None.

CLI Example:

```
salt '*' debconf.show <package name>
```

### 13.6.64 salt.modules.debian_ip

The networking module for Debian based distros

References:

- http://www.debian.org/doc/manuals/debian-reference/ch05.en.html

salt.modules.debian_ip.**apply_network_settings**(***settings*)
Apply global network configuration.

CLI Example:

```
salt '*' ip.apply_network_settings
```

salt.modules.debian_ip.**build_bond**(*iface*, ***settings*)
Create a bond script in /etc/modprobe.d with the passed settings and load the bonding kernel module.

CLI Example:

```
salt '*' ip.build_bond bond0 mode=balance-alb
```

salt.modules.debian_ip.**build_interface**(*iface*, *iface_type*, *enabled*, ***settings*)
Build an interface script for a network interface.

CLI Example:

```
salt '*' ip.build_interface eth0 eth <settings>
```

salt.modules.debian_ip.**build_network_settings**(***settings*)
Build the global network script.

CLI Example:

```
salt '*' ip.build_network_settings <settings>
```

salt.modules.debian_ip.**build_routes**(*iface*, ***settings*)
Add route scripts for a network interface using up commands.

CLI Example:

```
salt '*' ip.build_routes eth0 <settings>
```

salt.modules.debian_ip.**down**(*iface*, *iface_type*)
Shutdown a network interface

CLI Example:

```
salt '*' ip.down eth0 eth
```

salt.modules.debian_ip.**get_bond**(*iface*)
Return the content of a bond script

CLI Example:

```
salt '*' ip.get_bond bond0
```

salt.modules.debian_ip.**get_interface**(*iface*)
Return the contents of an interface script

CLI Example:

```
salt '*' ip.get_interface eth0
```

salt.modules.debian_ip.**get_network_settings**()
Return the contents of the global network script.

CLI Example:

```
salt '*' ip.get_network_settings
```

salt.modules.debian_ip.**get_routes**(*iface*)
Return the routes for the interface

CLI Example:

```
salt '*' ip.get_routes eth0
```

salt.modules.debian_ip.**up**(*iface*, *iface_type*)
Start up a network interface

CLI Example:

```
salt '*' ip.up eth0 eth
```

### 13.6.65 salt.modules.debian_service

Service support for Debian systems (uses update-rc.d and /sbin/service)

---

**Important**: If you feel that Salt should be using this module to manage services on a minion, and it is using a different module (or gives an error similar to *`service.start' is not available*), see *here*.

---

salt.modules.debian_service.**available**(*name*)
Returns `True` if the specified service is available, otherwise returns `False`.

CLI Example:

```
salt '*' service.available sshd
```

salt.modules.debian_service.**disable**(*name*, ***kwargs*)
Disable the named service to start at boot

CLI Example:

```
salt '*' service.disable <service name>
```

salt.modules.debian_service.**disabled**(*name*)
Return True if the named service is enabled, false otherwise

CLI Example:

```
salt '*' service.disabled <service name>
```

salt.modules.debian_service.**enable**(*name*, ***kwargs*)
Enable the named service to start at boot

CLI Example:

```
salt '*' service.enable <service name>
```

salt.modules.debian_service.**enabled**(*name*, ***kwargs*)
Return True if the named service is enabled, false otherwise

CLI Example:

```
salt '*' service.enabled <service name>
```

salt.modules.debian_service.**force_reload**(*name*)
Force-reload the named service

CLI Example:

```
salt '*' service.force_reload <service name>
```

salt.modules.debian_service.**get_all**()
Return all available boot services

CLI Example:

```
salt '*' service.get_all
```

salt.modules.debian_service.**get_disabled**()
Return a set of services that are installed but disabled

CLI Example:

```
salt '*' service.get_disabled
```

salt.modules.debian_service.**get_enabled**()
Return a list of service that are enabled on boot

CLI Example:

```
salt '*' service.get_enabled
```

salt.modules.debian_service.**missing**(*name*)
The inverse of service.available. Returns `True` if the specified service is not available, otherwise returns `False`.

CLI Example:

```
salt '*' service.missing sshd
```

salt.modules.debian_service.**reload**(*name*)
Reload the named service

CLI Example:

```
salt '*' service.reload <service name>
```

salt.modules.debian_service.**restart**(*name*)
Restart the named service

CLI Example:

```
salt '*' service.restart <service name>
```

salt.modules.debian_service.**start**(*name*)
Start the specified service

CLI Example:

```
salt '*' service.start <service name>
```

salt.modules.debian_service.**status**(*name*, *sig=None*)
Return the status for a service, pass a signature to use to find the service via ps

CLI Example:

```
salt '*' service.status <service name>
```

salt.modules.debian_service.**stop**(*name*)
Stop the specified service

CLI Example:

```
salt '*' service.stop <service name>
```

### 13.6.66 salt.modules.defaults

salt.modules.defaults.**get**(*key*, *default=''*)
defaults.get is used much like pillar.get except that it will read a default value for a pillar from defaults.json or defaults.yaml files that are stored in the root of a salt formula.

CLI Example:

```
salt '*' defaults.get core:users:root
```

The defaults is computed from pillar key. The first entry is considered as the formula namespace.

For example, querying `core:users:root` will try to load `salt://core/defaults.yaml` and `salt://core/defaults.json`.

salt.modules.defaults.**merge**(*dest*, *upd*)
Allows deep merging of dicts in formulas.
CLI Example: .. code-block:: bash

salt `*' default.merge a=b d=e
It is more typical to use this in a templating language in formulas, instead of directly on the command-line.

### 13.6.67 salt.modules.devmap

Device-Mapper module

salt.modules.devmap.**multipath_flush**(*device*)
Device-Mapper Multipath flush

CLI Example:

```
salt '*' devmap.multipath_flush mpath1
```

salt.modules.devmap.**multipath_list**()
Device-Mapper Multipath list

CLI Example:

```
salt '*' devmap.multipath_list
```

### 13.6.68 salt.modules.dig

Compendium of generic DNS utilities. The `dig' command line tool must be installed in order to use this module.

salt.modules.dig.**A**(*host*, *nameserver=None*)
Return the A record for `host`.

Always returns a list.

CLI Example:

```
salt ns1 dig.A www.google.com
```

salt.modules.dig.**AAAA**(*host*, *nameserver=None*)
Return the AAAA record for `host`.

Always returns a list.

CLI Example:

```
salt ns1 dig.AAAA www.google.com
```

salt.modules.dig.**MX**(*domain*, *resolve=False*, *nameserver=None*)
Return a list of lists for the MX of `domain`.

If the `resolve` argument is True, resolve IPs for the servers.

It's limited to one IP, because although in practice it's very rarely a round robin, it is an acceptable configuration and pulling just one IP lets the data be similar to the non-resolved version. If you think an MX has multiple IPs, don't use the resolver here, resolve them in a separate step.

CLI Example:

```
salt ns1 dig.MX google.com
```

salt.modules.dig.**NS**(*domain*, *resolve=True*, *nameserver=None*)
Return a list of IPs of the nameservers for `domain`

If `resolve` is False, don't resolve names.

CLI Example:

```
salt ns1 dig.NS google.com
```

salt.modules.dig.**SPF**(*domain*, *record='SPF'*, *nameserver=None*)
Return the allowed IPv4 ranges in the SPF record for `domain`.

If record is `SPF` and the SPF record is empty, the TXT record will be searched automatically. If you know the domain uses TXT and not SPF, specifying that will save a lookup.

CLI Example:

```
salt ns1 dig.SPF google.com
```

salt.modules.dig.**TXT**(*host*, *nameserver=None*)
Return the TXT record for `host`.

Always returns a list.

CLI Example:

```
salt ns1 dig.TXT google.com
```

salt.modules.dig.**check_ip**(*addr*)
Check if address is a valid IP. returns True if valid, otherwise False.

CLI Example:

```
salt ns1 dig.check_ip 127.0.0.1
salt ns1 dig.check_ip 1111:2222:3333:4444:5555:6666:7777:8888
```

### 13.6.69 salt.modules.disk

Module for managing disks and blockdevices

salt.modules.disk.**blkid**(*device=None*)

Return block device attributes: UUID, LABEL, etc. This function only works on systems where blkid is available.

CLI Example:

```
salt '*' disk.blkid
salt '*' disk.blkid /dev/sda
```

salt.modules.disk.**dump**(*device*, *args=None*)

Return all contents of dumpe2fs for a specified device

CLI Example: .. code-block:: bash
salt `*' disk.dump /dev/sda1

salt.modules.disk.**hdparms**(*disks*, *args=None*)

Retrieve all info's for all disks parse `em into a nice dict (which, considering hdparms output, is quite a hassle)

New in version 2016.3.0.

CLI Example: .. code-block:: bash
salt `*' disk.hdparms /dev/sda

salt.modules.disk.**hpa**(*disks*, *size=None*)

Get/set Host Protected Area settings

T13 INCITS 346-2001 (1367D) defines the BEER (Boot Engineering Extension Record) and PARTIES (Protected Area Run Time Interface Extension Services), allowing for a Host Protected Area on a disk.

It's often used by OEMS to hide parts of a disk, and for overprovisioning SSD's

**Warning**: Setting the HPA might clobber your data, be very careful with this on active disks!

New in version 2016.3.0.

CLI Example:

```
salt '*' disk.hpa /dev/sda
salt '*' disk.hpa /dev/sda 5%
salt '*' disk.hpa /dev/sda 10543256
```

salt.modules.disk.**inodeusage**(*args=None*)

Return inode usage information for volumes mounted on this minion

CLI Example:

```
salt '*' disk.inodeusage
```

salt.modules.disk.**iostat**(*interval=1*, *count=5*, *disks=None*)

Gather and return (averaged) IO stats.

New in version 2016.3.0.

CLI Example:

```
salt '*' disk.iostat 1 5 disks=sda
```

salt.modules.disk.**percent**(*args=None*)
Return partition information for volumes mounted on this minion

CLI Example:

```
salt '*' disk.percent /var
```

salt.modules.disk.**resize2fs**(*device*)
Resizes the filesystem.

CLI Example: .. code-block:: bash
salt `*' disk.resize2fs /dev/sda1

salt.modules.disk.**smart_attributes**(*dev, attributes=None, values=None*)
Fetch SMART attributes Providing attributes will deliver only requested attributes Providing values will deliver only requested values for attributes

Default is the Backblaze recommended set (https://www.backblaze.com/blog/hard-drive-smart-stats/): (5,187,188,197,198)

New in version 2016.3.0.

CLI Example:

```
salt '*' disk.smart_attributes /dev/sda
salt '*' disk.smart_attributes /dev/sda attributes=(5,187,188,197,198)
```

salt.modules.disk.**tune**(*device, **kwargs*)
Set attributes for the specified device

CLI Example:

```
salt '*' disk.tune /dev/sda1 read-ahead=1024 read-write=True
```

Valid options are: `read-ahead`, `filesystem-read-ahead`, `read-only`, `read-write`.

See the `blockdev(8)` manpage for a more complete description of these options.

salt.modules.disk.**usage**(*args=None*)
Return usage information for volumes mounted on this minion

CLI Example:

```
salt '*' disk.usage
```

salt.modules.disk.**wipe**(*device*)
Remove the filesystem information

CLI Example:

```
salt '*' disk.wipe /dev/sda1
```

### 13.6.70 salt.modules.djangomod

Manage Django sites

salt.modules.djangomod.**collectstatic**(*settings_module*, *bin_env=None*, *no_post_process=False*, *ignore=None*, *dry_run=False*, *clear=False*, *link=False*, *no_default_ignore=False*, *pythonpath=None*, *env=None*)

Collect static files from each of your applications into a single location that can easily be served in production.

CLI Example:

```
salt '*' django.collectstatic <settings_module>
```

salt.modules.djangomod.**command**(*settings_module*, *command*, *bin_env=None*, *pythonpath=None*, *env=None*, **args*, ***kwargs*)

Run arbitrary django management command

CLI Example:

```
salt '*' django.command <settings_module> <command>
```

salt.modules.djangomod.**createsuperuser**(*settings_module*, *username*, *email*, *bin_env=None*, *database=None*, *pythonpath=None*, *env=None*)

Create a super user for the database. This function defaults to use the `--noinput` flag which prevents the creation of a password for the superuser.

CLI Example:

```
salt '*' django.createsuperuser <settings_module> user user@example.com
```

salt.modules.djangomod.**loaddata**(*settings_module*, *fixtures*, *bin_env=None*, *database=None*, *pythonpath=None*, *env=None*)

Load fixture data

**Fixtures**: comma separated list of fixtures to load

CLI Example:

```
salt '*' django.loaddata <settings_module> <comma delimited list of fixtures>
```

salt.modules.djangomod.**syncdb**(*settings_module*, *bin_env=None*, *migrate=False*, *database=None*, *pythonpath=None*, *env=None*, *noinput=True*)

Run syncdb

Execute the Django-Admin syncdb command, if South is available on the minion the `migrate` option can be passed as `True` calling the migrations to run after the syncdb completes

CLI Example:

```
salt '*' django.syncdb <settings_module>
```

### 13.6.71 salt.modules.dnsmasq

Module for managing dnsmasq

salt.modules.dnsmasq.**fullversion**()

Shows installed version of dnsmasq and compile options.

CLI Example:

```
salt '*' dnsmasq.version
```

salt.modules.dnsmasq.**get_config**(*config_file='/etc/dnsmasq.conf'*)

Dumps all options from the config file.

**config_file** The location of the config file from which to obtain contents. Defaults to `/etc/dnsmasq.conf`.
CLI Examples:

```
salt '*' dnsmasq.get_config
salt '*' dnsmasq.get_config config_file=/etc/dnsmasq.conf
```

`salt.modules.dnsmasq.`**`set_config`**(*config_file='/etc/dnsmasq.conf'*, *follow=True*, ***kwargs*)
Sets a value or a set of values in the specified file. By default, if conf-dir is configured in this file, salt will attempt to set the option in any file inside the conf-dir where it has already been enabled. If it does not find it inside any files, it will append it to the main config file. Setting follow to False will turn off this behavior.

If a config option currently appears multiple times (such as dhcp-host, which is specified at least once per host), the new option will be added to the end of the main config file (and not to any includes). If you need an option added to a specific include file, specify it as the config_file.

**Parameters**

- **`config_file`** (`string`) -- config file where settings should be updated / added.
- **`follow`** (*`bool`*) -- attempt to set the config option inside any file within the `conf-dir` where it has already been enabled.
- **`kwargs`** -- key value pairs that contain the configuration settings that you want set.

CLI Examples:

```
salt '*' dnsmasq.set_config domain=mydomain.com
salt '*' dnsmasq.set_config follow=False domain=mydomain.com
salt '*' dnsmasq.set_config config_file=/etc/dnsmasq.conf domain=mydomain.com
```

`salt.modules.dnsmasq.`**`version`**()
Shows installed version of dnsmasq.

CLI Example:

```
salt '*' dnsmasq.version
```

### 13.6.72 salt.modules.dnsutil

Compendium of generic DNS utilities

`salt.modules.dnsutil.`**`A`**(*host*, *nameserver=None*)
Return the A record(s) for *host*.

Always returns a list.

CLI Example:

```
salt ns1 dnsutil.A www.google.com
```

`salt.modules.dnsutil.`**`AAAA`**(*host*, *nameserver=None*)
Return the AAAA record(s) for *host*.

Always returns a list.

New in version 2014.7.5.

CLI Example:

```
salt ns1 dnsutil.AAAA www.google.com
```

salt.modules.dnsutil.**MX**(*domain*, *resolve=False*, *nameserver=None*)
Return a list of lists for the MX of `domain`.

If the `resolve' argument is True, resolve IPs for the servers.

It's limited to one IP, because although in practice it's very rarely a round robin, it is an acceptable configuration and pulling just one IP lets the data be similar to the non-resolved version. If you think an MX has multiple IPs, don't use the resolver here, resolve them in a separate step.

CLI Example:

```
salt ns1 dig.MX google.com
```

salt.modules.dnsutil.**NS**(*domain*, *resolve=True*, *nameserver=None*)
Return a list of IPs of the nameservers for `domain`

If `resolve' is False, don't resolve names.

CLI Example:

```
salt ns1 dig.NS google.com
```

salt.modules.dnsutil.**SPF**(*domain*, *record='SPF'*, *nameserver=None*)
Return the allowed IPv4 ranges in the SPF record for `domain`.

If record is `SPF` and the SPF record is empty, the TXT record will be searched automatically. If you know the domain uses TXT and not SPF, specifying that will save a lookup.

CLI Example:

```
salt ns1 dig.SPF google.com
```

salt.modules.dnsutil.**check_ip**(*ip_addr*)
Check that string ip_addr is a valid IP

CLI Example:

```
salt ns1 dig.check_ip 127.0.0.1
```

salt.modules.dnsutil.**hosts_append**(*hostsfile='/etc/hosts'*, *ip_addr=None*, *entries=None*)
Append a single line to the /etc/hosts file.

CLI Example:

```
salt '*' dnsutil.hosts_append /etc/hosts 127.0.0.1 ad1.yuk.co,ad2.yuk.co
```

salt.modules.dnsutil.**hosts_remove**(*hostsfile='/etc/hosts'*, *entries=None*)
Remove a host from the /etc/hosts file. If doing so will leave a line containing only an IP address, then the line will be deleted. This function will leave comments and blank lines intact.

CLI Examples:

```
salt '*' dnsutil.hosts_remove /etc/hosts ad1.yuk.co
salt '*' dnsutil.hosts_remove /etc/hosts ad2.yuk.co,ad1.yuk.co
```

salt.modules.dnsutil.**parse_hosts**(*hostsfile='/etc/hosts'*, *hosts=None*)
Parse /etc/hosts file.

CLI Example:

```
salt '*' dnsutil.parse_hosts
```

salt.modules.dnsutil.**parse_zone**(*zonefile=None*, *zone=None*)
Parses a zone file. Can be passed raw zone data on the API level.

CLI Example:

```
salt ns1 dnsutil.parse_zone /var/lib/named/example.com.zone
```

salt.modules.dnsutil.**serial**(*zone=''*, *update=False*)
Return, store and update a dns serial for your zone files.

zone: a keyword for a specific zone

update: store an updated version of the serial in a grain

If `update` is False, the function will retrieve an existing serial or return the current date if no serial is stored. Nothing will be stored

If `update` is True, the function will set the serial to the current date if none exist or if the existing serial is for a previous date. If a serial for greater than the current date is already stored, the function will increment it.

This module stores the serial in a grain, you can explicitly set the stored value as a grain named `dnsserial_<zone_name>`.

CLI Example:

```
salt ns1 dnsutil.serial example.com
```

### 13.6.73 salt.modules.dockercompose module

Module to import docker-compose via saltstack

New in version 2016.3.0.

**maintainer** Jean Praloran <jeanpralo@gmail.com>

**maturity** new

**depends** docker-compose>=1.5

**platform** all

#### Introduction

This module allows one to deal with docker-compose file in a directory.

This is a first version only, the following commands are missing at the moment but will be built later on if the community is interested in this module:

- run
- logs
- port
- scale

### Installation Prerequisites

This execution module requires at least version 1.4.0 of both docker-compose and Docker. docker-compose can easily be installed using *pip.install*:

```
salt myminion pip.install docker-compose>=1.5.0
```

### How to use this module?

In order to use the module if you have no docker-compose file on the server you can issue the command create, it takes two arguments the path where the docker-compose.yml will be stored and the content of this latter:

```
# salt-call -l debug dockercompose.create /tmp/toto '
 database:
 image: mongo:3.0
 command: mongod --smallfiles --quiet --logpath=/dev/null
 '
```

Then you can execute a list of method defined at the bottom with at least one argument (the path where the docker-compose.yml will be read) and an optional python list which corresponds to the services names:

```
# salt-call -l debug dockercompose.up /tmp/toto
# salt-call -l debug dockercompose.restart /tmp/toto '[database]'
# salt-call -l debug dockercompose.stop /tmp/toto
# salt-call -l debug dockercompose.rm /tmp/toto
```

### Docker-compose method supported

- up
- restart
- stop
- start
- pause
- unpause
- kill
- rm
- ps
- pull
- build

### Functions

- **docker-compose.yml management**
  - *dockercompose.create*
  - *dockercompose.get*
- **Manage containers**

- *dockercompose.restart*
- *dockercompose.stop*
- *dockercompose.pause*
- *dockercompose.unpause*
- *dockercompose.start*
- *dockercompose.kill*
- *dockercompose.rm*
- *dockercompose.up*

- **Manage containers image**:
  - *dockercompose.pull*
  - *dockercompose.build*
- **Gather information about containers**:
  - *dockercompose.ps*

### Detailed Function Documentation

salt.modules.dockercompose.**build**(*path*, *service_names=None*)

Build image for containers in the docker-compose file, service_names is a python list, if omitted build images for all containers. Please note that at the moment the module does not allow you to upload your Dockerfile, nor any other file you could need with your docker-compose.yml, you will have to make sure the files you need are actually in the directory specified in the *build* keyword
**path** Path where the docker-compose file is stored on the server
**service_names** If specified will pull only the image for the specified services
CLI Example:

```
salt myminion dockercompose.build /path/where/docker-compose/stored
salt myminion dockercompose.build /path/where/docker-compose/stored '[janus]'
```

salt.modules.dockercompose.**create**(*path*, *docker_compose*)

Create and validate a docker-compose file into a directory
**path** Path where the docker-compose file will be stored on the server
**docker_compose** docker_compose file
CLI Example:

```
salt myminion dockercompose.create /path/where/docker-compose/stored content
```

salt.modules.dockercompose.**get**(*path*)

Get the content of the docker-compose file into a directory
**path** Path where the docker-compose file is stored on the server
CLI Example:

```
salt myminion dockercompose.get /path/where/docker-compose/stored
```

salt.modules.dockercompose.**kill**(*path*, *service_names=None*)

Kill containers in the docker-compose file, service_names is a python list, if omitted kill all containers
**path** Path where the docker-compose file is stored on the server
**service_names** If specified will kill only the specified services
CLI Example:

```
salt myminion dockercompose.kill /path/where/docker-compose/stored
salt myminion dockercompose.kill /path/where/docker-compose/stored '[janus]'
```

salt.modules.dockercompose.**pause**(*path*, *service_names=None*)

Pause running containers in the docker-compose file, service_names is a python list, if omitted pause all containers

**path** Path where the docker-compose file is stored on the server

**service_names** If specified will pause only the specified services

CLI Example:

```
salt myminion dockercompose.pause /path/where/docker-compose/stored
salt myminion dockercompose.pause /path/where/docker-compose/stored '[janus]'
```

salt.modules.dockercompose.**ps**(*path*)

List all running containers and report some information about them

**path** Path where the docker-compose file is stored on the server

CLI Example:

```
salt myminion dockercompose.ps /path/where/docker-compose/stored
```

salt.modules.dockercompose.**pull**(*path*, *service_names=None*)

Pull image for containers in the docker-compose file, service_names is a python list, if omitted pull all images

**path** Path where the docker-compose file is stored on the server

**service_names** If specified will pull only the image for the specified services

CLI Example:

```
salt myminion dockercompose.pull /path/where/docker-compose/stored
salt myminion dockercompose.pull /path/where/docker-compose/stored '[janus]'
```

salt.modules.dockercompose.**restart**(*path*, *service_names=None*)

Restart container(s) in the docker-compose file, service_names is a python list, if omitted restart all containers

**path** Path where the docker-compose file is stored on the server

**service_names** If specified will restart only the specified services

CLI Example:

```
salt myminion dockercompose.restart /path/where/docker-compose/stored
salt myminion dockercompose.restart /path/where/docker-compose/stored '[janus]'
```

salt.modules.dockercompose.**rm**(*path*, *service_names=None*)

Remove stopped containers in the docker-compose file, service_names is a python list, if omitted remove all stopped containers

**path** Path where the docker-compose file is stored on the server

**service_names** If specified will remove only the specified stopped services

CLI Example:

```
salt myminion dockercompose.rm /path/where/docker-compose/stored
salt myminion dockercompose.rm /path/where/docker-compose/stored '[janus]'
```

salt.modules.dockercompose.**start**(*path*, *service_names=None*)

Start containers in the docker-compose file, service_names is a python list, if omitted start all containers

**path** Path where the docker-compose file is stored on the server

**service_names** If specified will start only the specified services

CLI Example:

```
salt myminion dockercompose.start /path/where/docker-compose/stored
salt myminion dockercompose.start /path/where/docker-compose/stored '[janus]'
```

salt.modules.dockercompose.**stop**(*path*, *service_names=None*)

Stop running containers in the docker-compose file, service_names is a python list, if omitted stop all containers

**path** Path where the docker-compose file is stored on the server

**service_names** If specified will stop only the specified services

CLI Example:

```
salt myminion dockercompose.stop /path/where/docker-compose/stored
salt myminion dockercompose.stop  /path/where/docker-compose/stored '[janus]'
```

salt.modules.dockercompose.**unpause**(*path*, *service_names=None*)

Un-Pause containers in the docker-compose file, service_names is a python list, if omitted unpause all containers

**path** Path where the docker-compose file is stored on the server

**service_names** If specified will un-pause only the specified services

CLI Example:

```
salt myminion dockercompose.pause /path/where/docker-compose/stored
salt myminion dockercompose.pause /path/where/docker-compose/stored '[janus]'
```

salt.modules.dockercompose.**up**(*path*, *service_names=None*)

Create and start containers defined in the the docker-compose.yml file located in path, service_names is a python list, if omitted create and start all containers

**path** Path where the docker-compose file is stored on the server

**service_names** If specified will create and start only the specified services

CLI Example:

```
salt myminion dockercompose.up /path/where/docker-compose/stored
salt myminion dockercompose.up /path/where/docker-compose/stored '[janus]'
```

### 13.6.74 salt.modules.dockerio

Management of Docker Containers

New in version 2014.1.0.

Deprecated since version 2015.8.0: Future feature development will be done only in *dockerng*. See the documentation for this module for information on the deprecation path.

**Note:** The DockerIO integration is still in beta; the API is subject to change

#### General Notes

As we use states, we don't want to be continuously popping dockers, so we will map each container id (or image) with a grain whenever it is relevant.

As a corollary, we will resolve a container id either directly by the id or try to find a container id matching something stocked in grain.

### Installation Prerequisites

- You will need the `docker-py` python package in your python installation path that is running salt. Its version should support Docker Remote API v1.12.

  Currently, `docker-py 0.6.0` is known to support Docker Remote API v1.12

```
pip install docker-py==0.6.0
```

### Prerequisite Pillar Configuration for Authentication

- To push or pull you will need to be authenticated as the `docker-py` bindings require it
- For this to happen, you will need to configure a mapping in the pillar representing your per URL authentication bits:

```
docker-registries:
    registry_url:
        email: foo@foo.com
        password: s3cr3t
        username: foo
```

- You need at least an entry to the default docker index:

```
docker-registries:
    https://index.docker.io/v1/:
        email: foo@foo.com
        password: s3cr3t
        username: foo
```

- You can define multiple registry blocks for them to be aggregated. The only thing to keep in mind is that their ID must finish with `-docker-registries`:

```
ac-docker-registries:
    https://index.bar.io/v1/:
        email: foo@foo.com
        password: s3cr3t
        username: foo

ab-docker-registries:
    https://index.foo.io/v1/:
        email: foo@foo.com
        password: s3cr3t
        username: foo
```

  This could be also written as:

```
docker-registries:
    https://index.bar.io/v1/:
        email: foo@foo.com
        password: s3cr3t
        username: foo
    https://index.foo.io/v1/:
        email: foo@foo.com
        password: s3cr3t
        username: foo
```

### Methods

- Registry Dialog
  - *login*
  - *push*
  - *pull*
- Docker Management
  - *version*
  - *info*
- Image Management
  - *search*
  - *inspect_image*
  - *get_images*
  - *remove_image*
  - *import_image*
  - *build*
  - *tag*
  - *save*
  - *load*
- Container Management
  - *start*
  - *stop*
  - *restart*
  - *kill*
  - *wait*
  - *get_containers*
  - *inspect_container*
  - *remove_container*
  - *is_running*
  - *top*
  - *port*
  - *logs*
  - *diff*
  - *commit*
  - *create_container*
  - *export*
  - *get_container_root*

### Runtime Execution within a specific, already existing/running container

Idea is to use lxc-attach to execute inside the container context. We do not want to use `docker run` but want to execute something inside a running container.

These are the available methods:

- *retcode*
- *run*
- *run_all*
- *run_stderr*
- *run_stdout*
- *script*
- *script_retcode*

`salt.modules.dockerio.`**`build`**(*path=None*, *tag=None*, *quiet=False*, *fileobj=None*, *nocache=False*, *rm=True*, *timeout=None*)

Build a docker image from a dockerfile or an URL
**path** url/branch/docker_dir or path on the filesystem to the dockerfile
**tag** tag of the image
**quiet** quiet mode, Default is `False`
**nocache** do not use docker image cache, Default is `False`
**rm** remove intermediate commits, Default is `True`
**timeout** timeout value before aborting (in seconds)
CLI Example:

```
salt '*' docker.build vieux/apache
salt '*' docker.build github.com/creack/docker-firefox
```

`salt.modules.dockerio.`**`commit`**(*container*, *repository=None*, *tag=None*, *message=None*, *author=None*, *conf=None*)

Commit a container (promotes it to an image)
**container** container id
**repository** repository/image to commit to
**tag** tag of the image (Optional)
**message** commit message (Optional)
**author** author name (Optional)
**conf** conf (Optional)
CLI Example:

```
salt '*' docker.commit <container id>
```

`salt.modules.dockerio.`**`create_container`**(*image*, *command=None*, *hostname=None*, *user=None*, *detach=True*, *stdin_open=False*, *tty=False*, *mem_limit=None*, *ports=None*, *environment=None*, *dns=None*, *volumes=None*, *volumes_from=None*, *name=None*, *cpu_shares=None*, *cpuset=None*, *binds=None*)

Create a new container
**image** image to create the container from
**command** command to execute while starting
**hostname** hostname of the container
**user** user to run docker as
**detach** daemon mode, Default is `True`

**environment** environment variable mapping (`{'foo':'BAR'}`)
**ports** port redirections (`{'222': {}}`)
**volumes** list of volume mappings in either local volume, bound volume, or read-only bound volume form:

```
(['/var/lib/mysql/', '/usr/local/etc/ssl:/etc/ssl', '/etc/passwd:/etc/passwd:
↪ro'])
```

**binds** complete dictionary of bound volume mappings:

```
{ '/usr/local/etc/ssl/certs/internal.crt': {
    'bind': '/etc/ssl/certs/com.example.internal.crt',
    'ro': True
    },
  '/var/lib/mysql': {
    'bind': '/var/lib/mysql/',
    'ro': False
    }
}
```

This dictionary is suitable for feeding directly into the Docker API, and all keys are required. (see http://docker-py.readthedocs.org/en/latest/volumes/)

**tty** attach ttys, Default is `False`
**stdin_open** let stdin open, Default is `False`
**name** name given to container
**cpu_shares** CPU shares (relative weight)
**cpuset** CPUs in which to allow execution (`0-3' or `0,1')
CLI Example:

```
salt '*' docker.create_container o/ubuntu volumes="['/s','/m:/f']"
```

`salt.modules.dockerio.`**`diff`**(*container*)
Get container diffs
**container** container id
CLI Example:

```
salt '*' docker.diff <container id>
```

`salt.modules.dockerio.`**`exists`**(*container*)
Check if a given container exists
**container** container id
Returns `True` if container exists otherwise returns `False`

CLI Example:

```
salt '*' docker.exists <container id>
```

`salt.modules.dockerio.`**`export`**(*container*, *path*)
Export a container to a file
**container** container id
**path** path to which file is to be exported
CLI Example:

```
salt '*' docker.export <container id>
```

`salt.modules.dockerio.`**`get_container_root`**(*container*)
Get the container rootfs path
**container** container id or grain

CLI Example:

```
salt '*' docker.get_container_root <container id>
```

salt.modules.dockerio.**get_containers**(*all=True*, *trunc=False*, *since=None*, *before=None*, *limit=-1*, *host=False*, *inspect=False*)

Get a list of mappings representing all containers
**all** return all containers, Default is `True`
**trunc** set it to True to have the short ID, Default is `False`
**host** include the Docker host's ipv4 and ipv6 address in return, Default is `False`
**inspect** Get more granular information about each container by running a docker inspect
CLI Example:

```
salt '*' docker.get_containers
salt '*' docker.get_containers host=True
salt '*' docker.get_containers host=True inspect=True
```

salt.modules.dockerio.**get_images**(*name=None*, *quiet=False*, *all=True*)

List docker images
**name** repository name
**quiet** only show image id, Default is `False`
**all** show all images, Default is `True`
CLI Example:

```
salt '*' docker.get_images <name> [quiet=True|False] [all=True|False]
```

salt.modules.dockerio.**import_image**(*src*, *repo*, *tag=None*)

Import content from a local tarball or a URL to a docker image
**src** content to import (URL or absolute path to a tarball)
**repo** repository to import to
**tag** set tag of the image (Optional)
CLI Example:

```
salt '*' docker.import_image <src> <repo> [tag]
```

salt.modules.dockerio.**info**()

Get the version information about docker. This is similar to `docker info` command

CLI Example:

```
salt '*' docker.info
```

salt.modules.dockerio.**inspect_container**(*container*)

Get container information. This is similar to `docker inspect` command but only for containers
**container** container id
CLI Example:

```
salt '*' docker.inspect_container <container id>
```

salt.modules.dockerio.**inspect_image**(*image*)

Inspect the status of an image and return relative data. This is similar to `docker inspect` command but only for images.
**image** name of the image
CLI Example:

```
salt '*' docker.inspect_image <image>
```

salt.modules.dockerio.**is_running**(*container*)

Check if the specified container is running
**container** container id
Returns `True` if container is running otherwise returns `False`

CLI Example:

```
salt '*' docker.is_running <container id>
```

salt.modules.dockerio.**kill**(*container*, *signal=None*)

Kill a running container
**container** container id
**signal** signal to send

New in version 2015.8.0.

CLI Example:

```
salt '*' docker.kill <container id>
```

salt.modules.dockerio.**load**(*imagepath*)

Load the specified file at imagepath into docker that was generated from a docker save command e.g. *docker load < imagepath*
**imagepath** imagepath to docker tar file
CLI Example:

```
salt '*' docker.load /path/to/image
```

salt.modules.dockerio.**login**(*url=None*, *username=None*, *password=None*, *email=None*)

Wrapper to the `docker.py` login method (does not do much yet)
**url** registry url to authenticate to
**username** username to authenticate
**password** password to authenticate
**email** email to authenticate
CLI Example:

```
salt '*' docker.login <url> <username> <password> <email>
```

salt.modules.dockerio.**logs**(*container*)

Return logs for a specified container
**container** container id
CLI Example:

```
salt '*' docker.logs <container id>
```

salt.modules.dockerio.**port**(*container*, *private_port*)

Private port mapping allocation information. This method is broken on docker-py side. Just use the result of inspect to mangle port allocation
**container** container id
**private_port** private port on the container to query for
CLI Example:

```
salt '*' docker.port <container id> <private port>
```

salt.modules.dockerio.**pull**(*repo*, *tag=None*, *insecure_registry=False*)

Pulls an image from any registry. See documentation at top of this page to configure authenticated access
**repo** name of repository
**tag** specific tag to pull (Optional)

**insecure_registry** set as `True` to use insecure (non HTTPS) registry. Default is `False` (only available if using docker-py >= 0.5.0)

CLI Example:

```
salt '*' docker.pull <repository> [tag]
```

`salt.modules.dockerio.`**`push`**(*repo*, *tag=None*, *quiet=False*, *insecure_registry=False*)

Pushes an image to any registry. See documentation at top of this page to configure authenticated access

**repo** name of repository

**tag** specific tag to push (Optional)

**quiet** set as `True` to quiet output, Default is `False`

**insecure_registry** set as `True` to use insecure (non HTTPS) registry. Default is `False` (only available if using docker-py >= 0.5.0)

CLI Example:

```
salt '*' docker.push <repository> [tag] [quiet=True|False]
```

`salt.modules.dockerio.`**`remove_container`**(*container*, *force=False*, *v=False*)

Remove a container from a docker installation

**container** container id

**force** remove a running container, Default is `False`

**v** remove the volumes associated to the container, Default is `False`

CLI Example:

```
salt '*' docker.remove_container <container id> [force=True|False] [v=True|False]
```

`salt.modules.dockerio.`**`remove_image`**(*image*)

Remove an image from a system.

**image** name of image

CLI Example:

```
salt '*' docker.remove_image <image>
```

`salt.modules.dockerio.`**`restart`**(*container*, *timeout=10*)

Restart a running container

**container** container id

**timeout** timeout for container to exit gracefully before killing it, Default is `10` seconds

CLI Example:

```
salt '*' docker.restart <container id> [timeout=20]
```

`salt.modules.dockerio.`**`retcode`**(*container*, *cmd*)

Wrapper for *`cmdmod.retcode`* inside a container context

**container** container id (or grain)

**cmd** command to execute

---

**Note**: The return is True or False depending on the commands success.

---

**Warning**: Be advised that this function allows for raw shell access to the named container! If allowing users to execute this directly it may allow more rights than intended!

CLI Example:

```
salt '*' docker.retcode <container id> 'ls -l /etc'
```

salt.modules.dockerio.**run**(*container*, *cmd*)

Wrapper for *cmdmod.run* inside a container context

**container** container id (or grain)

**cmd** command to execute

---

**Note**: The return is a bit different as we use the docker struct. Output of the command is in `out' and result is always `True`.

---

**Warning**: Be advised that this function allows for raw shell access to the named container! If allowing users to execute this directly it may allow more rights than intended!

CLI Example:

```
salt '*' docker.run <container id> 'ls -l /etc'
```

salt.modules.dockerio.**run_all**(*container*, *cmd*)

Wrapper for *cmdmod.run_all* inside a container context

**container** container id (or grain)

**cmd** command to execute

---

**Note**: The return is a bit different as we use the docker struct. Output of the command is in `out' and result is `False` if command failed to execute.

---

**Warning**: Be advised that this function allows for raw shell access to the named container! If allowing users to execute this directly it may allow more rights than intended!

CLI Example:

```
salt '*' docker.run_all <container id> 'ls -l /etc'
```

salt.modules.dockerio.**run_stderr**(*container*, *cmd*)

Wrapper for *cmdmod.run_stderr* inside a container context

**container** container id (or grain)

**cmd** command to execute

---

**Note**: The return is a bit different as we use the docker struct. Output of the command is in `out' and result is always `True`.

---

**Warning**: Be advised that this function allows for raw shell access to the named container! If allowing users to execute this directly it may allow more rights than intended!

CLI Example:

```
salt '*' docker.run_stderr <container id> 'ls -l /etc'
```

salt.modules.dockerio.**run_stdout**(*container*, *cmd*)

Wrapper for *cmdmod.run_stdout* inside a container context
**container** container id (or grain)
**cmd** command to execute

---

**Note**: The return is a bit different as we use the docker struct. Output of the command is in `out' and result is always `True`.

---

**Warning**: Be advised that this function allows for raw shell access to the named container! If allowing users to execute this directly it may allow more rights than intended!

CLI Example:

```
salt '*' docker.run_stdout <container id> 'ls -l /etc'
```

salt.modules.dockerio.**save**(*image*, *filename*)

New in version 2015.5.0.

Save the specified image to filename from docker e.g. *docker save image > filename*
**image** name of image
**filename** The filename of the saved docker image
CLI Example:

```
salt '*' docker.save arch_image /path/to/save/image
```

salt.modules.dockerio.**script**(*container*, *source*, *args=None*, *cwd=None*, *stdin=None*, *runas=None*, *shell='/bin/sh'*, *env=None*, *template='jinja'*, *umask=None*, *timeout=None*, *reset_system_locale=True*, *no_clean=False*, *saltenv='base'*)

Wrapper for *cmdmod.script* inside a container context
**container** container id (or grain)
**additional parameters** See *cmd.script*

**Warning**: Be advised that this function allows for raw shell access to the named container! If allowing users to execute this directly it may allow more rights than intended!

Download a script from a remote location and execute the script in the container. The script can be located on the salt master file server or on an HTTP/FTP server.

The script will be executed directly, so it can be written in any available programming language.

The script can also be formatted as a template, the default is jinja. Arguments for the script can be specified as well.

CLI Example:

```
salt '*' docker.script <container id> salt://docker_script.py
salt '*' docker.script <container id> salt://scripts/runme.sh 'arg1 arg2 "arg 3"'
salt '*' docker.script <container id> salt://scripts/windows_task.ps1 args=' -
↪Input c:\tmp\infile.txt' shell='powershell'
```

A string of standard input can be specified for the command to be run using the stdin parameter. This can be useful in cases where sensitive information must be read from standard input:

CLI Example:

```
salt '*' docker.script <container id> salt://scripts/runme.sh stdin=
↪'one\ntwo\nthree\nfour\nfive\n'
```

salt.modules.dockerio.**script_retcode**(*container*, *source*, *cwd=None*, *stdin=None*, *runas=None*, *shell='/bin/sh'*, *env=None*, *template='jinja'*, *umask=None*, *timeout=None*, *reset_system_locale=True*, *no_clean=False*, *saltenv='base'*)

Wrapper for *cmdmod.script_retcode* inside a container context

**container** container id (or grain)

**additional parameters** See *cmd.script_retcode*

**Warning:** Be advised that this function allows for raw shell access to the named container! If allowing users to execute this directly it may allow more rights than intended!

CLI Example:

```
salt '*' docker.script_retcode <container id> salt://docker_script.py
```

salt.modules.dockerio.**search**(*term*)

Search for an image on the registry

**term** search keyword

CLI Example:

```
salt '*' docker.search <term>
```

salt.modules.dockerio.**start**(*container*, *binds=None*, *port_bindings=None*, *lxc_conf=None*, *publish_all_ports=None*, *links=None*, *privileged=False*, *dns=None*, *volumes_from=None*, *network_mode=None*, *restart_policy=None*, *cap_add=None*, *cap_drop=None*)

Start the specified container

**container** container id

CLI Example:

```
salt '*' docker.start <container id>
```

salt.modules.dockerio.**stop**(*container*, *timeout=10*)

Stop a running container

**container** container id

**timeout** timeout for container to exit gracefully before killing it, Default is `10` seconds

CLI Example:

```
salt '*' docker.stop <container id> [timeout=20]
```

salt.modules.dockerio.**tag**(*image*, *repository*, *tag=None*, *force=False*)

Tag an image into a repository

**image** name of image

**repository** name of repository

**tag** tag to apply (Optional)

**force** force apply tag, Default is `False`

CLI Example:

```
salt '*' docker.tag <image> <repository> [tag] [force=True|False]
```

salt.modules.dockerio.**top**(*container*)

Run the docker top command on a specific container

**container** container id
CLI Example:

```
salt '*' docker.top <container id>
```

salt.modules.dockerio.**version**()
Get docker version

CLI Example:

```
salt '*' docker.version
```

salt.modules.dockerio.**wait**(*container*)
Wait for a container to exit gracefully
**container** container id
CLI Example:

```
salt '*' docker.wait <container id>
```

### 13.6.75 salt.modules.dockerng

Management of Docker Containers

New in version 2015.8.0.

#### Why Make a Second Docker Execution Module?

We have received a lot of feedback on our Docker support. In the process of implementing recommended improvements, it became obvious that major changes needed to be made to the functions and return data. In the end, a complete rewrite was done.

The changes being too significant, it was decided that making a separate execution module and state module (called `dockerng`) would be the best option. This will give users a couple release cycles to modify their scripts, SLS files, etc. to use the new functionality, rather than forcing users to change everything immediately.

In the **Nitrogen** release of Salt (due in 2017), this execution module will take the place of the default Docker execution module, and backwards-compatible naming will be maintained for a couple releases after that to allow users time to replace references to `dockerng` with `docker`.

#### Installation Prerequisites

This execution module requires at least version 1.4.0 of both docker-py and Docker. docker-py can easily be installed using *`pip.install`*:

```
salt myminion pip.install docker-py>=1.4.0
```

#### Authentication

To push or pull images, credentials must be configured. Because a password must be used, it is recommended to place this configuration in *Pillar* data. The configuration schema is as follows:

```
docker-registries:
  <registry_url>:
    email: <email_address>
    password: <password>
    username: <username>
    reauth: <boolean>
```

For example:

```
docker-registries:
  https://index.docker.io/v1/:
    email: foo@foo.com
    password: s3cr3t
    username: foo
```

Reauth is an optional parameter that forces the docker login to reauthorize using the credentials passed in the pillar data. Defaults to false.

New in version 2016.3.5,2016.11.1.

For example:

```
docker-registries:
  https://index.docker.io/v1/:
    email: foo@foo.com
    password: s3cr3t
    username: foo
    reauth: True
```

Mulitiple registries can be configured. This can be done in one of two ways. The first way is to configure each registry under the `docker-registries` pillar key.

```
docker-registries:
  https://index.foo.io/v1/:
    email: foo@foo.com
    password: s3cr3t
    username: foo
  https://index.bar.io/v1/:
    email: foo@foo.com
    password: s3cr3t
    username: foo
```

The second way is to use separate pillar variables ending in `-docker-registries`:

```
foo-docker-registries:
  https://index.foo.io/v1/:
    email: foo@foo.com
    password: s3cr3t
    username: foo

bar-docker-registries:
  https://index.bar.io/v1/:
    email: foo@foo.com
    password: s3cr3t
    username: foo
```

Both methods can be combined; any registry configured under `docker-registries` or `*-docker-registries` will be detected.

### Configuration Options

The following configuration options can be set to fine-tune how Salt uses Docker:

- `docker.url`: URL to the docker service (default: local socket).
- `docker.version`: API version to use
- `docker.exec_driver`: Execution driver to use, one of `nsenter`, `lxc-attach`, or `docker-exec`. See the *Executing Commands Within a Running Container* section for more details on how this config parameter is used.

These configuration options are retrieved using *config.get* (click the link for further information).

### Functions

- **Information Gathering**
  - *dockerng.depends*
  - *dockerng.diff*
  - *dockerng.exists*
  - *dockerng.history*
  - *dockerng.images*
  - *dockerng.info*
  - *dockerng.inspect*
  - *dockerng.inspect_container*
  - *dockerng.inspect_image*
  - *dockerng.list_containers*
  - *dockerng.list_tags*
  - *dockerng.logs*
  - *dockerng.pid*
  - *dockerng.port*
  - *dockerng.ps*
  - *dockerng.state*
  - *dockerng.search*
  - *dockerng.top*
  - *dockerng.version*
- **Container Management**
  - *dockerng.create*
  - *dockerng.copy_from*
  - *dockerng.copy_to*
  - *dockerng.export*
  - *dockerng.rm*

- **Management of Container State**
  - *dockerng.kill*
  - *dockerng.pause*
  - *dockerng.restart*
  - *dockerng.start*
  - *dockerng.stop*
  - *dockerng.unpause*
  - *dockerng.wait*
- **Image Management**
  - *dockerng.build*
  - *dockerng.commit*
  - *dockerng.dangling*
  - *dockerng.import*
  - *dockerng.load*
  - *dockerng.pull*
  - *dockerng.push*
  - *dockerng.rmi*
  - *dockerng.save*
  - *dockerng.tag*
- **Network Management**
  - *dockerng.networks*
  - *dockerng.create_network*
  - *dockerng.remove_network*
  - *dockerng.inspect_network*
  - *dockerng.connect_container_to_network*
  - *dockerng.disconnect_container_from_network*

### Executing Commands Within a Running Container

**Note**: With the release of Docker 1.13.1, the Execution Driver has been removed. Starting in versions 2016.3.6, 2016.11.4, and Nitrogen, Salt defaults to using `docker exec` to run commands in containers, however for older Salt releases it will be necessary to set the `docker.exec_driver` config option to either `docker-exec` or `nsenter` for Docker versions 1.13.1 and newer.

Multiple methods exist for executing commands within Docker containers:

- lxc-attach: Default for older versions of docker
- nsenter: Enters container namespace to run command
- docker-exec: Native support for executing commands in Docker containers (added in Docker 1.3)

Adding a configuration option (see *config.get*) called `docker.exec_driver` will tell Salt which execution driver to use:

```
docker.exec_driver: docker-exec
```

If this configuration option is not found, Salt will use the appropriate interface (either nsenter or lxc-attach) based on the `Execution Driver` value returned from `docker info`. docker-exec will not be used by default, as it is presently (as of version 1.6.2) only able to execute commands as the effective user of the container. Thus, if a `USER` directive was used to run as a non-privileged user, docker-exec would be unable to perform the action as root. Salt can still use docker-exec as an execution driver, but must be explicitly configured (as in the example above) to do so at this time.

If possible, try to manually specify the execution driver, as it will save Salt a little work.

This execution module provides functions that shadow those from the *cmd* module. They are as follows:

- *dockerng.retcode*
- *dockerng.run*
- *dockerng.run_all*
- *dockerng.run_stderr*
- *dockerng.run_stdout*
- *dockerng.script*
- *dockerng.script_retcode*

### Detailed Function Documentation

**class** `salt.modules.dockerng.`**`DockerJSONDecoder`**(*encoding=None*, *object_hook=None*, *parse_float=None*, *parse_int=None*, *parse_constant=None*, *strict=True*, *object_pairs_hook=None*)

**`decode`**(*s*, *_w=None*)

`salt.modules.dockerng.`**`build`**(*path=None*, *image=None*, *cache=True*, *rm=True*, *api_response=False*, *fileobj=None*)

Builds a docker image from a Dockerfile or a URL

**path** Path to directory on the Minion containing a Dockerfile

**image** Image to be built, in `repo:tag` notation. If just the repository name is passed, a tag name of `latest` will be assumed. If building from a URL, this parameted can be omitted.

**cache** [True] Set to `False` to force the build process not to use the Docker image cache, and pull all required intermediate image layers

**rm** [True] Remove intermediate containers created during build

**api_response** [False] If `True`: an `API_Response` key will be present in the return data, containing the raw output from the Docker API.

**fileobj** Allows for a file-like object containing the contents of the Dockerfile to be passed in place of a file `path` argument. This argument should not be used from the CLI, only from other Salt code.

**RETURN DATA**

A dictionary containing one or more of the following keys:

- `Id` - ID of the newly-built image
- `Time_Elapsed` - Time in seconds taken to perform the build
- `Intermediate_Containers` - IDs of containers created during the course of the build process

*(Only present if rm=False)*

- **Images** - A dictionary containing one or more of the following keys:
  - Already_Pulled - Layers that that were already present on the Minion
  - Pulled - Layers that that were pulled

  *(Only present if the image specified by the ``image'' argument was not present on the Minion, or if cache=False)*
- Status - A string containing a summary of the pull action (usually a message saying that an image was downloaded, or that it was up to date).

  *(Only present if the image specified by the ``image'' argument was not present on the Minion, or if cache=False)*

CLI Example:

```
salt myminion dockerng.build /path/to/docker/build/dir image=myimage:dev
salt myminion dockerng.build https://github.com/myuser/myrepo.git image=myimage:
↪latest
```

salt.modules.dockerng.**commit**(*name*, *image*, *message=None*, *author=None*)

Commits a container, thereby promoting it to an image. Equivalent to running the `docker commit` Docker CLI command.

**name** Container name or ID to commit

**image** Image to be committed, in `repo:tag` notation. If just the repository name is passed, a tag name of `latest` will be assumed.

**message** Commit message (Optional)

**author** Author name (Optional)

**RETURN DATA**

A dictionary containing the following keys:

- Id - ID of the newly-created image
- Image - Name of the newly-created image
- Time_Elapsed - Time in seconds taken to perform the commit

CLI Example:

```
salt myminion dockerng.commit mycontainer myuser/myimage
salt myminion dockerng.commit mycontainer myuser/myimage:mytag
```

salt.modules.dockerng.**connect_container_to_network**(*container*, *network_id*)

Connect container to network.

**container** Container name or ID

**network_id** ID of network

CLI Example:

```
salt myminion dockerng.connect_container_from_network web-1
↪1f9d2454d0872b68dd9e8744c6e7a4c66b86f10abaccc21e14f7f014f729b2bc
```

salt.modules.dockerng.**copy_from**(*name*, **args*, ***kwargs*)

Copy a file from inside a container to the Minion

**name** Container name

**source** Path of the file on the container's filesystem

**dest** Destination on the Minion. Must be an absolute path. If the destination is a directory, the file will be copied into that directory.

**overwrite** [False] Unless this option is set to `True`, then if a file exists at the location specified by the `dest` argument, an error will be raised.

**makedirs** [False] Create the parent directory on the container if it does not already exist.

**RETURN DATA**

A boolean (`True` if successful, otherwise `False`)

CLI Example:

```
salt myminion dockerng.copy_from mycontainer /var/log/nginx/access.log /home/
↪myuser
```

`salt.modules.dockerng.`**`copy_to`**(*name*, **args*, ***kwargs*)

Copy a file from the host into a container

**name** Container name

**source** File to be copied to the container. Can be a local path on the Minion or a remote file from the Salt fileserver.

**dest** Destination on the container. Must be an absolute path. If the destination is a directory, the file will be copied into that directory.

**exec_driver** [None] If not passed, the execution driver will be detected as described *above*.

**overwrite** [False] Unless this option is set to `True`, then if a file exists at the location specified by the `dest` argument, an error will be raised.

**makedirs** [False] Create the parent directory on the container if it does not already exist.

**RETURN DATA**

A boolean (`True` if successful, otherwise `False`)

CLI Example:

```
salt myminion dockerng.copy_to mycontainer /tmp/foo /root/foo
```

`salt.modules.dockerng.`**`create`**(**args*, ***kwargs*)

Create a new container

**name** Name for the new container. If not provided, Docker will randomly generate one for you.

**image** Image from which to create the container

**command or cmd** Command to run in the container

Example: `command=bash` or `cmd=bash`

Changed in version 2015.8.1: `cmd` is now also accepted

**hostname** Hostname of the container. If not provided, and if a `name` has been provided, the `hostname` will default to the `name` that was passed.

Example: `hostname=web1`

> **Warning:** If the container is started with `network_mode=host`, the hostname will be overridden by the hostname of the Minion.

**domainname** Domain name of the container

Example: `domainname=domain.tld`

**interactive** [False] Leave stdin open

Example: `interactive=True`

**tty** [False] Attach TTYs

Example: `tty=True`

**detach** [True] If `True`, run `command` in the background (daemon mode)

Example: `detach=False`

**user** User under which to run docker

Example: `user=foo`

**memory** [0] Memory limit. Can be specified in bytes or using single-letter units (i.e. `512M`, `2G`, etc.). A value of `0` (the default) means no memory limit.

Example: `memory=512M`, `memory=1073741824`

**memory_swap** [-1] Total memory limit (memory plus swap). Set to `-1` to disable swap. A value of `0` means no swap limit.

Example: `memory_swap=1G`, `memory_swap=2147483648`

**mac_address** MAC address to use for the container. If not specified, a random MAC address will be used.

Example: `mac_address=01:23:45:67:89:0a`

**network_disabled** [False] If `True`, networking will be disabled within the container

Example: `network_disabled=True`

**working_dir** Working directory inside the container

Example: `working_dir=/var/log/nginx`

**entrypoint** Entrypoint for the container. Either a string (e.g. `"mycmd --arg1 --arg2"`) or a Python list (e.g. `"['mycmd','--arg1','--arg2']"`)

Example: `entrypoint="cat access.log"`

**environment** Either a dictionary of environment variable names and their values, or a Python list of strings in the format `VARNAME=value`.

Example: `"{'VAR1': 'value','VAR2': 'value'}"`, `"['VAR1=value','VAR2=value']"`

**ports** A list of ports to expose on the container. Can be passed as comma-separated list or a Python list. If the protocol is omitted, the port will be assumed to be a TCP port.

Example: `1111,2222/udp`, `"['1111/tcp','2222/udp']"`

**volumes** [None] List of directories to expose as volumes. Can be passed as a comma-separated list or a Python list.

Example: `volumes=/mnt/vol1,/mnt/vol2`, `volumes="[/mnt/vol1,/mnt/vol2]"`

**cpu_shares** CPU shares (relative weight)

Example: `cpu_shares=0.5`, `cpu_shares=1`

**cpuset** CPUs on which which to allow execution, specified as a string containing a range (e.g. `0-3`) or a comma-separated list of CPUs (e.g. `0,1`).

Example: `cpuset="0-3"`, `cpuset="0,1"`

**client_timeout** Timeout in seconds for the Docker client. This is not a timeout for this function, but for receiving a response from the API.

---

**Note**: This is only used if Salt needs to pull the requested image.

---

**labels** Add Metadata to the container. Can be a list of strings/dictionaries or a dictionary of strings (keys and values).

Example: `labels=LABEL1,LABEL2`, `labels="{'LABEL1': 'value1','LABEL2': 'value2'}"`

**validate_ip_addrs** [True] For parameters which accept IP addresses as input, IP address validation will be performed. To disable, set this to `False`

**binds** Files/directories to bind mount. Each bind mount should be passed in the format `<host_path>:<container_path>:<read_only>`, where `<read_only>` is one of `rw` (for read-write access) or `ro` (for read-only access). Optionally, the read-only information can be left off the end and the bind mount will be assumed to be read-write. Examples 2 and 3 below are equivalent.

Example 1: `binds=/srv/www:/var/www:ro`

Example 2: `binds=/srv/www:/var/www:rw`

Example 3: `binds=/srv/www:/var/www`

**port_bindings** Bind exposed ports which were exposed using the `ports` argument to *dockerng.create*. These should be passed in the same way as the `--publish` argument to the `docker run` CLI command:

- `ip:hostPort:containerPort` - Bind a specific IP and port on the host to a specific port within the container.
- `ip::containerPort` - Bind a specific IP and an ephemeral port to a specific port within the container.
- `hostPort:containerPort` - Bind a specific port on all of the host's interfaces to a specific port within the container.
- `containerPort` - Bind an ephemeral port on all of the host's interfaces to a specific port within the container.

Multiple bindings can be separated by commas, or passed as a Python list. The below two examples are equivalent:

Example 1: `port_bindings="5000:5000,2123:2123/udp,8080"`

Example 2: `port_bindings="['5000:5000','2123:2123/udp','8080']"`

---

**Note**: When configuring bindings for UDP ports, the protocol must be passed in the `containerPort` value, as seen in the examples above.

---

**lxc_conf** Additional LXC configuration parameters to set before starting the container.

Example: `lxc_conf="{lxc.utsname: docker}"`

---

**Note**: These LXC configuration parameters will only have the desired effect if the container is using the LXC execution driver, which has not been the default for some time.

---

**publish_all_ports** [False] Allocates a random host port for each port exposed using the `ports` argument to *dockerng.create*.

Example: `publish_all_ports=True`

**links** Link this container to another. Links should be specified in the format `<container_name_or_id>:<link_alias>`. Multiple links can be passed, ether as a comma separated list or a Python list.

Example 1: `links=mycontainer:myalias`, `links=web1:link1,web2:link2`

Example 2: `links="['mycontainer:myalias']"` `links="['web1:link1','web2:link2']"`

**dns** List of DNS nameservers. Can be passed as a comma-separated list or a Python list.

Example: `dns=8.8.8.8,8.8.4.4` or `dns="[8.8.8.8,8.8.4.4]"`

---

**Note**: To skip IP address validation, use `validate_ip_addrs=False`

---

**dns_search** List of DNS search domains. Can be passed as a comma-separated list or a Python list.

Example: `dns_search=foo1.domain.tld,foo2.domain.tld` or `dns_search="[foo1.domain.tld,foo2.domain.tld]"`

**volumes_from** Container names or IDs from which the container will get volumes. Can be passed as a comma-separated list or a Python list.

Example: `volumes_from=foo`, `volumes_from=foo,bar`, `volumes_from="[foo,bar]"`

**network_mode** [bridge] One of the following:

- `bridge` - Creates a new network stack for the container on the docker bridge
- `null` - No networking (equivalent of the Docker CLI argument `--net=none`)
- `container:<name_or_id>` - Reuses another container's network stack
- `host` - Use the host's network stack inside the container

> **Warning**: Using `host` mode gives the container full access to the hosts system's services (such as D-bus), and is therefore considered insecure.

Example: `network_mode=null`, `network_mode=container:web1`

**restart_policy** Set a restart policy for the container. Must be passed as a string in the format `policy[:retry_count]` where `policy` is one of `always` or `on-failure`, and `retry_count` is an optional limit to the number of retries. The retry count is ignored when using the `always` restart policy.

Example 1: `restart_policy=on-failure:5`

Example 2: `restart_policy=always`

**cap_add** List of capabilities to add within the container. Can be passed as a comma-separated list or a Python list. Requires Docker 1.2.0 or newer.

Example: `cap_add=SYS_ADMIN,MKNOD`, `cap_add="[SYS_ADMIN,MKNOD]"`

**cap_drop** List of capabilities to drop within the container. Can be passed as a comma-separated string or a Python list. Requires Docker 1.2.0 or newer.

Example: `cap_drop=SYS_ADMIN,MKNOD`, `cap_drop="[SYS_ADMIN,MKNOD]"`

**extra_hosts** Additional hosts to add to the container's /etc/hosts file. Can be passed as a comma-separated list or a Python list. Requires Docker 1.3.0 or newer.

Example: `extra_hosts=web1:10.9.8.7,web2:10.9.8.8`

---

**Note**: To skip IP address validation, use `validate_ip_addrs=False`

---

**pid_mode** Set to `host` to use the host container's PID namespace within the container. Requires Docker 1.5.0 or newer.

Example: `pid_mode=host`

**RETURN DATA**

A dictionary containing the following keys:

- `Id` - ID of the newly-created container
- `Name` - Name of the newly-created container

CLI Example:

```
# Create a data-only container
salt myminion dockerng.create myuser/mycontainer volumes="/mnt/vol1,/mnt/vol2"
# Create a CentOS 7 container that will stay running once started
salt myminion dockerng.create centos:7 name=mycent7 interactive=True tty=True
 ↪command=bash
```

`salt.modules.dockerng.`**`create_network`**(*name*, *driver=None*)

Create a new network

**network_id** ID of network

**driver** Driver of the network
CLI Example:

```
salt myminion dockerng.create_network web_network driver=bridge
```

salt.modules.dockerng.**create_volume**(*name*, *driver=None*, *driver_opts=None*)
Create a new volume

New in version 2015.8.4.
**name** name of volume
**driver** Driver of the volume
**driver_opts** Options for the driver volume
CLI Example:

```
salt myminion dockerng.create_volume my_volume driver=local
```

salt.modules.dockerng.**dangling**(*prune=False*, *force=False*)
Return top-level images (those on which no other images depend) which do not have a tag assigned to them. These include:

- Images which were once tagged but were later untagged, such as those which were superseded by committing a new copy of an existing tagged image.
- Images which were loaded using *docker.load* (or the `docker load` Docker CLI command), but not tagged.

**prune** [False] Remove these images
**force** [False] If `True`, and if `prune=True`, then forcibly remove these images.

**RETURN DATA**

If `prune=False`, the return data will be a list of dangling image IDs.

If `prune=True`, the return data will be a dictionary with each key being the ID of the dangling image, and the following information for each image:

- `Comment` - Any error encountered when trying to prune a dangling image

  *(Only present if prune failed)*
- `Removed` - A boolean (`True` if prune was successful, `False` if not)

CLI Example:

```
salt myminion dockerng.dangling
salt myminion dockerng.dangling prune=True
```

salt.modules.dockerng.**depends**(*name*)
Returns the containers and images, if any, which depend on the given image
**name** Name or ID of image
**RETURN DATA**

A dictionary containing the following keys:

- `Containers` - A list of containers which depend on the specified image
- `Images` - A list of IDs of images which depend on the specified image

CLI Example:

```
salt myminion dockerng.depends myimage
salt myminion dockerng.depends 0123456789ab
```

salt.modules.dockerng.**diff**(*name*, **args*, ***kwargs*)
Get information on changes made to container's filesystem since it was created. Equivalent to running the `docker diff` Docker CLI command.
**name** Container name or ID

**RETURN DATA**

A dictionary containing any of the following keys:

- `Added` - A list of paths that were added.
- `Changed` - A list of paths that were changed.
- `Deleted` - A list of paths that were deleted.

These keys will only be present if there were changes, so if the container has no differences the return dict will be empty.

CLI Example:

```
salt myminion dockerng.diff mycontainer
```

`salt.modules.dockerng.`**`disconnect_container_from_network`**(*container*, *network_id*)

Disconnect container from network.

**container** Container name or ID

**network_id** ID of network

CLI Example:

```
salt myminion dockerng.disconnect_container_from_network web-1
 ↪1f9d2454d0872b68dd9e8744c6e7a4c66b86f10abaccc21e14f7f014f729b2bc
```

`salt.modules.dockerng.`**`exists`**(*name*)

Check if a given container exists

**name** Container name or ID

**RETURN DATA**

A boolean (`True` if the container exists, otherwise `False`)

CLI Example:

```
salt myminion dockerng.exists mycontainer
```

`salt.modules.dockerng.`**`export`**(*name*, **args*, ***kwargs*)

Exports a container to a tar archive. It can also optionally compress that tar archive, and push it up to the Master.

**name** Container name or ID

**path** Absolute path on the Minion where the container will be exported

**overwrite** [False] Unless this option is set to `True`, then if a file exists at the location specified by the `path` argument, an error will be raised.

**makedirs** [False] If `True`, then if the parent directory of the file specified by the `path` argument does not exist, Salt will attempt to create it.

**compression** [None] Can be set to any of the following:

- `gzip` or `gz` for gzip compression
- `bzip2` or `bz2` for bzip2 compression
- `xz` or `lzma` for XZ compression (requires xz-utils, as well as the `lzma` module from Python 3.3, available in Python 2 and Python 3.0-3.2 as backports.lzma)

This parameter can be omitted and Salt will attempt to determine the compression type by examining the filename passed in the `path` parameter.

**push** [False] If `True`, the container will be pushed to the master using *`cp.push`*.

> **Note:** This requires *`file_recv`* to be set to `True` on the Master.

**RETURN DATA**

A dictionary will containing the following keys:

- `Path` - Path of the file that was exported
- `Push` - Reports whether or not the file was successfully pushed to the Master

*(Only present if push=True)*

- `Size` - Size of the file, in bytes
- `Size_Human` - Size of the file, in human-readable units
- `Time_Elapsed` - Time in seconds taken to perform the export

CLI Examples:

```
salt myminion dockerng.export mycontainer /tmp/mycontainer.tar
salt myminion dockerng.export mycontainer /tmp/mycontainer.tar.xz push=True
```

`salt.modules.dockerng.`**`get_client_args`**`()`

New in version 2016.3.6,2016.11.4,Nitrogen.

Returns the args for docker-py's low-level API, organized by container config, host config, and networking config.

CLI Example:

```
salt myminion docker.get_client_args
```

`salt.modules.dockerng.`**`history`**`(`*name*, *quiet=False*`)`

Return the history for an image. Equivalent to running the `docker history` Docker CLI command.

**name** Container name or ID

**quiet** [False] If `True`, the return data will simply be a list of the commands run to build the container.

```
$ salt myminion dockerng.history nginx:latest quiet=True
myminion:
    - FROM scratch
    - ADD file:
↪ef063ed0ae9579362871b9f23d2bc0781ef7cd4de6ac822052cf6c9c5a12b1e2 in /
    - CMD [/bin/bash]
    - MAINTAINER NGINX Docker Maintainers "docker-maint@nginx.com"
    - apt-key adv --keyserver pgp.mit.edu --recv-keys
↪573BFD6B3D8FBC641079A6ABABF5BD827BD9BF62
    - echo "deb http://nginx.org/packages/mainline/debian/ wheezy nginx" >> /
↪etc/apt/sources.list
    - ENV NGINX_VERSION=1.7.10-1~wheezy
    - apt-get update &&     apt-get install -y ca-certificates nginx=${NGINX_
↪VERSION} &&     rm -rf /var/lib/apt/lists/*
    - ln -sf /dev/stdout /var/log/nginx/access.log
    - ln -sf /dev/stderr /var/log/nginx/error.log
    - VOLUME [/var/cache/nginx]
    - EXPOSE map[80/tcp:{} 443/tcp:{}]
    - CMD [nginx -g daemon off;]
           https://github.com/saltstack/salt/pull/22421
```

**RETURN DATA**

If `quiet=False`, the return value will be a list of dictionaries containing information about each step taken to build the image. The keys in each step include the following:

- `Command` - The command executed in this build step
- `Id` - Layer ID
- `Size` - Cumulative image size, in bytes
- `Size_Human` - Cumulative image size, in human-readable units

- `Tags` - Tag(s) assigned to this layer
- `Time_Created_Epoch` - Time this build step was completed (Epoch time)
- `Time_Created_Local` - Time this build step was completed (Minion's local timezone)

CLI Example:

```
salt myminion dockerng.exists mycontainer
```

`salt.modules.dockerng.`**`images`**(*verbose=False*, ***kwargs*)

Returns information about the Docker images on the Minion. Equivalent to running the `docker images` Docker CLI command.

**all** [False] If `True`, untagged images will also be returned

**verbose** [False] If `True`, a `docker inspect` will be run on each image returned.

**RETURN DATA**

A dictionary with each key being an image ID, and each value some general info about that image (time created, size, tags associated with the image, etc.)

CLI Example:

```
salt myminion dockerng.images
salt myminion dockerng.images all=True
```

`salt.modules.dockerng.`**`import`**(*source*, *image*, *api_response=False*)

Imports content from a local tarball or a URL as a new docker image

**source** Content to import (URL or absolute path to a tarball). URL can be a file on the Salt fileserver (i.e. `salt://path/to/rootfs/tarball.tar.xz`. To import a file from a saltenv other than `base` (e.g. `dev`), pass it at the end of the URL (ex. `salt://path/to/rootfs/tarball.tar.xz?saltenv=dev`).

**image** Image to be created by the import, in `repo:tag` notation. If just the repository name is passed, a tag name of `latest` will be assumed.

**api_response** [False] If `True` an `api_response` key will be present in the return data, containing the raw output from the Docker API.

**RETURN DATA**

A dictionary containing the following keys:

- `Id` - ID of the newly-created image
- `Image` - Name of the newly-created image
- `Time_Elapsed` - Time in seconds taken to perform the commit

CLI Example:

```
salt myminion dockerng.import /tmp/cent7-minimal.tar.xz myuser/centos
salt myminion dockerng.import /tmp/cent7-minimal.tar.xz myuser/centos:7
salt myminion dockerng.import salt://dockerimages/cent7-minimal.tar.xz myuser/
↪centos:7
```

`salt.modules.dockerng.`**`info`**(**args*, ***kwargs*)

Returns a dictionary of system-wide information. Equivalent to running the `docker info` Docker CLI command.

CLI Example:

```
salt myminion dockerng.info
```

`salt.modules.dockerng.`**`inspect`**(*name*)

This is a generic container/image inspecton function. It will first attempt to get container information for the passed name/ID using *docker.inspect_container*, and then will try to get image information for the passed name/ID using *docker.inspect_image*. If it is already known that the name/ID is an image, it is slightly more efficient to use *docker.inspect_image*.

**name** Container/image name or ID
**RETURN DATA**

A dictionary of container/image information

CLI Example:

```
salt myminion dockerng.inspect mycontainer
salt myminion dockerng.inspect busybox
```

salt.modules.dockerng.**inspect_container**(*name*, **args*, ***kwargs*)
Retrieves container information. Equivalent to running the `docker inspect` Docker CLI command, but will only look for container information.
**name** Container name or ID
**RETURN DATA**

A dictionary of container information

CLI Example:

```
salt myminion dockerng.inspect_container mycontainer
salt myminion dockerng.inspect_container 0123456789ab
```

salt.modules.dockerng.**inspect_image**(*name*)
Retrieves image information. Equivalent to running the `docker inspect` Docker CLI command, but will only look for image information.

---

**Note**: To inspect an image, it must have been pulled from a registry or built locally. Images on a Docker registry which have not been pulled cannot be inspected.

---

**name** Image name or ID

**RETURN DATA**

A dictionary of image information

CLI Examples:

```
salt myminion dockerng.inspect_image busybox
salt myminion dockerng.inspect_image centos:6
salt myminion dockerng.inspect_image 0123456789ab
```

salt.modules.dockerng.**inspect_network**(*network_id*)
Inspect Network
**network_id** ID of network
CLI Example:

```
salt myminion dockerng.inspect_network
↪1f9d2454d0872b68dd9e8744c6e7a4c66b86f10abaccc21e14f7f014f729b2bc
```

salt.modules.dockerng.**inspect_volume**(*name*)
Inspect Volume

New in version 2015.8.4.
**name** Name of volume
CLI Example:

```
salt myminion dockerng.inspect_volume my_volume
```

salt.modules.dockerng.**kill**(**args*, ***kwargs*)

Kill all processes in a running container instead of performing a graceful shutdown

**name** Container name or ID

**RETURN DATA**

A dictionary will be returned, containing the following keys:

- `status` - A dictionary showing the prior state of the container as well as the new state
- `result` - A boolean noting whether or not the action was successful
- `comment` - Only present if the container cannot be killed

CLI Example:

```
salt myminion dockerng.kill mycontainer
```

salt.modules.dockerng.**layers**(*name*)

Returns a list of the IDs of layers belonging to the specified image, with the top-most layer (the one corresponding to the passed name) appearing last.

**name** Image name or ID

CLI Example:

```
salt myminion dockerng.layers centos:7
```

salt.modules.dockerng.**list_containers**(***kwargs*)

Returns a list of containers by name. This is different from `dockerng.ps` in that `dockerng.ps` returns its results organized by container ID.

**all** [False] If `True`, stopped containers will be included in return data

CLI Example:

```
salt myminion dockerng.inspect_image <image>
```

salt.modules.dockerng.**list_tags**()

Returns a list of tagged images

CLI Example:

```
salt myminion dockerng.list_tags
```

salt.modules.dockerng.**load**(*path*, *image=None*)

Load a tar archive that was created using *dockerng.save* (or via the Docker CLI using `docker save`).

**path** Path to docker tar archive. Path can be a file on the Minion, or the URL of a file on the Salt fileserver (i.e. `salt://path/to/docker/saved/image.tar`). To load a file from a saltenv other than `base` (e.g. `dev`), pass it at the end of the URL (ex. `salt://path/to/rootfs/tarball.tar.xz?saltenv=dev`).

**image** [None] If specified, the topmost layer of the newly-loaded image will be tagged with the specified repo and tag using `dockerng.tag`. The image name should be specified in `repo:tag` notation. If just the repository name is passed, a tag name of `latest` will be assumed.

**RETURN DATA**

A dictionary will be returned, containing the following keys:

- `Path` - Path of the file that was saved
- `Layers` - A list containing the IDs of the layers which were loaded. Any layers in the file that was loaded, which were already present on the Minion, will not be included.
- `Image` - Name of tag applied to topmost layer

  *(Only present if tag was specified and tagging was successful)*
- `Time_Elapsed` - Time in seconds taken to load the file
- `Warning` - Message describing any problems encountered in attemp to tag the topmost layer

  *(Only present if tag was specified and tagging failed)*

CLI Example:

```
salt myminion dockerng.load /path/to/image.tar
salt myminion dockerng.load salt://path/to/docker/saved/image.tar image=myuser/
↪myimage:mytag
```

salt.modules.dockerng.**logs**(*name*)

Returns the logs for the container. Equivalent to running the `docker logs` Docker CLI command.

**name** Container name or ID

CLI Example:

```
salt myminion dockerng.logs mycontainer
```

salt.modules.dockerng.**networks**(*names=None*, *ids=None*)

List existing networks

**names** Filter by name

**ids** Filter by id

CLI Example:

```
salt myminion dockerng.networks names="['network-web']"
salt myminion dockerng.networks ids="[
↪'1f9d2454d0872b68dd9e8744c6e7a4c66b86f10abaccc21e14f7f014f729b2bc']"
```

salt.modules.dockerng.**pause**(**args*, ***kwargs*)

Pauses a container

**name** Container name or ID

**RETURN DATA**

A dictionary will be returned, containing the following keys:

- `status` - A dictionary showing the prior state of the container as well as the new state
- `result` - A boolean noting whether or not the action was successful
- `comment` - Only present if the container cannot be paused

CLI Example:

```
salt myminion dockerng.pause mycontainer
```

salt.modules.dockerng.**pid**(*name*, **args*, ***kwargs*)

Returns the PID of a container

**name** Container name or ID

CLI Example:

```
salt myminion dockerng.pid mycontainer
salt myminion dockerng.pid 0123456789ab
```

salt.modules.dockerng.**port**(*name*, **args*, ***kwargs*)

Returns port mapping information for a given container. Equivalent to running the `docker port` Docker CLI command.

**name** Container name or ID

**private_port** [None] If specified, get information for that specific port. Can be specified either as a port number (i.e. `5000`), or as a port number plus the protocol (i.e. `5000/udp`).

If this argument is omitted, all port mappings will be returned.

**RETURN DATA**

A dictionary of port mappings, with the keys being the port and the values being the mapping(s) for that port.

CLI Examples:

```
salt myminion dockerng.port mycontainer
salt myminion dockerng.port mycontainer 5000
salt myminion dockerng.port mycontainer 5000/udp
```

salt.modules.dockerng.**ps**(*filters=None*, ***kwargs*)

Returns information about the Docker containers on the Minion. Equivalent to running the `docker ps` Docker CLI command.

**all** [False] If `True`, stopped containers will also be returned

**host: False** If `True`, local host's network topology will be included

**verbose** [False] If `True`, a `docker inspect` will be run on each container returned.

**filters: None** A dictionary of filters to be processed on the container list. Available filters:

- exited (int): Only containers with specified exit code
- status (str): One of restarting, running, paused, exited
- label (str): format either ``key'' or ``key=value''

**RETURN DATA**

A dictionary with each key being an container ID, and each value some general info about that container (time created, name, command, etc.)

CLI Example:

```
salt myminion dockerng.ps
salt myminion dockerng.ps all=True
salt myminion dockerng.ps filters="{'label': 'role=web'}"
```

salt.modules.dockerng.**pull**(*image*, *insecure_registry=False*, *api_response=False*, *client_timeout=60*)

Pulls an image from a Docker registry. See the documentation at the top of this page to configure authenticated access.

**image** Image to be pulled, in `repo:tag` notation. If just the repository name is passed, a tag name of `latest` will be assumed.

**insecure_registry** [False] If `True`, the Docker client will permit the use of insecure (non-HTTPS) registries.

**api_response** [False] If `True`, an `API_Response` key will be present in the return data, containing the raw output from the Docker API.

> **Note:** This may result in a **lot** of additional return data, especially for larger images.

**client_timeout** Timeout in seconds for the Docker client. This is not a timeout for this function, but for receiving a response from the API.

**RETURN DATA**

A dictionary will be returned, containing the following keys:

- **`Layers` - A dictionary containing one or more of the following keys:**
  - `Already_Pulled` - Layers that that were already present on the Minion
  - `Pulled` - Layers that that were pulled
- `Status` - A string containing a summary of the pull action (usually a message saying that an image was downloaded, or that it was up to date).
- `Time_Elapsed` - Time in seconds taken to perform the pull

CLI Example:

```
salt myminion dockerng.pull centos
salt myminion dockerng.pull centos:6
```

salt.modules.dockerng.**push**(*image*, *insecure_registry=False*, *api_response=False*, *client_timeout=60*)

Changed in version 2015.8.4: The `Id` and `Image` keys are no longer present in the return data. This is due to changes in the Docker Remote API.

Pushes an image to a Docker registry. See the documentation at top of this page to configure authenticated access.

**image** Image to be pushed, in `repo:tag` notation.

Changed in version 2015.8.4: If just the repository name is passed, then all tagged images for the specified repo will be pushed. In prior releases, a tag of `latest` was assumed if the tag was omitted.

**insecure_registry** [False] If `True`, the Docker client will permit the use of insecure (non-HTTPS) registries.

**api_response** [False] If `True`, an `API_Response` key will be present in the return data, containing the raw output from the Docker API.

**client_timeout** Timeout in seconds for the Docker client. This is not a timeout for this function, but for receiving a response from the API.

**RETURN DATA**

A dictionary will be returned, containing the following keys:

- **`Layers` - A dictionary containing one or more of the following keys:**
  - `Already_Pushed` - Layers that that were already present on the Minion
  - `Pushed` - Layers that that were pushed
- `Time_Elapsed` - Time in seconds taken to perform the push

CLI Example:

```
salt myminion dockerng.push myuser/mycontainer
salt myminion dockerng.push myuser/mycontainer:mytag
```

salt.modules.dockerng.**remove_network**(*network_id*)

Remove a network

**network_id** ID of network

CLI Example:

```
salt myminion dockerng.remove_network
↪1f9d2454d0872b68dd9e8744c6e7a4c66b86f10abaccc21e14f7f014f729b2bc
```

salt.modules.dockerng.**remove_volume**(*name*)

Remove a volume

New in version 2015.8.4.

**name** Name of volume

CLI Example:

```
salt myminion dockerng.remove_volume my_volume
```

salt.modules.dockerng.**restart**(*name*, **args*, ***kwargs*)

Restarts a container

**name** Container name or ID

**timeout** [10] Timeout in seconds after which the container will be killed (if it has not yet gracefully shut down)

**RETURN DATA**

A dictionary will be returned, containing the following keys:

- `status` - A dictionary showing the prior state of the container as well as the new state
- `result` - A boolean noting whether or not the action was successful
- `restarted` - If restart was successful, this key will be present and will be set to `True`.

CLI Examples:

```
salt myminion dockerng.restart mycontainer
salt myminion dockerng.restart mycontainer timeout=20
```

salt.modules.dockerng.**retcode**(*name*, *cmd*, *exec_driver=None*, *stdin=None*, *python_shell=True*, *output_loglevel='debug'*, *use_vt=False*, *ignore_retcode=False*, *keep_env=None*)

Run *cmd.retcode* within a container

**name** Container name or ID in which to run the command

**cmd** Command to run

**exec_driver** [None] If not passed, the execution driver will be detected as described *above*.

**stdin** [None] Standard input to be used for the command

**output_loglevel** [debug] Level at which to log the output from the command. Set to `quiet` to suppress logging.

**use_vt** [False] Use SaltStack's utils.vt to stream output to console.

**keep_env** [None] If not passed, only a sane default PATH environment variable will be set. If `True`, all environment variables from the container's host will be kept. Otherwise, a comma-separated list (or Python list) of environment variable names can be passed, and those environment variables will be kept.

CLI Example:

```
salt myminion dockerng.retcode mycontainer 'ls -l /etc'
```

salt.modules.dockerng.**rm**(**args*, ***kwargs*)

Removes a container

**name** Container name or ID

**force** [False] If `True`, the container will be killed first before removal, as the Docker API will not permit a running container to be removed. This option is set to `False` by default to prevent accidental removal of a running container.

**volumes** [False] Also remove volumes associated with container

**RETURN DATA**

A list of the IDs of containers which were removed

CLI Example:

```
salt myminion dockerng.rm mycontainer
salt myminion dockerng.rm mycontainer force=True
```

salt.modules.dockerng.**rmi**(**names*, ***kwargs*)

Removes an image

**name** Name (in `repo:tag` notation) or ID of image.

**force** [False] If `True`, the image will be removed even if the Minion has containers created from that image

**prune** [True] If `True`, untagged parent image layers will be removed as well, set this to `False` to keep them.

**RETURN DATA**

A dictionary will be returned, containing the following two keys:

- `Layers` - A list of the IDs of image layers that were removed
- `Tags` - A list of the tags that were removed
- `Errors` - A list of any errors that were encountered

CLI Examples:

```
salt myminion dockerng.rmi busybox
salt myminion dockerng.rmi busybox force=True
salt myminion dockerng.rmi foo bar baz
```

salt.modules.dockerng.**run**(*name*, *cmd*, *exec_driver=None*, *stdin=None*, *python_shell=True*, *output_loglevel='debug'*, *use_vt=False*, *ignore_retcode=False*, *keep_env=None*)

Run *cmd.run* within a container

**name** Container name or ID in which to run the command

**cmd** Command to run

**exec_driver** [None] If not passed, the execution driver will be detected as described *above*.

**stdin** [None] Standard input to be used for the command

**output_loglevel** [debug] Level at which to log the output from the command. Set to `quiet` to suppress logging.

**use_vt** [False] Use SaltStack's utils.vt to stream output to console.

**keep_env** [None] If not passed, only a sane default PATH environment variable will be set. If `True`, all environment variables from the container's host will be kept. Otherwise, a comma-separated list (or Python list) of environment variable names can be passed, and those environment variables will be kept.

CLI Example:

```
salt myminion dockerng.run mycontainer 'ls -l /etc'
```

salt.modules.dockerng.**run_all**(*name*, *cmd*, *exec_driver=None*, *stdin=None*, *python_shell=True*, *output_loglevel='debug'*, *use_vt=False*, *ignore_retcode=False*, *keep_env=None*)

Run *cmd.run_all* within a container

---

**Note**: While the command is run within the container, it is initiated from the host. Therefore, the PID in the return dict is from the host, not from the container.

---

**name** Container name or ID in which to run the command

**cmd** Command to run

**exec_driver** [None] If not passed, the execution driver will be detected as described *above*.

**stdin** [None] Standard input to be used for the command

**output_loglevel** [debug] Level at which to log the output from the command. Set to `quiet` to suppress logging.

**use_vt** [False] Use SaltStack's utils.vt to stream output to console.

**keep_env** [None] If not passed, only a sane default PATH environment variable will be set. If `True`, all environment variables from the container's host will be kept. Otherwise, a comma-separated list (or Python list) of environment variable names can be passed, and those environment variables will be kept.

CLI Example:

```
salt myminion dockerng.run_all mycontainer 'ls -l /etc'
```

salt.modules.dockerng.**run_stderr**(*name*, *cmd*, *exec_driver=None*, *stdin=None*, *python_shell=True*, *output_loglevel='debug'*, *use_vt=False*, *ignore_retcode=False*, *keep_env=None*)

Run *cmd.run_stderr* within a container

**name** Container name or ID in which to run the command

**cmd** Command to run

**exec_driver** [None] If not passed, the execution driver will be detected as described *above*.

**stdin** [None] Standard input to be used for the command

**output_loglevel** [debug] Level at which to log the output from the command. Set to `quiet` to suppress logging.

**use_vt** [False] Use SaltStack's utils.vt to stream output to console.

**keep_env** [None] If not passed, only a sane default PATH environment variable will be set. If `True`, all environment variables from the container's host will be kept. Otherwise, a comma-separated list (or Python list) of environment variable names can be passed, and those environment variables will be kept.

CLI Example:

```
salt myminion dockerng.run_stderr mycontainer 'ls -l /etc'
```

`salt.modules.dockerng.`**`run_stdout`**(*name*, *cmd*, *exec_driver=None*, *stdin=None*, *python_shell=True*, *output_loglevel='debug'*, *use_vt=False*, *ignore_retcode=False*, *keep_env=None*)

Run *cmd.run_stdout* within a container

**name** Container name or ID in which to run the command

**cmd** Command to run

**exec_driver** [None] If not passed, the execution driver will be detected as described *above*.

**stdin** [None] Standard input to be used for the command

**output_loglevel** [debug] Level at which to log the output from the command. Set to `quiet` to suppress logging.

**use_vt** [False] Use SaltStack's utils.vt to stream output to console.

**keep_env** [None] If not passed, only a sane default PATH environment variable will be set. If `True`, all environment variables from the container's host will be kept. Otherwise, a comma-separated list (or Python list) of environment variable names can be passed, and those environment variables will be kept.

CLI Example:

```
salt myminion dockerng.run_stdout mycontainer 'ls -l /etc'
```

`salt.modules.dockerng.`**`save`**(*name*, *path*, *overwrite=False*, *makedirs=False*, *compression=None*, ***kwargs*)

Saves an image and to a file on the minion. Equivalent to running the `docker save` Docker CLI command, but unlike `docker save` this will also work on named images instead of just images IDs.

**name** Name or ID of image. Specify a specific tag by using the `repo:tag` notation.

**path** Absolute path on the Minion where the image will be exported

**overwrite** [False] Unless this option is set to `True`, then if the destination file exists an error will be raised.

**makedirs** [False] If `True`, then if the parent directory of the file specified by the `path` argument does not exist, Salt will attempt to create it.

**compression** [None] Can be set to any of the following:

- `gzip` or `gz` for gzip compression
- `bzip2` or `bz2` for bzip2 compression
- `xz` or `lzma` for XZ compression (requires xz-utils, as well as the `lzma` module from Python 3.3, available in Python 2 and Python 3.0-3.2 as backports.lzma)

This parameter can be omitted and Salt will attempt to determine the compression type by examining the filename passed in the `path` parameter.

---

**Note:** Since the Docker API does not support `docker save`, compression will be a bit slower with this function than with *docker.export* since the image(s) will first be saved and then the compression done afterwards.

---

**push** [False] If `True`, the container will be pushed to the master using *cp.push*.

---

**Note:** This requires *file_recv* to be set to `True` on the Master.

---

**RETURN DATA**

A dictionary will be returned, containing the following keys:

- `Path` - Path of the file that was saved
- `Push` - Reports whether or not the file was successfully pushed to the Master

*(Only present if push=True)*

- `Size` - Size of the file, in bytes
- `Size_Human` - Size of the file, in human-readable units
- `Time_Elapsed` - Time in seconds taken to perform the save

CLI Examples:

```
salt myminion dockerng.save centos:7 /tmp/cent7.tar
salt myminion dockerng.save 0123456789ab cdef01234567 /tmp/saved.tar
```

`salt.modules.dockerng.`**`script`**(*name*, *source*, *saltenv='base'*, *args=None*, *template=None*, *exec_driver=None*, *stdin=None*, *python_shell=True*, *output_loglevel='debug'*, *ignore_retcode=False*, *use_vt=False*, *keep_env=None*)

Run *`cmd.script`* within a container

---

**Note**: While the command is run within the container, it is initiated from the host. Therefore, the PID in the return dict is from the host, not from the container.

---

**name** Container name or ID
**source** Path to the script. Can be a local path on the Minion or a remote file from the Salt fileserver.
**args** A string containing additional command-line options to pass to the script.
**template** [None] Templating engine to use on the script before running.
**exec_driver** [None] If not passed, the execution driver will be detected as described *above*.
**stdin** [None] Standard input to be used for the script
**output_loglevel** [debug] Level at which to log the output from the script. Set to `quiet` to suppress logging.
**use_vt** [False] Use SaltStack's utils.vt to stream output to console.
**keep_env** [None] If not passed, only a sane default PATH environment variable will be set. If `True`, all environment variables from the container's host will be kept. Otherwise, a comma-separated list (or Python list) of environment variable names can be passed, and those environment variables will be kept.

CLI Example:

```
salt myminion dockerng.script mycontainer salt://docker_script.py
salt myminion dockerng.script mycontainer salt://scripts/runme.sh 'arg1 arg2 "arg
↪3"'
salt myminion dockerng.script mycontainer salt://scripts/runme.sh stdin=
↪'one\ntwo\nthree\nfour\nfive\n' output_loglevel=quiet
```

`salt.modules.dockerng.`**`script_retcode`**(*name*, *source*, *saltenv='base'*, *args=None*, *template=None*, *exec_driver=None*, *stdin=None*, *python_shell=True*, *output_loglevel='debug'*, *ignore_retcode=False*, *use_vt=False*, *keep_env=None*)

Run *`cmd.script_retcode`* within a container
**name** Container name or ID
**source** Path to the script. Can be a local path on the Minion or a remote file from the Salt fileserver.
**args** A string containing additional command-line options to pass to the script.
**template** [None] Templating engine to use on the script before running.
**exec_driver** [None] If not passed, the execution driver will be detected as described *above*.
**stdin** [None] Standard input to be used for the script

**output_loglevel** [debug] Level at which to log the output from the script. Set to `quiet` to suppress logging.
**use_vt** [False] Use SaltStack's utils.vt to stream output to console.
**keep_env** [None] If not passed, only a sane default PATH environment variable will be set. If `True`, all environment variables from the container's host will be kept. Otherwise, a comma-separated list (or Python list) of environment variable names can be passed, and those environment variables will be kept.
CLI Example:

```
salt myminion dockerng.script_retcode mycontainer salt://docker_script.py
salt myminion dockerng.script_retcode mycontainer salt://scripts/runme.sh 'arg1
↪arg2 "arg 3"'
salt myminion dockerng.script_retcode mycontainer salt://scripts/runme.sh stdin=
↪'one\ntwo\nthree\nfour\nfive\n' output_loglevel=quiet
```

`salt.modules.dockerng.`**`search`**`(`*name*, *official=False*, *trusted=False*`)`
Searches the registry for an image
**name** Search keyword
**official** [False] Limit results to official builds
**trusted** [False] Limit results to trusted builds
**RETURN DATA**

A dictionary with each key being the name of an image, and the following information for each image:
- `Description` - Image description
- `Official` - A boolean (`True` if an official build, `False` if not)
- `Stars` - Number of stars the image has on the registry
- `Trusted` - A boolean (`True` if a trusted build, `False` if not)

CLI Example:

```
salt myminion dockerng.search centos
salt myminion dockerng.search centos official=True
```

`salt.modules.dockerng.`**`signal`**`(`**args*, ***kwargs*`)`
Send a signal to a container. Signals can be either strings or numbers, and are defined in the **Standard Signals** section of the `signal(7)` manpage. Run `man 7 signal` on a Linux host to browse this manpage.
**name** Container name or ID
**signal** Signal to send to container
**RETURN DATA**

If the signal was successfully sent, `True` will be returned. Otherwise, an error will be raised.

CLI Example:

```
salt myminion dockerng.signal mycontainer SIGHUP
```

`salt.modules.dockerng.`**`start`**`(`**args*, ***kwargs*`)`
Start a container
**name** Container name or ID
**RETURN DATA**

A dictionary will be returned, containing the following keys:
- `status` - A dictionary showing the prior state of the container as well as the new state
- `result` - A boolean noting whether or not the action was successful
- `comment` - Only present if the container cannot be started

CLI Example:

```
salt myminion dockerng.start mycontainer
```

salt.modules.dockerng.**state**(*name*, **args*, ***kwargs*)

Returns the state of the container

**name** Container name or ID

**RETURN DATA**

A string representing the current state of the container (either `running`, `paused`, or `stopped`)

CLI Example:

```
salt myminion dockerng.state mycontainer
```

salt.modules.dockerng.**stop**(**args*, ***kwargs*)

Stops a running container

**name** Container name or ID

**unpause** [False] If `True` and the container is paused, it will be unpaused before attempting to stop the container.

**timeout** [10] Timeout in seconds after which the container will be killed (if it has not yet gracefully shut down)

**RETURN DATA**

A dictionary will be returned, containing the following keys:

- `status` - A dictionary showing the prior state of the container as well as the new state
- `result` - A boolean noting whether or not the action was successful
- `comment` - Only present if the container can not be stopped

CLI Examples:

```
salt myminion dockerng.stop mycontainer
salt myminion dockerng.stop mycontainer unpause=True
salt myminion dockerng.stop mycontainer timeout=20
```

salt.modules.dockerng.**tag**(*name*, *image*, *force=False*)

Tag an image into a repository and return `True`. If the tag was unsuccessful, an error will be raised.

**name** ID of image

**image** Tag to apply to the image, in `repo:tag` notation. If just the repository name is passed, a tag name of `latest` will be assumed.

**force** [False] Force apply tag

CLI Example:

```
salt myminion dockerng.tag 0123456789ab myrepo/mycontainer
salt myminion dockerng.tag 0123456789ab myrepo/mycontainer:mytag
```

salt.modules.dockerng.**top**(*name*, **args*, ***kwargs*)

Runs the *docker top* command on a specific container

**name** Container name or ID

CLI Example:

**RETURN DATA**

A list of dictionaries containing information about each process

```
salt myminion dockerng.top mycontainer
salt myminion dockerng.top 0123456789ab
```

salt.modules.dockerng.**unpause**(**args*, ***kwargs*)

Unpauses a container

**name** Container name or ID

**RETURN DATA**

A dictionary will be returned, containing the following keys:

- `status` - A dictionary showing the prior state of the container as well as the new state
- `result` - A boolean noting whether or not the action was successful
- `comment` - Only present if the container can not be unpaused

CLI Example:

```
salt myminion dockerng.pause mycontainer
```

`salt.modules.dockerng.`**`version`**`()`

Returns a dictionary of Docker version information. Equivalent to running the `docker version` Docker CLI command.

CLI Example:

```
salt myminion dockerng.version
```

`salt.modules.dockerng.`**`volumes`**`(`*filters=None*`)`

List existing volumes

New in version 2015.8.4.

**filters** There is one available filter: dangling=true

CLI Example:

```
salt myminion dockerng.volumes filters="{'dangling': True}"
```

`salt.modules.dockerng.`**`wait`**`(`*name*, *ignore_already_stopped=False*, *fail_on_exit_status=False*`)`

Wait for the container to exit gracefully, and return its exit code

**Note**: This function will block until the container is stopped.

**name** Container name or ID

**ignore_already_stopped** Boolean flag that prevent execution to fail, if a container is already stopped.

**fail_on_exit_status** Boolean flag to report execution as failure if `exit_status` is different than 0.

**RETURN DATA**

A dictionary will be returned, containing the following keys:

- `status` - A dictionary showing the prior state of the container as well as the new state
- `result` - A boolean noting whether or not the action was successful
- `exit_status` - Exit status for the container
- `comment` - Only present if the container is already stopped

CLI Example:

```
salt myminion dockerng.wait mycontainer
```

### 13.6.76 salt.modules.dpkg

Support for DEB packages

`salt.modules.dpkg.`**`bin_pkg_info`**`(`*path*, *saltenv='base'*`)`

New in version 2015.8.0.

Parses RPM metadata and returns a dictionary of information about the package (name, version, etc.).

**path** Path to the file. Can either be an absolute path to a file on the minion, or a salt fileserver URL (e.g. `salt://path/to/file.rpm`). If a salt fileserver URL is passed, the file will be cached to the minion so that it can be examined.

**saltenv** [base] Salt fileserver envrionment from which to retrieve the package. Ignored if `path` is a local file path on the minion.

CLI Example:

```
salt '*' lowpkg.bin_pkg_info /root/foo-1.2.3-1ubuntu1_all.deb
salt '*' lowpkg.bin_pkg_info salt://foo-1.2.3-1ubuntu1_all.deb
```

salt.modules.dpkg.**file_dict**(**packages*)

List the files that belong to a package, grouped by package. Not specifying any packages will return a list of _every_ file on the system's package database (not generally recommended).

CLI Examples:

```
salt '*' lowpkg.file_list httpd
salt '*' lowpkg.file_list httpd postfix
salt '*' lowpkg.file_list
```

salt.modules.dpkg.**file_list**(**packages*)

List the files that belong to a package. Not specifying any packages will return a list of _every_ file on the system's package database (not generally recommended).

CLI Examples:

```
salt '*' lowpkg.file_list httpd
salt '*' lowpkg.file_list httpd postfix
salt '*' lowpkg.file_list
```

salt.modules.dpkg.**info**(**packages*)

Returns a detailed summary of package information for provided package names. If no packages are specified, all packages will be returned.

New in version 2015.8.1.

**packages** The names of the packages for which to return information.

CLI example:

```
salt '*' lowpkg.info
salt '*' lowpkg.info apache2 bash
```

salt.modules.dpkg.**list_pkgs**(**packages*)

List the packages currently installed in a dict:

```
{'<package_name>': '<version>'}
```

External dependencies:

```
Virtual package resolution requires aptitude. Because this function
uses dpkg, virtual packages will be reported as not installed.
```

CLI Example:

```
salt '*' lowpkg.list_pkgs
salt '*' lowpkg.list_pkgs httpd
```

salt.modules.dpkg.**unpurge**(**packages*)

Change package selection for each package specified to `install'

CLI Example:

```
salt '*' lowpkg.unpurge curl
```

### 13.6.77 salt.modules.drac

Manage Dell DRAC

salt.modules.drac.**change_password**(*username*, *password*, *uid=None*)
Change users password

CLI Example:

```
salt dell drac.change_password [USERNAME] [PASSWORD] [UID - optional]
salt dell drac.change_password diana secret
```

salt.modules.drac.**create_user**(*username*, *password*, *permissions*, *users=None*)
Create user accounts

CLI Example:

```
salt dell drac.create_user [USERNAME] [PASSWORD] [PRIVILEGES]
salt dell drac.create_user diana secret login,test_alerts,clear_logs
```

**DRAC Privileges**

- login : Login to iDRAC
- drac : Configure iDRAC
- user_management : Configure Users
- clear_logs : Clear Logs
- server_control_commands : Execute Server Control Commands
- console_redirection : Access Console Redirection
- virtual_media : Access Virtual Media
- test_alerts : Test Alerts
- debug_commands : Execute Debug Commands

salt.modules.drac.**delete_user**(*username*, *uid=None*)
Delete a user

CLI Example:

```
salt dell drac.delete_user [USERNAME] [UID - optional]
salt dell drac.delete_user diana 4
```

salt.modules.drac.**email_alerts**(*action*)
Enable/Disable email alerts

CLI Example:

```
salt dell drac.email_alerts True
salt dell drac.email_alerts False
```

salt.modules.drac.**list_users**()
List all DRAC users

CLI Example:

```
salt dell drac.list_users
```

salt.modules.drac.**nameservers**(**ns*)
Configure the nameservers on the DRAC

CLI Example:

```
salt dell drac.nameservers [NAMESERVERS]
salt dell drac.nameservers ns1.example.com ns2.example.com
```

salt.modules.drac.**network_info**()
Return Network Configuration

CLI Example:

```
salt dell drac.network_info
```

salt.modules.drac.**server_hardreset**()
Performs a reset (reboot) operation on the managed server.

CLI Example:

```
salt dell drac.server_hardreset
```

salt.modules.drac.**server_poweroff**()
Powers down the managed server.

CLI Example:

```
salt dell drac.server_poweroff
```

salt.modules.drac.**server_poweron**()
Powers up the managed server.

CLI Example:

```
salt dell drac.server_poweron
```

salt.modules.drac.**server_pxe**()
Configure server to PXE perform a one off PXE boot

CLI Example:

```
salt dell drac.server_pxe
```

salt.modules.drac.**server_reboot**()
Issues a power-cycle operation on the managed server. This action is similar to pressing the power button on the system's front panel to power down and then power up the system.

CLI Example:

```
salt dell drac.server_reboot
```

salt.modules.drac.**set_network**(*ip*, *netmask*, *gateway*)
Configure Network

CLI Example:

```
salt dell drac.set_network [DRAC IP] [NETMASK] [GATEWAY]
salt dell drac.set_network 192.168.0.2 255.255.255.0 192.168.0.1
```

salt.modules.drac.**set_permissions**(*username*, *permissions*, *uid=None*)
Configure users permissions

CLI Example:

```
salt dell drac.set_permissions [USERNAME] [PRIVILEGES] [USER INDEX - optional]
salt dell drac.set_permissions diana login,test_alerts,clear_logs 4
```

**DRAC Privileges**

- login : Login to iDRAC
- drac : Configure iDRAC
- user_management : Configure Users
- clear_logs : Clear Logs
- server_control_commands : Execute Server Control Commands
- console_redirection : Access Console Redirection
- virtual_media : Access Virtual Media
- test_alerts : Test Alerts
- debug_commands : Execute Debug Commands

salt.modules.drac.**set_snmp**(*community*)
Configure SNMP community string

CLI Example:

```
salt dell drac.set_snmp [COMMUNITY]
salt dell drac.set_snmp public
```

salt.modules.drac.**syslog**(*server*, *enable=True*)
Configure syslog remote logging, by default syslog will automatically be enabled if a server is specified. However, if you want to disable syslog you will need to specify a server followed by False

CLI Example:

```
salt dell drac.syslog [SYSLOG IP] [ENABLE/DISABLE]
salt dell drac.syslog 0.0.0.0 False
```

salt.modules.drac.**system_info**()
Return System information

CLI Example:

```
salt dell drac.system_info
```

### 13.6.78 salt.modules.dracr

Manage Dell DRAC.

New in version 2015.8.2.

salt.modules.dracr.**bare_rac_cmd**(*cmd*, *host=None*, *admin_username=None*, *admin_password=None*)

salt.modules.dracr.**change_password**(*username*, *password*, *uid=None*, *host=None*, *admin_username=None*, *admin_password=None*, *module=None*)

Change user's password

CLI Example:

```
salt dell dracr.change_password [USERNAME] [PASSWORD] uid=[OPTIONAL]
    host=<remote DRAC> admin_username=<DRAC user>
    admin_password=<DRAC PW>
salt dell dracr.change_password diana secret
```

Note that if only a username is specified then this module will look up details for all 16 possible DRAC users. This is time consuming, but might be necessary if one is not sure which user slot contains the one you want. Many late-model Dell chassis have `root' as UID 1, so if you can depend on that then setting the password is much quicker. Raises an error if the supplied password is greater than 20 chars.

salt.modules.dracr.**create_user**(*username*, *password*, *permissions*, *users=None*, *host=None*, *admin_username=None*, *admin_password=None*)

Create user accounts

CLI Example:

```
salt dell dracr.create_user [USERNAME] [PASSWORD] [PRIVILEGES]
salt dell dracr.create_user diana secret login,test_alerts,clear_logs
```

**DRAC Privileges**

- login : Login to iDRAC
- drac : Configure iDRAC
- user_management : Configure Users
- clear_logs : Clear Logs
- server_control_commands : Execute Server Control Commands
- console_redirection : Access Console Redirection
- virtual_media : Access Virtual Media
- test_alerts : Test Alerts
- debug_commands : Execute Debug Commands

salt.modules.dracr.**delete_user**(*username*, *uid=None*, *host=None*, *admin_username=None*, *admin_password=None*)

Delete a user

CLI Example:

```
salt dell dracr.delete_user [USERNAME] [UID - optional]
salt dell dracr.delete_user diana 4
```

salt.modules.dracr.**deploy_password**(*username*, *password*, *host=None*, *admin_username=None*, *admin_password=None*, *module=None*)

Change the QuickDeploy password, used for switches as well

CLI Example:

```
salt dell dracr.deploy_password [USERNAME] [PASSWORD]
    host=<remote DRAC> admin_username=<DRAC user>
```

```
    admin_password=<DRAC PW>
salt dell dracr.change_password diana secret
```

Note that if only a username is specified then this module will look up details for all 16 possible DRAC users. This is time consuming, but might be necessary if one is not sure which user slot contains the one you want. Many late-model Dell chassis have `root' as UID 1, so if you can depend on that then setting the password is much quicker.

salt.modules.dracr.**deploy_snmp**(*snmp*, *host=None*, *admin_username=None*, *admin_password=None*, *module=None*)

Change the QuickDeploy SNMP community string, used for switches as well

CLI Example:

```
salt dell dracr.deploy_snmp SNMP_STRING
    host=<remote DRAC or CMC> admin_username=<DRAC user>
    admin_password=<DRAC PW>
salt dell dracr.deploy_password diana secret
```

salt.modules.dracr.**email_alerts**(*action*, *host=None*, *admin_username=None*, *admin_password=None*)

Enable/Disable email alerts

CLI Example:

```
salt dell dracr.email_alerts True
salt dell dracr.email_alerts False
```

salt.modules.dracr.**get_chassis_datacenter**(*host=None*, *admin_username=None*, *admin_password=None*)

Get the datacenter of the chassis.

**host** The chassis host.

**admin_username** The username used to access the chassis.

**admin_password** The password used to access the chassis.

CLI Example:

```
salt '*' dracr.set_chassis_location host=111.222.333.444
   admin_username=root admin_password=secret
```

salt.modules.dracr.**get_chassis_location**(*host=None*, *admin_username=None*, *admin_password=None*)

Get the location of the chassis.

**host** The chassis host.

**admin_username** The username used to access the chassis.

**admin_password** The password used to access the chassis.

CLI Example:

```
salt '*' dracr.set_chassis_location host=111.222.333.444
   admin_username=root admin_password=secret
```

salt.modules.dracr.**get_chassis_name**(*host=None*, *admin_username=None*, *admin_password=None*)

Get the name of a chassis.

**host** The chassis host.

**admin_username** The username used to access the chassis.

**admin_password** The password used to access the chassis.

CLI Example:

```
salt '*' dracr.get_chassis_name host=111.222.333.444
    admin_username=root admin_password=secret
```

salt.modules.dracr.**get_dns_dracname**(*host=None, admin_username=None, admin_password=None*)

salt.modules.dracr.**get_general**(*cfg_sec, cfg_var, host=None, admin_username=None, admin_password=None*)

salt.modules.dracr.**get_slotname**(*slot, host=None, admin_username=None, admin_password=None*)

Get the name of a slot number in the chassis.

**slot** The number of the slot for which to obtain the name.

**host** The chassis host.

**admin_username** The username used to access the chassis.

**admin_password** The password used to access the chassis.

CLI Example:

```
salt-call --local dracr.get_slotname 0 host=111.222.333.444
   admin_username=root admin_password=secret
```

salt.modules.dracr.**idrac_general**(*blade_name, command, idrac_password=None, host=None, admin_username=None, admin_password=None*)

Run a generic racadm command against a particular blade in a chassis. Blades are usually named things like `server-1', `server-2', etc. If the iDRAC has a different password than the CMC, then you can pass it with the idrac_password kwarg.

**Parameters**

- **blade_name** -- Name of the blade to run the command on
- **command** -- Command like to pass to racadm
- **idrac_password** -- Password for the iDRAC if different from the CMC
- **host** -- Chassis hostname
- **admin_username** -- CMC username
- **admin_password** -- CMC password

**Returns** stdout if the retcode is 0, otherwise a standard cmd.run_all dictionary

CLI Example:

```
salt fx2 chassis.cmd idrac_general server-1 'get BIOS.SysProfileSettings'
```

salt.modules.dracr.**inventory**(*host=None, admin_username=None, admin_password=None*)

salt.modules.dracr.**list_slotnames**(*host=None, admin_username=None, admin_password=None*)

List the names of all slots in the chassis.

**host** The chassis host.

**admin_username** The username used to access the chassis.

**admin_password** The password used to access the chassis.

CLI Example:

```
salt-call --local dracr.list_slotnames host=111.222.333.444
    admin_username=root admin_password=secret
```

salt.modules.dracr.**list_users**(*host=None, admin_username=None, admin_password=None, module=None*)

List all DRAC users

CLI Example:

```
salt dell dracr.list_users
```

salt.modules.dracr.**nameservers**(*ns*, *host=None*, *admin_username=None*, *admin_password=None*, *module=None*)

Configure the nameservers on the DRAC

CLI Example:

```
salt dell dracr.nameservers [NAMESERVERS]
salt dell dracr.nameservers ns1.example.com ns2.example.com
    admin_username=root admin_password=calvin module=server-1
    host=192.168.1.1
```

salt.modules.dracr.**network_info**(*host=None*, *admin_username=None*, *admin_password=None*, *module=None*)

Return Network Configuration

CLI Example:

```
salt dell dracr.network_info
```

salt.modules.dracr.**server_hardreset**(*host=None*, *admin_username=None*, *admin_password=None*, *module=None*)

Performs a reset (reboot) operation on the managed server.

**host** The chassis host.

**admin_username** The username used to access the chassis.

**admin_password** The password used to access the chassis.

**module** The element to hard reset on the chassis such as a blade. If not provided, the chassis will be reset.

CLI Example:

```
salt dell dracr.server_hardreset
salt dell dracr.server_hardreset module=server-1
```

salt.modules.dracr.**server_power**(*status*, *host=None*, *admin_username=None*, *admin_password=None*, *module=None*)

**status** One of `powerup', `powerdown', `powercycle', `hardreset', `graceshutdown'

**host** The chassis host.

**admin_username** The username used to access the chassis.

**admin_password** The password used to access the chassis.

**module** The element to reboot on the chassis such as a blade. If not provided, the chassis will be rebooted.

CLI Example:

```
salt dell dracr.server_reboot
salt dell dracr.server_reboot module=server-1
```

salt.modules.dracr.**server_poweroff**(*host=None*, *admin_username=None*, *admin_password=None*, *module=None*)

Powers down the managed server.

**host** The chassis host.

**admin_username** The username used to access the chassis.

**admin_password** The password used to access the chassis.

**module** The element to power off on the chassis such as a blade. If not provided, the chassis will be powered off.

CLI Example:

```
salt dell dracr.server_poweroff
salt dell dracr.server_poweroff module=server-1
```

salt.modules.dracr.**server_poweron**(*host=None*, *admin_username=None*, *admin_password=None*, *module=None*)

Powers up the managed server.

**host** The chassis host.

**admin_username** The username used to access the chassis.

**admin_password** The password used to access the chassis.

**module** The element to power on located on the chassis such as a blade. If not provided, the chassis will be powered on.

CLI Example:

```
salt dell dracr.server_poweron
salt dell dracr.server_poweron module=server-1
```

salt.modules.dracr.**server_powerstatus**(*host=None*, *admin_username=None*, *admin_password=None*, *module=None*)

return the power status for the passed module

CLI Example:

```
salt dell drac.server_powerstatus
```

salt.modules.dracr.**server_pxe**(*host=None*, *admin_username=None*, *admin_password=None*)

Configure server to PXE perform a one off PXE boot

CLI Example:

```
salt dell dracr.server_pxe
```

salt.modules.dracr.**server_reboot**(*host=None*, *admin_username=None*, *admin_password=None*, *module=None*)

Issues a power-cycle operation on the managed server. This action is similar to pressing the power button on the system's front panel to power down and then power up the system.

**host** The chassis host.

**admin_username** The username used to access the chassis.

**admin_password** The password used to access the chassis.

**module** The element to reboot on the chassis such as a blade. If not provided, the chassis will be rebooted.

CLI Example:

```
salt dell dracr.server_reboot
salt dell dracr.server_reboot module=server-1
```

salt.modules.dracr.**set_chassis_datacenter**(*location*, *host=None*, *admin_username=None*, *admin_password=None*)

Set the location of the chassis.

**location** The name of the datacenter to be set on the chassis.

**host** The chassis host.

**admin_username** The username used to access the chassis.

**admin_password** The password used to access the chassis.

CLI Example:

```
salt '*' dracr.set_chassis_datacenter datacenter-name host=111.222.333.444
    admin_username=root admin_password=secret
```

salt.modules.dracr.**set_chassis_location**(*location*, *host=None*, *admin_username=None*, *admin_password=None*)

Set the location of the chassis.
**location** The name of the location to be set on the chassis.
**host** The chassis host.
**admin_username** The username used to access the chassis.
**admin_password** The password used to access the chassis.
CLI Example:

```
salt '*' dracr.set_chassis_location location-name host=111.222.333.444
    admin_username=root admin_password=secret
```

salt.modules.dracr.**set_chassis_name**(*name*, *host=None*, *admin_username=None*, *admin_password=None*)

Set the name of the chassis.
**name** The name to be set on the chassis.
**host** The chassis host.
**admin_username** The username used to access the chassis.
**admin_password** The password used to access the chassis.
CLI Example:

```
salt '*' dracr.set_chassis_name my-chassis host=111.222.333.444
    admin_username=root admin_password=secret
```

salt.modules.dracr.**set_dns_dracname**(*name*, *host=None*, *admin_username=None*, *admin_password=None*)

salt.modules.dracr.**set_general**(*cfg_sec*, *cfg_var*, *val*, *host=None*, *admin_username=None*, *admin_password=None*)

salt.modules.dracr.**set_network**(*ip*, *netmask*, *gateway*, *host=None*, *admin_username=None*, *admin_password=None*)

Configure Network on the CMC or individual iDRAC. Use `set_niccfg` for blade and switch addresses.

CLI Example:

```
salt dell dracr.set_network [DRAC IP] [NETMASK] [GATEWAY]
salt dell dracr.set_network 192.168.0.2 255.255.255.0 192.168.0.1
    admin_username=root admin_password=calvin host=192.168.1.1
```

salt.modules.dracr.**set_niccfg**(*ip=None*, *netmask=None*, *gateway=None*, *dhcp=False*, *host=None*, *admin_username=None*, *admin_password=None*, *module=None*)

salt.modules.dracr.**set_nicvlan**(*vlan=None*, *host=None*, *admin_username=None*, *admin_password=None*, *module=None*)

salt.modules.dracr.**set_permissions**(*username*, *permissions*, *uid=None*, *host=None*, *admin_username=None*, *admin_password=None*)

Configure users permissions

CLI Example:

```
salt dell dracr.set_permissions [USERNAME] [PRIVILEGES]
     [USER INDEX - optional]
salt dell dracr.set_permissions diana login,test_alerts,clear_logs 4
```

**DRAC Privileges**

- login : Login to iDRAC
- drac : Configure iDRAC

- user_management : Configure Users
- clear_logs : Clear Logs
- server_control_commands : Execute Server Control Commands
- console_redirection : Access Console Redirection
- virtual_media : Access Virtual Media
- test_alerts : Test Alerts
- debug_commands : Execute Debug Commands

salt.modules.dracr.**set_slotname**(*slot*, *name*, *host=None*, *admin_username=None*, *admin_password=None*)

Set the name of a slot in a chassis.
**slot** The slot number to change.
**name** The name to set. Can only be 15 characters long.
**host** The chassis host.
**admin_username** The username used to access the chassis.
**admin_password** The password used to access the chassis.
CLI Example:

```
salt '*' dracr.set_slotname 2 my-slotname host=111.222.333.444
    admin_username=root admin_password=secret
```

salt.modules.dracr.**set_snmp**(*community*, *host=None*, *admin_username=None*, *admin_password=None*)

Configure CMC or individual iDRAC SNMP community string. Use `deploy_snmp` for configuring chassis switch SNMP.

CLI Example:

```
salt dell dracr.set_snmp [COMMUNITY]
salt dell dracr.set_snmp public
```

salt.modules.dracr.**syslog**(*server*, *enable=True*, *host=None*, *admin_username=None*, *admin_password=None*, *module=None*)

Configure syslog remote logging, by default syslog will automatically be enabled if a server is specified. However, if you want to disable syslog you will need to specify a server followed by False

CLI Example:

```
salt dell dracr.syslog [SYSLOG IP] [ENABLE/DISABLE]
salt dell dracr.syslog 0.0.0.0 False
```

salt.modules.dracr.**system_info**(*host=None*, *admin_username=None*, *admin_password=None*, *module=None*)

Return System information

CLI Example:

```
salt dell dracr.system_info
```

salt.modules.dracr.**update_firmware**(*filename*, *host=None*, *admin_username=None*, *admin_password=None*)

Updates firmware using local firmware file

```
salt dell dracr.update_firmware firmware.exe
```

This executes the following command on your FX2 (using username and password stored in the pillar data)

```
racadm update -f firmware.exe -u user -p pass
```

salt.modules.dracr.**update_firmware_nfs_or_cifs**(*filename*, *share*, *host=None*, *admin_username=None*, *admin_password=None*)

Executes the following for CIFS (using username and password stored in the pillar data)

```
racadm update -f <updatefile> -u user -p pass -l //IP-Address/share
```

Or for NFS (using username and password stored in the pillar data)

```
racadm update -f <updatefile> -u user -p pass -l IP-address:/share
```

Salt command for CIFS:

```
salt dell dracr.update_firmware_nfs_or_cifs          firmware.exe //IP-Address/
↪share
```

Salt command for NFS:

```
salt dell dracr.update_firmware_nfs_or_cifs          firmware.exe IP-address:/share
```

### 13.6.79 salt.modules.drbd

DRBD administration module

salt.modules.drbd.**overview**()

Show status of the DRBD devices

CLI Example:

```
salt '*' drbd.overview
```

### 13.6.80 salt.modules.ebuild

Support for Portage

---

**Important**: If you feel that Salt should be using this module to manage packages on a minion, and it is using a different module (or gives an error similar to *`pkg.install' is not available*), see *here*.

---

**optdepends**

- portage Python adapter

For now all package names *MUST* include the package category, i.e. `'vim'` will not work, `'app-editors/vim'` will.

salt.modules.ebuild.**check_db**(**names*, ***kwargs*)

New in version 0.17.0.

Returns a dict containing the following information for each specified package:

1. A key `found`, which will be a boolean value denoting if a match was found in the package database.

2.If `found` is `False`, then a second key called `suggestions` will be present, which will contain a list of possible matches. This list will be empty if the package name was specified in `category/pkgname` format, since the suggestions are only intended to disambiguate ambiguous package names (ones submitted without a category).

CLI Examples:

```
salt '*' pkg.check_db <package1> <package2> <package3>
```

`salt.modules.ebuild.`**`check_extra_requirements`**(*pkgname*, *pkgver*)

Check if the installed package already has the given requirements.

CLI Example:

```
salt '*' pkg.check_extra_requirements 'sys-devel/gcc' '~>4.1.2:4.1::
↪gentoo[nls,fortran]'
```

`salt.modules.ebuild.`**`depclean`**(*name=None*, *slot=None*, *fromrepo=None*, *pkgs=None*)

Portage has a function to remove unused dependencies. If a package is provided, it will only removed the package if no other package depends on it.

**name** The name of the package to be cleaned.

**slot** Restrict the remove to a specific slot. Ignored if `name` is None.

**fromrepo** Restrict the remove to a specific slot. Ignored if `name` is None.

**pkgs** Clean multiple packages. `slot` and `fromrepo` arguments are ignored if this argument is present. Must be passed as a python list.

Return a list containing the removed packages:

CLI Example:

```
salt '*' pkg.depclean <package name>
```

`salt.modules.ebuild.`**`ex_mod_init`**(*low*)

If the config option `ebuild.enforce_nice_config` is set to True, this module will enforce a nice tree structure for /etc/portage/package.* configuration files.

New in version 0.17.0: Initial automatic enforcement added when pkg is used on a Gentoo system.

Changed in version 2014.1.0-Hydrogen: Configure option added to make this behaviour optional, defaulting to off.

**See also**:

`ebuild.ex_mod_init` is called automatically when a state invokes a pkg state on a Gentoo system. `salt.states.pkg.mod_init()`

`ebuild.ex_mod_init` uses `portage_config.enforce_nice_config` to do the lifting. *salt.modules.portage_config.enforce_nice_config()*

CLI Example:

```
salt '*' pkg.ex_mod_init
```

`salt.modules.ebuild.`**`install`**(*name=None*, *refresh=False*, *pkgs=None*, *sources=None*, *slot=None*, *fromrepo=None*, *uses=None*, *binhost=None*, ***kwargs*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any emerge commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *config option* called `systemd.scope`, with a value of `False` (no quotes).

Install the passed package(s), add refresh=True to sync the portage tree before package is installed.

**name** The name of the package to be installed. Note that this parameter is ignored if either ``pkgs'' or ``sources'' is passed. Additionally, please note that this option can only be used to emerge a package from the portage tree. To install a tbz2 package manually, use the ``sources'' option described below.

CLI Example:

```
salt '*' pkg.install <package name>
```

**refresh** Whether or not to sync the portage tree before installing.

**version** Install a specific version of the package, e.g. 1.0.9-r1. Ignored if ``pkgs'' or ``sources'' is passed.

**slot** Similar to version, but specifies a valid slot to be installed. It will install the latest available version in the specified slot. Ignored if ``pkgs'' or ``sources'' or ``version'' is passed.

CLI Example:

```
salt '*' pkg.install sys-devel/gcc slot='4.4'
```

**fromrepo** Similar to slot, but specifies the repository from the package will be installed. It will install the latest available version in the specified repository. Ignored if ``pkgs'' or ``sources'' or ``version'' is passed.

CLI Example:

```
salt '*' pkg.install salt fromrepo='gentoo'
```

**uses** Similar to slot, but specifies a list of use flag. Ignored if ``pkgs'' or ``sources'' or ``version'' is passed.

CLI Example:

```
salt '*' pkg.install sys-devel/gcc uses='["nptl","-nossp"]'
```

Multiple Package Installation Options:

**pkgs** A list of packages to install from the portage tree. Must be passed as a python list.

CLI Example:

```
salt '*' pkg.install pkgs='["foo","bar","~category/package:slot::
↪repository[use]"]'
```

**sources** A list of tbz2 packages to install. Must be passed as a list of dicts, with the keys being package names, and the values being the source URI or local path to the package.

CLI Example:

```
salt '*' pkg.install sources='[{"foo": "salt://foo.tbz2"},{"bar": "salt://bar.
↪tbz2"}]'
```

**binhost** has two options try and force. try - tells emerge to try and install the package from a configured binhost. force - forces emerge to install the package from a binhost otherwise it fails out.

Returns a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

`salt.modules.ebuild.`**`latest_version`**`(`*names, **kwargs*`)`

Return the latest version of the named package available for upgrade or installation. If more than one package name is specified, a dict of name/version pairs is returned.

CLI Example:

```
salt '*' pkg.latest_version <package name>
salt '*' pkg.latest_version <package1> <package2> <package3> ...
```

salt.modules.ebuild.**list_pkgs**(*versions_as_list=False*, ***kwargs*)

List the packages currently installed in a dict:

```
{'<package_name>': '<version>'}
```

CLI Example:

```
salt '*' pkg.list_pkgs
```

salt.modules.ebuild.**list_upgrades**(*refresh=True*, *backtrack=3*, ***kwargs*)

List all available package upgrades.

**refresh** Whether or not to sync the portage tree before checking for upgrades.

**backtrack** Specifies an integer number of times to backtrack if dependency calculation fails due to a conflict or an unsatisfied dependency (default: ´3´).

CLI Example:

```
salt '*' pkg.list_upgrades
```

salt.modules.ebuild.**porttree_matches**(*name*)

Returns a list containing the matches for a given package name from the portage tree. Note that the specific version of the package will not be provided for packages that have several versions in the portage tree, but rather the name of the package (i.e. ``dev-python/paramiko'').

salt.modules.ebuild.**purge**(*name=None*, *slot=None*, *fromrepo=None*, *pkgs=None*, ***kwargs*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any emerge commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *`config option`* called `systemd.scope`, with a value of `False` (no quotes).

Portage does not have a purge, this function calls remove followed by depclean to emulate a purge process

**name** The name of the package to be deleted.

**slot** Restrict the remove to a specific slot. Ignored if name is None.

**fromrepo** Restrict the remove to a specific slot. Ignored if `name` is None.

Multiple Package Options:

**pkgs** Uninstall multiple packages. `slot` and `fromrepo` arguments are ignored if this argument is present. Must be passed as a python list.

New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.purge <package name>
salt '*' pkg.purge <package name> slot=4.4
salt '*' pkg.purge <package1>,<package2>,<package3>
salt '*' pkg.purge pkgs='["foo", "bar"]'
```

salt.modules.ebuild.**refresh_db**()

Updates the portage tree (emerge --sync). Uses eix-sync if available.

CLI Example:

```
salt '*' pkg.refresh_db
```

salt.modules.ebuild.**remove**(*name=None*, *slot=None*, *fromrepo=None*, *pkgs=None*, ***kwargs*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now

used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any emerge commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *config option* called `systemd.scope`, with a value of `False` (no quotes).

Remove packages via emerge --unmerge.
**name** The name of the package to be deleted.
**slot** Restrict the remove to a specific slot. Ignored if `name` is None.
**fromrepo** Restrict the remove to a specific slot. Ignored if `name` is None.
Multiple Package Options:
**pkgs** Uninstall multiple packages. `slot` and `fromrepo` arguments are ignored if this argument is present. Must be passed as a python list.
New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.remove <package name>
salt '*' pkg.remove <package name> slot=4.4 fromrepo=gentoo
salt '*' pkg.remove <package1>,<package2>,<package3>
salt '*' pkg.remove pkgs='["foo", "bar"]'
```

`salt.modules.ebuild.`**`update`**(*pkg*, *slot=None*, *fromrepo=None*, *refresh=False*, *binhost=None*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any emerge commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *config option* called `systemd.scope`, with a value of `False` (no quotes).

Updates the passed package (emerge --update package)
**slot** Restrict the update to a particular slot. It will update to the latest version within the slot.
**fromrepo** Restrict the update to a particular repository. It will update to the latest version within the repository.
**binhost** has two options try and force. try - tells emerge to try and install the package from a configured binhost. force - forces emerge to install the package from a binhost otherwise it fails out.
Return a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

CLI Example:

```
salt '*' pkg.update <package name>
```

`salt.modules.ebuild.`**`upgrade`**(*refresh=True*, *binhost=None*, *backtrack=3*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any emerge commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *config option* called `systemd.scope`, with a value of `False` (no quotes).

Run a full system upgrade (emerge -uDN @world)
**binhost** has two options try and force. try - tells emerge to try and install the package from a configured binhost. force - forces emerge to install the package from a binhost otherwise it fails out.

**backtrack** Specifies an integer number of times to backtrack if dependency calculation fails due to a conflict or an unsatisfied dependency (default: ´3´).

Return a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

CLI Example:

```
salt '*' pkg.upgrade
```

salt.modules.ebuild.**upgrade_available**(*name*)

Check whether or not an upgrade is available for a given package

CLI Example:

```
salt '*' pkg.upgrade_available <package name>
```

salt.modules.ebuild.**version**(**names*, ***kwargs*)

Returns a string representing the package version or an empty string if not installed. If more than one package name is specified, a dict of name/version pairs is returned.

CLI Example:

```
salt '*' pkg.version <package name>
salt '*' pkg.version <package1> <package2> <package3> ...
```

salt.modules.ebuild.**version_clean**(*version*)

Clean the version string removing extra data.

CLI Example:

```
salt '*' pkg.version_clean <version_string>
```

salt.modules.ebuild.**version_cmp**(*pkg1*, *pkg2*, ***kwargs*)

Do a cmp-style comparison on two packages. Return -1 if pkg1 < pkg2, 0 if pkg1 == pkg2, and 1 if pkg1 > pkg2. Return None if there was a problem making the comparison.

CLI Example:

```
salt '*' pkg.version_cmp '0.2.4-0' '0.2.4.1-0'
```

### 13.6.81 salt.modules.eix

Support for Eix

salt.modules.eix.**sync**()

Sync portage/overlay trees and update the eix database

CLI Example:

```
salt '*' eix.sync
```

salt.modules.eix.**update**()

Update the eix database

CLI Example:

```
salt '*' eix.update
```

### 13.6.82 salt.modules.elasticsearch

Elasticsearch - A distributed RESTful search and analytics server

Module to provide Elasticsearch compatibility to Salt (compatible with Elasticsearch version 1.5.2+)

New in version 2015.8.0.

**depends** elasticsearch-py

**configuration** This module accepts connection configuration details either as parameters or as configuration settings in /etc/salt/minion on the relevant minions:

```
elasticsearch:
  host: '10.10.10.100:9200'

elasticsearch:
  hosts:
    - '10.10.10.100:9200'
    - '10.10.10.101:9200'
    - '10.10.10.102:9200'

elasticsearch:
  hosts:
    - '10.10.10.100:9200'
  number_of_shards: 1
  number_of_replicas: 0
  functions_blacklist:
    - 'saltutil.find_job'
    - 'pillar.items'
    - 'grains.items'
```

This data can also be passed into pillar. Options passed into opts will overwrite options passed into pillar.

salt.modules.elasticsearch.**alias_create**(*indices*, *alias*, *hosts=None*, *body=None*, *profile=None*)

Create an alias for a specific index/indices

CLI example:

```
salt myminion elasticsearch.alias_create testindex_v1 testindex
```

salt.modules.elasticsearch.**alias_delete**(*indices*, *aliases*, *hosts=None*, *body=None*, *profile=None*)

Delete an alias of an index

CLI example:

```
salt myminion elasticsearch.alias_delete testindex_v1 testindex
```

salt.modules.elasticsearch.**alias_exists**(*aliases*, *indices=None*, *hosts=None*, *profile=None*)

Return a boolean indicating whether given alias exists

CLI example:

```
salt myminion elasticsearch.alias_exists testindex
```

salt.modules.elasticsearch.**alias_get**(*indices=None*, *aliases=None*, *hosts=None*, *profile=None*)
Check for the existence of an alias and if it exists, return it

CLI example:

```
salt myminion elasticsearch.alias_get testindex
```

salt.modules.elasticsearch.**document_create**(*index*, *doc_type*, *body=None*, *id=None*, *hosts=None*, *profile=None*)
Create a document in a specified index

CLI example:

```
salt myminion elasticsearch.document_create testindex doctype1 '{}'
```

salt.modules.elasticsearch.**document_delete**(*index*, *doc_type*, *id*, *hosts=None*, *profile=None*)
Delete a document from an index

CLI example:

```
salt myminion elasticsearch.document_delete testindex doctype1 AUx-384m0Bug_
↪8U80wQZ
```

salt.modules.elasticsearch.**document_exists**(*index*, *id*, *doc_type='_all'*, *hosts=None*, *profile=None*)
Return a boolean indicating whether given document exists

CLI example:

```
salt myminion elasticsearch.document_exists testindex AUx-384m0Bug_8U80wQZ
```

salt.modules.elasticsearch.**document_get**(*index*, *id*, *doc_type='_all'*, *hosts=None*, *profile=None*)
Check for the existence of a document and if it exists, return it

CLI example:

```
salt myminion elasticsearch.document_get testindex AUx-384m0Bug_8U80wQZ
```

salt.modules.elasticsearch.**index_create**(*index*, *body=None*, *hosts=None*, *profile=None*)
Create an index

CLI example:

```
salt myminion elasticsearch.index_create testindex
```

salt.modules.elasticsearch.**index_delete**(*index*, *hosts=None*, *profile=None*)
Delete an index

CLI example:

```
salt myminion elasticsearch.index_delete testindex
```

salt.modules.elasticsearch.**index_exists**(*index*, *hosts=None*, *profile=None*)
Return a boolean indicating whether given index exists

CLI example:

```
salt myminion elasticsearch.index_exists testindex
```

salt.modules.elasticsearch.**index_get**(*index*, *hosts=None*, *profile=None*)
Check for the existence of an index and if it exists, return it

CLI example:

```
salt myminion elasticsearch.index_get testindex
```

salt.modules.elasticsearch.**index_template_create**(*name*, *body*, *hosts=None*, *profile=None*)
Create an index template

CLI example:

```
salt myminion elasticsearch.index_template_create testindex_templ '{ "template":
↪"logstash-*", "order": 1, "settings": { "number_of_shards": 1 } }'
```

salt.modules.elasticsearch.**index_template_delete**(*name*, *hosts=None*, *profile=None*)
Delete an index template (type) along with its data

CLI example:

```
salt myminion elasticsearch.index_template_delete testindex_templ user
```

salt.modules.elasticsearch.**index_template_exists**(*name*, *hosts=None*, *profile=None*)
Return a boolean indicating whether given index template exists

CLI example:

```
salt myminion elasticsearch.index_template_exists testindex_templ
```

salt.modules.elasticsearch.**index_template_get**(*name*, *hosts=None*, *profile=None*)
Retrieve template definition of index or index/type

CLI example:

```
salt myminion elasticsearch.index_template_get testindex_templ user
```

salt.modules.elasticsearch.**mapping_create**(*index*, *doc_type*, *body*, *hosts=None*, *profile=None*)
Create a mapping in a given index

CLI example:

```
salt myminion elasticsearch.mapping_create testindex user '{ "user" : {
↪"properties" : { "message" : {"type" : "string", "store" : true } } } }'
```

salt.modules.elasticsearch.**mapping_delete**(*index*, *doc_type*, *hosts=None*, *profile=None*)
Delete a mapping (type) along with its data

CLI example:

```
salt myminion elasticsearch.mapping_delete testindex user
```

salt.modules.elasticsearch.**mapping_get**(*index*, *doc_type*, *hosts=None*, *profile=None*)
Retrieve mapping definition of index or index/type

CLI example:

```
salt myminion elasticsearch.mapping_get testindex user
```

### 13.6.83 salt.modules.environ

Support for getting and setting the environment variables of the current salt process.

salt.modules.environ.**get**(*key*, *default=''*)

Get a single salt process environment variable.

**key** String used as the key for environment lookup.

**default** If the key is not found in the environment, return this value. Default: ``'

CLI Example:

```
salt '*' environ.get foo
salt '*' environ.get baz default=False
```

salt.modules.environ.**has_value**(*key*, *value=None*)

Determine whether the key exists in the current salt process environment dictionary. Optionally compare the current value of the environment against the supplied value string.

**key** Must be a string. Used as key for environment lookup.

**value**: Optional. If key exists in the environment, compare the current value with this value. Return True if they are equal.

CLI Example:

```
salt '*' environ.has_value foo
```

salt.modules.environ.**item**(*keys*, *default=''*)

Get one or more salt process environment variables. Returns a dict.

**keys** Either a string or a list of strings that will be used as the keys for environment lookup.

**default** If the key is not found in the environment, return this value. Default: ``'

CLI Example:

```
salt '*' environ.item foo
salt '*' environ.item '[foo, baz]' default=None
```

salt.modules.environ.**items**()

Return a dict of the entire environment set for the salt process

CLI Example:

```
salt '*' environ.items
```

salt.modules.environ.**setenv**(*environ*, *false_unsets=False*, *clear_all=False*, *update_minion=False*, *permanent=False*)

Set multiple salt process environment variables from a dict. Returns a dict.

**environ** Must be a dict. The top-level keys of the dict are the names of the environment variables to set. Each key's value must be a string or False. Refer to the `false_unsets' parameter for behavior when a value set to False.

**false_unsets** If a key's value is False and false_unsets is True, then the key will be removed from the salt processes environment dict entirely. If a key's value is False and false_unsets is not True, then the key's value will be set to an empty string. Default: False

**clear_all** USE WITH CAUTION! This option can unset environment variables needed for salt to function properly. If clear_all is True, then any environment variables not defined in the environ dict will be deleted. Default: False

**update_minion** If True, apply these environ changes to the main salt-minion process. If False, the environ changes will only affect the current salt subprocess. Default: False

**permanent** On Windows minions this will set the environment variable in the registry so that it is always added as a environment variable when applications open. If you want to set the variable to HKLM instead of HKCU just pass in ``HKLM'' for this parameter. On all other minion types this will be ignored. Note: This will only take affect on applications opened after this has been set.

CLI Example:

```
salt '*' environ.setenv '{"foo": "bar", "baz": "quux"}'
salt '*' environ.setenv '{"a": "b", "c": False}' false_unsets=True
```

salt.modules.environ.**setval**(*key*, *val*, *false_unsets=False*, *permanent=False*)

Set a single salt process environment variable. Returns True on success.

**key** The environment key to set. Must be a string.

**val** The value to set. Must be a string or False. Refer to the `false_unsets' parameter for behavior when set to False.

**false_unsets** If val is False and false_unsets is True, then the key will be removed from the salt processes environment dict entirely. If val is False and false_unsets is not True, then the key's value will be set to an empty string. Default: False.

**permanent** On Windows minions this will set the environment variable in the registry so that it is always added as a environment variable when applications open. If you want to set the variable to HKLM instead of HKCU just pass in ``HKLM'' for this parameter. On all other minion types this will be ignored. Note: This will only take affect on applications opened after this has been set.

CLI Example:

```
salt '*' environ.setval foo bar
salt '*' environ.setval baz val=False false_unsets=True
salt '*' environ.setval baz bar permanent=True
salt '*' environ.setval baz bar permanent=HKLM
```

### 13.6.84 salt.modules.eselect

Support for eselect, Gentoo's configuration and management tool.

salt.modules.eselect.**exec_action**(*module*, *action*, *module_parameter=None*, *action_parameter=None*, *state_only=False*)

Execute an arbitrary action on a module.

**module** name of the module to be executed

**action** name of the module's action to be run

**module_parameter** additional params passed to the defined module

**action_parameter** additional params passed to the defined action

**state_only** don't return any output but only the success/failure of the operation

CLI Example (updating the `php` implementation used for `apache2`):

```
salt '*' eselect.exec_action php update action_parameter='apache2'
```

salt.modules.eselect.**get_current_target**(*module*, *module_parameter=None*, *action_parameter=None*)

Get the currently selected target for the given module.

**module** name of the module to be queried for its current target

**module_parameter** additional params passed to the defined module

**action_parameter** additional params passed to the `show' action

CLI Example (current target of system-wide `java-vm`):

```
salt '*' eselect.get_current_target java-vm action_parameter='system'
```

CLI Example (current target of `kernel` symlink):

```
salt '*' eselect.get_current_target kernel
```

salt.modules.eselect.**get_modules**()

List available `eselect` modules.

CLI Example:

```
salt '*' eselect.get_modules
```

salt.modules.eselect.**get_target_list**(*module*)

List available targets for the given module.
**module** name of the module to be queried for its targets
CLI Example:

```
salt '*' eselect.get_target_list kernel
```

salt.modules.eselect.**set_target**(*module*, *target*, *module_parameter=None*, *action_parameter=None*)

Set the target for the given module. Target can be specified by index or name.
**module** name of the module for which a target should be set
**target** name of the target to be set for this module
**module_parameter** additional params passed to the defined module
**action_parameter** additional params passed to the defined action
CLI Example (setting target of system-wide `java-vm`):

```
salt '*' eselect.set_target java-vm icedtea-bin-7 action_parameter='system'
```

CLI Example (setting target of `kernel` symlink):

```
salt '*' eselect.set_target kernel linux-3.17.5-gentoo
```

### 13.6.85 salt.modules.esxi

Glues the VMware vSphere Execution Module to the VMware ESXi Proxy Minions to the *esxi proxymodule*.

New in version 2015.8.4.

Depends: *vSphere Remote Execution Module (salt.modules.vsphere)*

For documentation on commands that you can direct to an ESXi host via proxy, look in the documentation for *salt.modules.vsphere*.

This execution module calls through to a function in the ESXi proxy module called `ch_config`, which looks up the function passed in the `command` parameter in *salt.modules.vsphere* and calls it.

To execute commands with an ESXi Proxy Minion using the vSphere Execution Module, use the `esxi.cmd <vsphere-function-name>` syntax. Both args and kwargs needed for various vsphere execution module functions must be passed through in a kwarg- type manor.

```
salt 'esxi-proxy' esxi.cmd system_info
salt 'exsi-proxy' esxi.cmd get_service_policy service_name='ssh'
```

salt.modules.esxi.**cmd**(*command*, **args*, ***kwargs*)

### 13.6.86 salt.modules.etcd_mod

Execution module to work with etcd

**depends**

- python-etcd

#### Configuration

To work with an etcd server you must configure an etcd profile. The etcd config can be set in either the Salt Minion configuration file or in pillar:

```
my_etd_config:
  etcd.host: 127.0.0.1
  etcd.port: 4001
```

It is technically possible to configure etcd without using a profile, but this is not considered to be a best practice, especially when multiple etcd servers or clusters are available.

```
etcd.host: 127.0.0.1
etcd.port: 4001
```

---

**Note:** The etcd configuration can also be set in the Salt Master config file, but in order to use any etcd configurations defined in the Salt Master config, the *pillar_opts* must be set to `True`.

Be aware that setting `pillar_opts` to `True` has security implications as this makes all master configuration settings available in all minion's pillars.

---

`salt.modules.etcd_mod.`**`get`**(*key*, *recurse=False*, *profile=None*)

New in version 2014.7.0.

Get a value from etcd, by direct path. Returns None on failure.

CLI Examples:

```
salt myminion etcd.get /path/to/key
salt myminion etcd.get /path/to/key profile=my_etcd_config
salt myminion etcd.get /path/to/key recurse=True profile=my_etcd_config
```

`salt.modules.etcd_mod.`**`ls`**(*path='/'*, *profile=None*)

New in version 2014.7.0.

Return all keys and dirs inside a specific path. Returns an empty dict on failure.

CLI Example:

```
salt myminion etcd.ls /path/to/dir/
salt myminion etcd.ls /path/to/dir/ profile=my_etcd_config
```

`salt.modules.etcd_mod.`**`rm`**(*key*, *recurse=False*, *profile=None*)

New in version 2014.7.0.

Delete a key from etcd. Returns True if the key was deleted, False if it wasn not and None if there was a failure.

CLI Example:

```
salt myminion etcd.rm /path/to/key
salt myminion etcd.rm /path/to/key profile=my_etcd_config
salt myminion etcd.rm /path/to/dir recurse=True profile=my_etcd_config
```

salt.modules.etcd_mod.**set**(*key*, *value*, *profile=None*, *ttl=None*, *directory=False*)

New in version 2014.7.0.

Set a key in etcd by direct path. Optionally, create a directory or set a TTL on the key. Returns None on failure.

CLI Example:

```
salt myminion etcd.set /path/to/key value
salt myminion etcd.set /path/to/key value profile=my_etcd_config
salt myminion etcd.set /path/to/dir '' directory=True
salt myminion etcd.set /path/to/key value ttl=5
```

salt.modules.etcd_mod.**tree**(*path='/'*, *profile=None*)

New in version 2014.7.0.

Recurse through etcd and return all values. Returns None on failure.

CLI Example:

```
salt myminion etcd.tree
salt myminion etcd.tree profile=my_etcd_config
salt myminion etcd.tree /path/to/keys profile=my_etcd_config
```

salt.modules.etcd_mod.**update**(*fields*, *path='`*, *profile=None*)

New in version 2016.3.0.

Sets a dictionary of values in one call. Useful for large updates in syndic environments. The dictionary can contain a mix of formats such as:

```
{
  '/some/example/key': 'bar',
  '/another/example/key': 'baz'
}
```

Or it may be a straight dictionary, which will be flattened to look like the above format:

```
{
    'some': {
        'example': {
            'key': 'bar'
        }
    },
    'another': {
        'example': {
            'key': 'baz'
        }
    }
}
```

You can even mix the two formats and it will be flattened to the first format. Leading and trailing `/' will be removed.

Empty directories can be created by setting the value of the key to an empty dictionary.

The `path' parameter will optionally set the root of the path to use.

CLI Example:

```
salt myminion etcd.update "{'/path/to/key': 'baz', '/another/key': 'bar'}"
salt myminion etcd.update "{'/path/to/key': 'baz', '/another/key': 'bar'}"
 ↪profile=my_etcd_config
salt myminion etcd.update "{'/path/to/key': 'baz', '/another/key': 'bar'}" path='/
 ↪some/root'
```

salt.modules.etcd_mod.**watch**(*key*, *recurse=False*, *profile=None*, *timeout=0*, *index=None*)
New in version 2016.3.0.

Makes a best effort to watch for a key or tree change in etcd. Returns a dict containing the new key value ( or None if the key was deleted ), the modifiedIndex of the key, whether the key changed or not, the path to the key that changed and whether it is a directory or not.

If something catastrophic happens, returns {}

CLI Example:

```
salt myminion etcd.watch /path/to/key
salt myminion etcd.watch /path/to/key timeout=10
salt myminion etcd.watch /patch/to/key profile=my_etcd_config index=10
```

### 13.6.87 salt.modules.ethtool module

Module for running ethtool command

New in version 2016.3.0.

**codeauthor** Krzysztof Pawlowski <msciciel@msciciel.eu>

**maturity** new

**depends** python-ethtool

**platform** linux

salt.modules.ethtool.**set_coalesce**(*devname*, ***kwargs*)
Changes the coalescing settings of the specified network device

CLI Example:

```
salt '*' ethtool.set_coalesce <devname> [adaptive_rx=on|off] [adaptive_tx=on|off]
 ↪[rx_usecs=N] [rx_frames=N]
    [rx_usecs_irq=N] [rx_frames_irq=N] [tx_usecs=N] [tx_frames=N] [tx_usecs_
 ↪irq=N] [tx_frames_irq=N]
    [stats_block_usecs=N] [pkt_rate_low=N] [rx_usecs_low=N] [rx_frames_low=N] [tx_
 ↪usecs_low=N] [tx_frames_low=N]
    [pkt_rate_high=N] [rx_usecs_high=N] [rx_frames_high=N] [tx_usecs_high=N] [tx_
 ↪frames_high=N]
    [sample_interval=N]
```

salt.modules.ethtool.**set_offload**(*devname*, ***kwargs*)
Changes the offload parameters and other features of the specified network device

CLI Example:

```
salt '*' ethtool.show_offload <devname>
```

salt.modules.ethtool.**set_ring**(*devname*, ***kwargs*)
Changes the rx/tx ring parameters of the specified network device

CLI Example:

```
salt '*' ethtool.set_ring <devname> [ring=N] [rx_mini=N] [rx_jumbo=N] [tx=N]
```

salt.modules.ethtool.**show_coalesce**(*devname*)
Queries the specified network device for coalescing information

CLI Example:

```
salt '*' ethtool.show_coalesce <devname>
```

salt.modules.ethtool.**show_driver**(*devname*)
Queries the specified network device for associated driver information

CLI Example:

```
salt '*' ethtool.show_driver <devname>
```

salt.modules.ethtool.**show_offload**(*devname*)
Queries the specified network device for the state of protocol offload and other features

CLI Example:

```
salt '*' ethtool.show_offload <devname>
```

salt.modules.ethtool.**show_ring**(*devname*)
Queries the specified network device for rx/tx ring parameter information

CLI Example:

```
salt '*' ethtool.show_ring <devname>
```

### 13.6.88 salt.modules.event

Use the *Salt Event System* to fire events from the master to the minion and vice-versa.

salt.modules.event.**fire**(*data*, *tag*)
Fire an event on the local minion event bus. Data must be formed as a dict.

CLI Example:

```
salt '*' event.fire '{"data":"my event data"}' 'tag'
```

salt.modules.event.**fire_master**(*data*, *tag*, *preload=None*)
Fire an event off up to the master server

CLI Example:

```
salt '*' event.fire_master '{"data":"my event data"}' 'tag'
```

salt.modules.event.**send**(*tag*, *data=None*, *preload=None*, *with_env=False*, *with_grains=False*, *with_pillar=False*, ***kwargs*)
Send an event to the Salt Master

New in version 2014.7.0.

**Parameters**

- **tag** -- A tag to give the event. Use slashes to create a namespace for related events. E.g., `myco/build/buildserver1/start`, `myco/build/buildserver1/success`, `myco/build/buildserver1/failure`.
- **data** -- A dictionary of data to send in the event. This is free-form. Send any data points that are needed for whoever is consuming the event. Arguments on the CLI are interpreted as YAML so complex data structures are possible.
- **with_env** (Specify `True` to include all environment variables, or specify a list of strings of variable names to include.) -- Include environment variables from the current shell environment in the event data as `environ`.. This is a short-hand for working with systems that seed the environment with relevant data such as Jenkins.
- **with_grains** (Specify `True` to include all grains, or specify a list of strings of grain names to include.) -- Include grains from the current minion in the event data as `grains`.
- **with_pillar** (Specify `True` to include all Pillar values, or specify a list of strings of Pillar keys to include. It is a best-practice to only specify a relevant subset of Pillar data.) -- Include Pillar values from the current minion in the event data as `pillar`. Remember Pillar data is often sensitive data so be careful. This is useful for passing ephemeral Pillar values through an event. Such as passing the `pillar={}` kwarg in *`state.sls`* from the Master, through an event on the Minion, then back to the Master.
- **kwargs** -- Any additional keyword arguments passed to this function will be interpreted as key-value pairs and included in the event data. This provides a convenient alternative to YAML for simple values.

CLI Example:

```
salt-call event.send myco/mytag foo=Foo bar=Bar
salt-call event.send 'myco/mytag' '{foo: Foo, bar: Bar}'
```

A convenient way to allow Jenkins to execute `salt-call` is via sudo. The following rule in sudoers will allow the `jenkins` user to run only the following command.

`/etc/sudoers` (allow preserving the environment):

```
jenkins ALL=(ALL) NOPASSWD:SETENV: /usr/bin/salt-call event.send*
```

Call Jenkins via sudo (preserve the environment):

```
sudo -E salt-call event.send myco/jenkins/build/success with_env=[BUILD_ID, BUILD_
↪URL, GIT_BRANCH, GIT_COMMIT]
```

### 13.6.89 salt.modules.extfs

Module for managing ext2/3/4 file systems

`salt.modules.extfs.`**`attributes`**`(`*device*, *args=None*`)`

Return attributes from dumpe2fs for a specified device

CLI Example:

```
salt '*' extfs.attributes /dev/sda1
```

`salt.modules.extfs.`**`blocks`**`(`*device*, *args=None*`)`

Return block and inode info from dumpe2fs for a specified device

CLI Example:

```
salt '*' extfs.blocks /dev/sda1
```

salt.modules.extfs.**dump**(*device*, *args=None*)
Return all contents of dumpe2fs for a specified device

CLI Example:

```
salt '*' extfs.dump /dev/sda1
```

salt.modules.extfs.**mkfs**(*device*, *fs_type*, ***kwargs*)
Create a file system on the specified device

CLI Example:

```
salt '*' extfs.mkfs /dev/sda1 fs_type=ext4 opts='acl,noexec'
```

Valid options are:

- **block_size**: 1024, 2048 or 4096
- **check**: check for bad blocks
- **direct**: use direct IO
- **ext_opts**: extended file system options (comma-separated)
- **fragment_size**: size of fragments
- **force**: setting force to True will cause mke2fs to specify the -F option twice (it is already set once); this is truly dangerous
- **blocks_per_group**: number of blocks in a block group
- **number_of_groups**: ext4 option for a virtual block group
- **bytes_per_inode**: set the bytes/inode ratio
- **inode_size**: size of the inode
- **journal**: set to True to create a journal (default on ext3/4)
- **journal_opts**: options for the fs journal (comma separated)
- **blocks_file**: read bad blocks from file
- **label**: label to apply to the file system
- **reserved**: percentage of blocks reserved for super-user
- **last_dir**: last mounted directory
- **test**: set to True to not actually create the file system (mke2fs -n)
- **number_of_inodes**: override default number of inodes
- **creator_os**: override ``creator operating system'' field
- **opts**: mount options (comma separated)
- **revision**: set the filesystem revision (default 1)
- **super**: write superblock and group descriptors only
- **fs_type**: set the filesystem type (REQUIRED)
- **usage_type**: how the filesystem is going to be used
- **uuid**: set the UUID for the file system

See the `mke2fs(8)` manpage for a more complete description of these options.

salt.modules.extfs.**tune**(*device*, ***kwargs*)
Set attributes for the specified device (using tune2fs)

CLI Example:

```
salt '*' extfs.tune /dev/sda1 force=True label=wildstallyns opts='acl,noexec'
```

Valid options are:

- **max**: max mount count
- **count**: mount count

- **error**: error behavior
- **extended_opts**: extended options (comma separated)
- **force**: force, even if there are errors (set to True)
- **group**: group name or gid that can use the reserved blocks
- **interval**: interval between checks
- **journal**: set to True to create a journal (default on ext3/4)
- **journal_opts**: options for the fs journal (comma separated)
- **label**: label to apply to the file system
- **reserved**: percentage of blocks reserved for super-user
- **last_dir**: last mounted directory
- **opts**: mount options (comma separated)
- **feature**: set or clear a feature (comma separated)
- **mmp_check**: mmp check interval
- **reserved**: reserved blocks count
- **quota_opts**: quota options (comma separated)
- **time**: time last checked
- **user**: user or uid who can use the reserved blocks
- **uuid**: set the UUID for the file system

See the `mke2fs(8)` manpage for a more complete description of these options.

### 13.6.90 salt.modules.file

Manage information about regular files, directories, and special files on the minion, set/read user, group, mode, and data

`salt.modules.file.`**`access`**(*path*, *mode*)

New in version 2014.1.0.

Test whether the Salt process has the specified access to the file. One of the following modes must be specified:

CLI Example:

```
salt '*' file.access /path/to/file f
salt '*' file.access /path/to/file x
```

`salt.modules.file.`**`append`**(*path*, **args*, ***kwargs*)

New in version 0.9.5.

Append text to the end of a file
**path** path to file
***args** strings to append to file
CLI Example:

```
salt '*' file.append /etc/motd \
        "With all thine offerings thou shalt offer salt." \
        "Salt is what makes things taste bad when it isn't in them."
```

---

**Attention**

If you need to pass a string to append and that string contains an equal sign, you **must** include the argument name, args. For example:

```
salt '*' file.append /etc/motd args='cheese=spam'

salt '*' file.append /etc/motd args="['cheese=spam','spam=cheese']"
```

salt.modules.file.**apply_template_on_contents**(*contents*, *template*, *context*, *defaults*, *saltenv*)

Return the contents after applying the templating engine
**contents** template string
**template** template format
**context** Overrides default context variables passed to the template.
**defaults** Default context passed to the template.
CLI Example:

```
salt '*' file.apply_template_on_contents \
    contents='This is a {{ template }} string.' \
    template=jinja \
    "context={}" "defaults={'template': 'cool'}" \
    saltenv=base
```

salt.modules.file.**basename**(*path*)

Returns the final component of a pathname

New in version 2015.5.0.

This can be useful at the CLI but is frequently useful when scripting.

```
{%- set filename = salt['file.basename'](source_file) %}
```

CLI Example:

```
salt '*' file.basename 'test/test.config'
```

salt.modules.file.**blockreplace**(*path*, *marker_start='#-- start managed zone --`*, *marker_end='#-- end managed zone --`*, *content='`*, *append_if_not_found=False*, *prepend_if_not_found=False*, *backup='.bak'*, *dry_run=False*, *show_changes=True*, *append_newline=False*)

New in version 2014.1.0.

Replace content of a text block in a file, delimited by line markers

A block of content delimited by comments can help you manage several lines entries without worrying about old entries removal.

**Note**: This function will store two copies of the file in-memory (the original version and the edited version) in order to detect changes and only edit the targeted file if necessary.

**path** Filesystem path to the file to be edited
**marker_start** The line content identifying a line as the start of the content block. Note that the whole line containing this marker will be considered, so whitespace or extra content before or after the marker is included in final output
**marker_end** The line content identifying a line as the end of the content block. Note that the whole line containing this marker will be considered, so whitespace or extra content before or after the marker is included in final output
**content** The content to be used between the two lines identified by marker_start and marker_stop.
**append_if_not_found** [False] If markers are not found and set to `True` then, the markers and content will be appended to the file.
**prepend_if_not_found** [False] If markers are not found and set to `True` then, the markers and content will be prepended to the file.

**backup** The file extension to use for a backup of the file if any edit is made. Set to `False` to skip making a backup.
**dry_run** Don't make any edits to the file.
**show_changes** Output a unified diff of the old file and the new file. If `False`, return a boolean if any changes were made.
**append_newline**: Append a newline to the content block. For more information see: https://github.com/saltstack/salt/issues/33686

New in version 2016.3.4.

CLI Example:

```
salt '*' file.blockreplace /etc/hosts '#-- start managed zone foobar : DO NOT
↪EDIT --' \
'#-- end managed zone foobar --' $'10.0.1.1 foo.foobar\n10.0.1.2 bar.foobar' True
```

`salt.modules.file.`**`check_file_meta`**(*name*, *sfn*, *source*, *source_sum*, *user*, *group*, *mode*, *saltenv*, *contents=None*)

Check for the changes in the file metadata.

CLI Example:

```
salt '*' file.check_file_meta /etc/httpd/conf.d/httpd.conf salt://http/httpd.conf
↪'{hash_type: 'md5', 'hsum': <md5sum>}' root, root, '755' base
```

---

**Note**: Supported hash types include sha512, sha384, sha256, sha224, sha1, and md5.

---

**name** Path to file destination
**sfn** Template-processed source file contents
**source** URL to file source
**source_sum** File checksum information as a dictionary

```
{hash_type: md5, hsum: <md5sum>}
```

**user** Destination file user owner
**group** Destination file group owner
**mode** Destination file permissions mode
**saltenv** Salt environment used to resolve source files
**contents** File contents

`salt.modules.file.`**`check_hash`**(*path*, *file_hash*)

Check if a file matches the given hash string

Returns true if the hash matched, otherwise false. Raises ValueError if the hash was not formatted correctly.
**path** A file path
**hash** A string in the form <hash_type>:<hash_value>. For example: `md5:e138491e9d5b97023cea823fe17bac22`
CLI Example:

```
salt '*' file.check_hash /etc/fstab md5:<md5sum>
```

`salt.modules.file.`**`check_managed`**(*name*, *source*, *source_hash*, *source_hash_name*, *user*, *group*, *mode*, *template*, *context*, *defaults*, *saltenv*, *contents=None*, *skip_verify=False*, ***kwargs*)

Check to see what changes need to be made for a file

CLI Example:

```
salt '*' file.check_managed /etc/httpd/conf.d/httpd.conf salt://http/httpd.conf '
↪{hash_type: 'md5', 'hsum': <md5sum>}' root, root, '755' jinja True None None base
```

salt.modules.file.**check_managed_changes**(*name*, *source*, *source_hash*, *source_hash_name*, *user*, *group*, *mode*, *template*, *context*, *defaults*, *saltenv*, *contents=None*, *skip_verify=False*, ***kwargs*)

Return a dictionary of what changes need to be made for a file

CLI Example:

```
salt '*' file.check_managed_changes /etc/httpd/conf.d/httpd.conf salt://http/
↪httpd.conf '{hash_type: 'md5', 'hsum': <md5sum>}' root, root, '755' jinja True
↪None None base
```

salt.modules.file.**check_perms**(*name*, *ret*, *user*, *group*, *mode*, *follow_symlinks=False*)

Check the permissions on files and chown if needed

CLI Example:

```
salt '*' file.check_perms /etc/sudoers '{}' root root 400
```

Changed in version 2014.1.3: `follow_symlinks` option added

salt.modules.file.**chgrp**(*path*, *group*)

Change the group of a file

**path** path to the file or directory

**group** group owner

CLI Example:

```
salt '*' file.chgrp /etc/passwd root
```

salt.modules.file.**chown**(*path*, *user*, *group*)

Chown a file, pass the file the desired user and group

**path** path to the file or directory

**user** user owner

**group** group owner

CLI Example:

```
salt '*' file.chown /etc/passwd root root
```

salt.modules.file.**comment**(*path*, *regex*, *char='#'*, *backup='.bak'*)

Deprecated since version 0.17.0: Use *replace()* instead.

Comment out specified lines in a file

**path** The full path to the file to be edited

**regex** A regular expression used to find the lines that are to be commented; this pattern will be wrapped in parenthesis and will move any preceding/trailing `^` or `$` characters outside the parenthesis (e.g., the pattern `^foo$` will be rewritten as `^(foo)$`)

**char** [#] The character to be inserted at the beginning of a line in order to comment it out

**backup** [`.bak`] The file will be backed up before edit with this file extension

> **Warning**: This backup will be overwritten each time `sed` / `comment` / `uncomment` is called. Meaning the backup will only be useful after the first invocation.

CLI Example:

```
salt '*' file.comment /etc/modules pcspkr
```

salt.modules.file.**comment_line**(*path*, *regex*, *char='#'*, *cmnt=True*, *backup='.bak'*)

Comment or Uncomment a line in a text file.

**Parameters**

- **path** -- string The full path to the text file.
- **regex** -- string A regex expression that begins with ^ that will find the line you wish to comment. Can be as simple as `^color =`
- **char** -- string The character used to comment a line in the type of file you're referencing. Default is #
- **cmnt** -- boolean True to comment the line. False to uncomment the line. Default is True.
- **backup** -- string The file extension to give the backup file. Default is `.bak` Set to False/None to not keep a backup.

**Returns** boolean Returns True if successful, False if not

CLI Example:

The following example will comment out the `pcspkr` line in the `/etc/modules` file using the default # character and create a backup file named `modules.bak`

```
salt '*' file.comment_line '/etc/modules' '^pcspkr'
```

CLI Example:

The following example will uncomment the `log_level` setting in `minion` config file if it is set to either `warning`, `info`, or `debug` using the # character and create a backup file named `minion.bk`

```
salt '*' file.comment_line 'C:\salt\conf\minion' '^log_level: (warning|info|debug)
↪' '#' False '.bk'
```

salt.modules.file.**contains**(*path*, *text*)

Deprecated since version 0.17.0: Use *search()* instead.

Return `True` if the file at `path` contains `text`

CLI Example:

```
salt '*' file.contains /etc/crontab 'mymaintenance.sh'
```

salt.modules.file.**contains_glob**(*path*, *glob_expr*)

Deprecated since version 0.17.0: Use *search()* instead.

Return `True` if the given glob matches a string in the named file

CLI Example:

```
salt '*' file.contains_glob /etc/foobar '*cheese*'
```

salt.modules.file.**contains_regex**(*path*, *regex*, *lchar=''*)

Deprecated since version 0.17.0: Use *search()* instead.

Return True if the given regular expression matches on any line in the text of a given file.

If the lchar argument (leading char) is specified, it will strip *lchar* from the left side of each line before trying to match

CLI Example:

```
salt '*' file.contains_regex /etc/crontab
```

salt.modules.file.**contains_regex_multiline**(*path*, *regex*)

Deprecated since version 0.17.0: Use *search()* instead.

Return True if the given regular expression matches anything in the text of a given file

Traverses multiple lines at a time, via the salt BufferedReader (reads in chunks)

CLI Example:

```
salt '*' file.contains_regex_multiline /etc/crontab '^maint'
```

salt.modules.file.**copy**(*src*, *dst*, *recurse=False*, *remove_existing=False*)

Copy a file or directory from source to dst

In order to copy a directory, the recurse flag is required, and will by default overwrite files in the destination with the same path, and retain all other existing files. (similar to cp -r on unix)

remove_existing will remove all files in the target directory, and then copy files from the source.

---

**Note:** The copy function accepts paths that are local to the Salt minion. This function does not support salt://, http://, or the other additional file paths that are supported by *states.file.managed* and *states.file.recurse*.

---

CLI Example:

```
salt '*' file.copy /path/to/src /path/to/dst
salt '*' file.copy /path/to/src_dir /path/to/dst_dir recurse=True
salt '*' file.copy /path/to/src_dir /path/to/dst_dir recurse=True remove_
↪existing=True
```

salt.modules.file.**delete_backup**(*path*, *backup_id*)

New in version 0.17.0.

Delete a previous version of a file that was backed up using Salt's *file state backup* system.
**path** The path on the minion to check for backups
**backup_id** The numeric id for the backup you wish to delete, as found using *file.list_backups*
CLI Example:

```
salt '*' file.delete_backup /var/cache/salt/minion/file_backup/home/foo/bar/baz.
↪txt 0
```

salt.modules.file.**directory_exists**(*path*)

Tests to see if path is a valid directory. Returns True/False.

CLI Example:

```
salt '*' file.directory_exists /etc
```

salt.modules.file.**dirname**(*path*)

Returns the directory component of a pathname

New in version 2015.5.0.

This can be useful at the CLI but is frequently useful when scripting.

```
{%- from salt['file.dirname'](tpldir) + '/vars.jinja' import parent_vars %}
```

CLI Example:

```
salt '*' file.dirname 'test/path/filename.config'
```

salt.modules.file.**diskusage**(*path*)

Recursively calculate disk usage of path and return it in bytes

CLI Example:

```
salt '*' file.diskusage /path/to/check
```

salt.modules.file.**extract_hash**(*hash_fn*, *hash_type='sha256'*, *file_name=''*, *source=''*, *source_hash_name=None*)

Changed in version 2016.3.5: Prior to this version, only the `file_name` argument was considered for filename matches in the hash file. This would be problematic for cases in which the user was relying on a remote checksum file that they do not control, and they wished to use a different name for that file on the minion from the filename on the remote server (and in the checksum file). For example, managing `/tmp/myfile.tar.gz` when the remote file was at `https://mydomain.tld/different_name.tar.gz`. The *file.managed* state now also passes this function the source URI as well as the `source_hash_name` (if specified). In cases where `source_hash_name` is specified, it takes precedence over both the `file_name` and `source`. When it is not specified, `file_name` takes precedence over `source`. This allows for better capability for matching hashes.

This routine is called from the *file.managed* state to pull a hash from a remote file. Regular expressions are used line by line on the `source_hash` file, to find a potential candidate of the indicated hash type. This avoids many problems of arbitrary file lay out rules. It specifically permits pulling hash codes from debian `*.dsc` files.

For example:

```
openerp_7.0-latest-1.tar.gz:
  file.managed:
    - name: /tmp/openerp_7.0-20121227-075624-1_all.deb
    - source: http://nightly.openerp.com/7.0/nightly/deb/openerp_7.0-20121227-
↪075624-1.tar.gz
    - source_hash: http://nightly.openerp.com/7.0/nightly/deb/openerp_7.0-
↪20121227-075624-1.dsc
```

CLI Example:

```
salt '*' file.extract_hash /path/to/hash/file sha512 /etc/foo
```

salt.modules.file.**file_exists**(*path*)

Tests to see if path is a valid file. Returns True/False.

CLI Example:

```
salt '*' file.file_exists /etc/passwd
```

salt.modules.file.**find**(*path*, **args*, ***kwargs*)

Approximate the Unix `find(1)` command and return a list of paths that meet the specified criteria.

The options include match criteria:

```
name    = path-glob                 # case sensitive
iname   = path-glob                 # case insensitive
regex   = path-regex                # case sensitive
iregex  = path-regex                # case insensitive
type    = file-types                # match any listed type
user    = users                     # match any listed user
group   = groups                    # match any listed group
size    = [+-]number[size-unit]     # default unit = byte
mtime   = interval                  # modified since date
grep    = regex                     # search file contents
```

and/or actions:

```
delete [= file-types]               # default type = 'f'
exec    = command [arg ...]         # where {} is replaced by pathname
print  [= print-opts]
```

and/or depth criteria:

```
maxdepth = maximum depth to transverse in path
mindepth = minimum depth to transverse before checking files or directories
```

The default action is `print=path`

`path-glob`:

```
*               = match zero or more chars
?               = match any char
[abc]           = match a, b, or c
[!abc] or [^abc] = match anything except a, b, and c
[x-y]           = match chars x through y
[!x-y] or [^x-y] = match anything except chars x through y
{a,b,c}         = match a or b or c
```

`path-regex`: a Python Regex (regular expression) pattern to match pathnames

`file-types`: a string of one or more of the following:

```
a: all file types
b: block device
c: character device
d: directory
p: FIFO (named pipe)
f: plain file
l: symlink
s: socket
```

`users`: a space and/or comma separated list of user names and/or uids

`groups`: a space and/or comma separated list of group names and/or gids

`size-unit`:

```
b: bytes
k: kilobytes
m: megabytes
g: gigabytes
t: terabytes
```

interval:

```
[<num>w] [<num>d] [<num>h] [<num>m] [<num>s]

where:
    w: week
    d: day
    h: hour
    m: minute
    s: second
```

print-opts: a comma and/or space separated list of one or more of the following:

```
group: group name
md5:   MD5 digest of file contents
mode:  file permissions (as integer)
mtime: last modification time (as time_t)
name:  file basename
path:  file absolute path
size:  file size in bytes
type:  file type
user:  user name
```

CLI Examples:

```
salt '*' file.find / type=f name=\*.bak size=+10m
salt '*' file.find /var mtime=+30d size=+10m print=path,size,mtime
salt '*' file.find /var/log name=\*.[0-9] mtime=+30d size=+10m delete
```

salt.modules.file.**get_devmm**(*name*)

Get major/minor info from a device

CLI Example:

```
salt '*' file.get_devmm /dev/chr
```

salt.modules.file.**get_diff**(*minionfile*, *masterfile*, *env=None*, *saltenv='base'*)

Return unified diff of file compared to file on master

CLI Example:

```
salt '*' file.get_diff /home/fred/.vimrc salt://users/fred/.vimrc
```

salt.modules.file.**get_gid**(*path*, *follow_symlinks=True*)

Return the id of the group that owns a given file

**path** file or directory of which to get the gid

**follow_symlinks** indicated if symlinks should be followed

CLI Example:

```
salt '*' file.get_gid /etc/passwd
```

Changed in version 0.16.4: `follow_symlinks` option added

salt.modules.file.**get_group**(*path*, *follow_symlinks=True*)

Return the group that owns a given file

**path** file or directory of which to get the group

**follow_symlinks** indicated if symlinks should be followed

CLI Example:

```
salt '*' file.get_group /etc/passwd
```

Changed in version 0.16.4: `follow_symlinks` option added

`salt.modules.file.`**`get_hash`**(*path*, *form='sha256'*, *chunk_size=65536*)

Get the hash sum of a file

**This is better than `get_sum` for the following reasons:**

- It does not read the entire file into memory.
- **It does not return a string on error. The returned value of** `get_sum` cannot really be trusted since it is vulnerable to collisions: `get_sum(...,'xyz') == 'Hash xyz not supported'`

**path** path to the file or directory
**form** desired sum format
**chunk_size** amount to sum at once
CLI Example:

```
salt '*' file.get_hash /etc/shadow
```

`salt.modules.file.`**`get_managed`**(*name*, *template*, *source*, *source_hash*, *source_hash_name*, *user*, *group*, *mode*, *saltenv*, *context*, *defaults*, *skip_verify=False*, ***kwargs*)

Return the managed file data for file.managed
**name** location where the file lives on the server
**template** template format
**source** managed source file
**source_hash** hash of the source file
**source_hash_name** When `source_hash` refers to a remote file, this specifies the filename to look for in that file.

New in version 2016.3.5.

**user** Owner of file
**group** Group owner of file
**mode** Permissions of file
**context** Variables to add to the template context
**defaults** Default values of for context_dict
**skip_verify** If `True`, hash verification of remote file sources (`http://`, `https://`, `ftp://`) will be skipped, and the `source_hash` argument will be ignored.

New in version 2016.3.0.

CLI Example:

```
salt '*' file.get_managed /etc/httpd/conf.d/httpd.conf jinja salt://http/httpd.
↪conf '{hash_type: 'md5', 'hsum': <md5sum>}' None root root '755' base None None
```

`salt.modules.file.`**`get_mode`**(*path*, *follow_symlinks=True*)

Return the mode of a file
**path** file or directory of which to get the mode
**follow_symlinks** indicated if symlinks should be followed
CLI Example:

```
salt '*' file.get_mode /etc/passwd
```

Changed in version 2014.1.0: `follow_symlinks` option added

`salt.modules.file.`**`get_selinux_context`**(*path*)

Get an SELinux context from a given path

CLI Example:

```
salt '*' file.get_selinux_context /etc/hosts
```

salt.modules.file.**get_sum**(*path*, *form='sha256'*)

Return the checksum for the given file. The following checksum algorithms are supported:

- md5
- sha1
- sha224
- sha256 **(default)**
- sha384
- sha512

**path** path to the file or directory
**form** desired sum format

CLI Example:

```
salt '*' file.get_sum /etc/passwd sha512
```

salt.modules.file.**get_uid**(*path*, *follow_symlinks=True*)

Return the id of the user that owns a given file
**path** file or directory of which to get the uid
**follow_symlinks** indicated if symlinks should be followed
CLI Example:

```
salt '*' file.get_uid /etc/passwd
```

Changed in version 0.16.4: `follow_symlinks` option added

salt.modules.file.**get_user**(*path*, *follow_symlinks=True*)

Return the user that owns a given file
**path** file or directory of which to get the user
**follow_symlinks** indicated if symlinks should be followed
CLI Example:

```
salt '*' file.get_user /etc/passwd
```

Changed in version 0.16.4: `follow_symlinks` option added

salt.modules.file.**gid_to_group**(*gid*)

Convert the group id to the group name on this system
**gid** gid to convert to a group name
CLI Example:

```
salt '*' file.gid_to_group 0
```

salt.modules.file.**grep**(*path*, *pattern*, **opts*)

Grep for a string in the specified file

---

**Note**: This function's return value is slated for refinement in future versions of Salt

---

**path** Path to the file to be searched

---

**Note**: Globbing is supported (i.e. `/var/log/foo/*.log`, but if globbing is being used then the path

should be quoted to keep the shell from attempting to expand the glob expression.

**pattern** Pattern to match. For example: `test`, or `a[0-5]`
**opts** Additional command-line flags to pass to the grep command. For example: `-v`, or `-i -B2`

**Note:** The options should come after a double-dash (as shown in the examples below) to keep Salt's own argument parser from interpreting them.

CLI Example:

```
salt '*' file.grep /etc/passwd nobody
salt '*' file.grep /etc/sysconfig/network-scripts/ifcfg-eth0 ipaddr -- -i
salt '*' file.grep /etc/sysconfig/network-scripts/ifcfg-eth0 ipaddr -- -i -B2
salt '*' file.grep "/etc/sysconfig/network-scripts/*" ipaddr -- -i -l
```

salt.modules.file.**group_to_gid**(*group*)
Convert the group to the gid on this system
**group** group to convert to its gid
CLI Example:

```
salt '*' file.group_to_gid root
```

salt.modules.file.**is_blkdev**(*name*)
Check if a file exists and is a block device.

CLI Example:

```
salt '*' file.is_blkdev /dev/blk
```

salt.modules.file.**is_chrdev**(*name*)
Check if a file exists and is a character device.

CLI Example:

```
salt '*' file.is_chrdev /dev/chr
```

salt.modules.file.**is_fifo**(*name*)
Check if a file exists and is a FIFO.

CLI Example:

```
salt '*' file.is_fifo /dev/fifo
```

salt.modules.file.**is_link**(*path*)
Check if the path is a symbolic link

CLI Example:

```
salt '*' file.is_link /path/to/link
```

salt.modules.file.**join**(**args*)
Return a normalized file system path for the underlying OS

New in version 2014.7.0.

This can be useful at the CLI but is frequently useful when scripting combining path variables:

```
{% set www_root = '/var' %}
{% set app_dir = 'myapp' %}

myapp_config:
  file:
    - managed
    - name: {{ salt['file.join'](www_root, app_dir, 'config.yaml') }}
```

CLI Example:

```
salt '*' file.join '/' 'usr' 'local' 'bin'
```

salt.modules.file.**lchown**(*path*, *user*, *group*)

Chown a file, pass the file the desired user and group without following symlinks.

**path** path to the file or directory

**user** user owner

**group** group owner

CLI Example:

```
salt '*' file.chown /etc/passwd root root
```

salt.modules.file.**line**(*path*, *content*, *match=None*, *mode=None*, *location=None*, *before=None*, *after=None*, *show_changes=True*, *backup=False*, *quiet=False*, *indent=True*)

New in version 2015.8.0.

Edit a line in the configuration file. The `path` and `content` arguments are required, as well as passing in one of the `mode` options.

**path** Filesystem path to the file to be edited.

**content** Content of the line.

**match** Match the target line for an action by a fragment of a string or regular expression.

If neither `before` nor `after` are provided, and `match` is also `None`, match becomes the `content` value.

**mode** Defines how to edit a line. One of the following options is required:

- **ensure** If line does not exist, it will be added. This is based on the `content` argument.
- **replace** If line already exists, it will be replaced.
- **delete** Delete the line, once found.
- **insert** Insert a line.

---

**Note:** If `mode=insert` is used, at least one of the following options must also be defined: `location`, `before`, or `after`. If `location` is used, it takes precedence over the other two options.

---

**location** Defines where to place content in the line. Note this option is only used when `mode=insert` is specified. If a location is passed in, it takes precedence over both the `before` and `after` kwargs. Valid locations are:

- **start** Place the content at the beginning of the file.
- **end** Place the content at the end of the file.

**before** Regular expression or an exact case-sensitive fragment of the string. This option is only used when either the `ensure` or `insert` mode is defined.

**after** Regular expression or an exact case-sensitive fragment of the string. This option is only used when either the `ensure` or `insert` mode is defined.

**show_changes** Output a unified diff of the old file and the new file. If `False` return a boolean if any changes were made. Default is `True`

---

**Note:** Using this option will store two copies of the file in-memory (the original version and the edited version) in order to generate the diff.

---

**backup** Create a backup of the original file with the extension: ``Year-Month-Day-Hour-Minutes-Seconds''.

**quiet** Do not raise any exceptions. E.g. ignore the fact that the file that is tried to be edited does not exist and nothing really happened.

**indent** Keep indentation with the previous line. This option is not considered when the `delete` mode is specified.

CLI Example:

```
salt '*' file.line /etc/nsswitch.conf "networks:       files dns" after="hosts:.*?
↪" mode='ensure'
```

---

**Note:** If an equal sign (=) appears in an argument to a Salt command, it is interpreted as a keyword argument in the format of `key=val`. That processing can be bypassed in order to pass an equal sign through to the remote shell command by manually specifying the kwarg:

```
salt '*' file.line /path/to/file content="CREATEMAIL_SPOOL=no" match="CREATE_MAIL_
↪SPOOL=yes" mode="replace"
```

---

`salt.modules.file.`**`link`**(*src*, *path*)

New in version 2014.1.0.

Create a hard link to a file

CLI Example:

```
salt '*' file.link /path/to/file /path/to/link
```

`salt.modules.file.`**`list_backups`**(*path*, *limit=None*)

New in version 0.17.0.

Lists the previous versions of a file backed up using Salt's *file state backup* system.

**path** The path on the minion to check for backups

**limit** Limit the number of results to the most recent N backups

CLI Example:

```
salt '*' file.list_backups /foo/bar/baz.txt
```

`salt.modules.file.`**`list_backups_dir`**(*path*, *limit=None*)

Lists the previous versions of a directory backed up using Salt's *file state backup* system.

**path** The directory on the minion to check for backups

**limit** Limit the number of results to the most recent N backups

CLI Example:

```
salt '*' file.list_backups_dir /foo/bar/baz/
```

`salt.modules.file.`**`lstat`**(*path*)

New in version 2014.1.0.

Returns the lstat attributes for the given file or dir. Does not support symbolic links.

CLI Example:

```
salt '*' file.lstat /path/to/file
```

salt.modules.file.**makedirs**(*path*, *user=None*, *group=None*, *mode=None*)

Ensure that the directory containing this path is available.

---

**Note**: The path must end with a trailing slash otherwise the directory/directories will be created up to the parent directory. For example if path is `/opt/code`, then it would be treated as `/opt/` but if the path ends with a trailing slash like `/opt/code/`, then it would be treated as `/opt/code/`.

---

CLI Example:

```
salt '*' file.makedirs /opt/code/
```

salt.modules.file.**makedirs_perms**(*name*, *user=None*, *group=None*, *mode='0755'*)

Taken and modified from os.makedirs to set user, group and mode for each directory created.

CLI Example:

```
salt '*' file.makedirs_perms /opt/code
```

salt.modules.file.**manage_file**(*name*, *sfn*, *ret*, *source*, *source_sum*, *user*, *group*, *mode*, *saltenv*, *backup*, *makedirs=False*, *template=None*, *show_diff=True*, *contents=None*, *dir_mode=None*, *follow_symlinks=True*, *skip_verify=False*)

Checks the destination against what was retrieved with get_managed and makes the appropriate modifications (if necessary).

**name** location to place the file

**sfn** location of cached file on the minion

This is the path to the file stored on the minion. This file is placed on the minion using cp.cache_file. If the hash sum of that file matches the source_sum, we do not transfer the file to the minion again.

This file is then grabbed and if it has template set, it renders the file to be placed into the correct place on the system using salt.files.utils.copyfile()

**ret** The initial state return data structure. Pass in `None` to use the default structure.

**source** file reference on the master

**source_hash** sum hash for source

**user** user owner

**group** group owner

**backup** backup_mode

**makedirs** make directories if they do not exist

**template** format of templating

**show_diff** Include diff in state return

**contents**: contents to be placed in the file

**dir_mode** mode for directories created with makedirs

**skip_verify** [False] If `True`, hash verification of remote file sources (`http://`, `https://`, `ftp://`) will be skipped, and the `source_hash` argument will be ignored.

New in version 2016.3.0.

CLI Example:

```
salt '*' file.manage_file /etc/httpd/conf.d/httpd.conf '' '{}' salt://http/httpd.
↪conf '{hash_type: 'md5', 'hsum': <md5sum>}' root root '755' base ''
```

Changed in version 2014.7.0: `follow_symlinks` option added

salt.modules.file.**mkdir**(*dir_path*, *user=None*, *group=None*, *mode=None*)
Ensure that a directory is available.

CLI Example:

```
salt '*' file.mkdir /opt/jetty/context
```

salt.modules.file.**mknod**(*name*, *ntype*, *major=0*, *minor=0*, *user=None*, *group=None*, *mode=`0600'*)
New in version 0.17.0.

Create a block device, character device, or fifo pipe. Identical to the gnu mknod.

CLI Examples:

```
salt '*' file.mknod /dev/chr c 180 31
salt '*' file.mknod /dev/blk b 8 999
salt '*' file.nknod /dev/fifo p
```

salt.modules.file.**mknod_blkdev**(*name*, *major*, *minor*, *user=None*, *group=None*, *mode=`0660'*)
New in version 0.17.0.

Create a block device.

CLI Example:

```
salt '*' file.mknod_blkdev /dev/blk 8 999
```

salt.modules.file.**mknod_chrdev**(*name*, *major*, *minor*, *user=None*, *group=None*, *mode=`0660'*)
New in version 0.17.0.

Create a character device.

CLI Example:

```
salt '*' file.mknod_chrdev /dev/chr 180 31
```

salt.modules.file.**mknod_fifo**(*name*, *user=None*, *group=None*, *mode=`0660'*)
New in version 0.17.0.

Create a FIFO pipe.

CLI Example:

```
salt '*' file.mknod_fifo /dev/fifo
```

salt.modules.file.**move**(*src*, *dst*)
Move a file or directory

CLI Example:

```
salt '*' file.move /path/to/src /path/to/dst
```

salt.modules.file.**normpath**(*path*)
Returns Normalize path, eliminating double slashes, etc.

New in version 2015.5.0.

This can be useful at the CLI but is frequently useful when scripting.

```
{%- from salt['file.normpath'](tpldir + '/../vars.jinja') import parent_vars %}
```

CLI Example:

```
salt '*' file.normpath 'a/b/c/..'
```

salt.modules.file.**open_files**(*by_pid=False*)

Return a list of all physical open files on the system.

CLI Examples:

```
salt '*' file.open_files
salt '*' file.open_files by_pid=True
```

salt.modules.file.**pardir**()

Return the relative parent directory path symbol for underlying OS

New in version 2014.7.0.

This can be useful when constructing Salt Formulas.

```
{% set pardir = salt['file.pardir']() %}
{% set final_path = salt['file.join']('subdir', pardir, 'confdir') %}
```

CLI Example:

```
salt '*' file.pardir
```

salt.modules.file.**patch**(*originalfile*, *patchfile*, *options=''*, *dry_run=False*)

New in version 0.10.4.

Apply a patch to a file or directory.

Equivalent to:

```
patch <options> -i <patchfile> <originalfile>
```

Or, when a directory is patched:

```
patch <options> -i <patchfile> -d <originalfile> -p0
```

**originalfile** The full path to the file or directory to be patched
**patchfile** A patch file to apply to `originalfile`
**options** Options to pass to patch.

CLI Example:

```
salt '*' file.patch /opt/file.txt /tmp/file.txt.patch
```

salt.modules.file.**path_exists_glob**(*path*)

Tests to see if path after expansion is a valid path (file or directory). Expansion allows usage of ? * and character ranges []. Tilde expansion is not supported. Returns True/False.

New in version Hellium.

CLI Example:

```
salt '*' file.path_exists_glob /etc/pam*/pass*
```

salt.modules.file.**prepend**(*path*, **args*, ***kwargs*)

New in version 2014.7.0.

Prepend text to the beginning of a file
**path** path to file

***args** strings to prepend to the file
CLI Example:

```
salt '*' file.prepend /etc/motd \
        "With all thine offerings thou shalt offer salt." \
        "Salt is what makes things taste bad when it isn't in them."
```

---

**Attention**

If you need to pass a string to append and that string contains an equal sign, you **must** include the argument name, args. For example:

```
salt '*' file.prepend /etc/motd args='cheese=spam'

salt '*' file.prepend /etc/motd args="['cheese=spam','spam=cheese']"
```

---

salt.modules.file.**psed**(*path*, *before*, *after*, *limit=''*, *backup='.bak'*, *flags='gMS'*, *escape_all=False*, *multi=False*)

Deprecated since version 0.17.0: Use *replace()* instead.

Make a simple edit to a file (pure Python version)

Equivalent to:

```
sed <backup> <options> "/<limit>/ s/<before>/<after>/<flags> <file>"
```

**path** The full path to the file to be edited
**before** A pattern to find in order to replace with `after`
**after** Text that will replace `before`
**limit** [`''`] An initial pattern to search for before searching for `before`
**backup** [`.bak`] The file will be backed up before edit with this file extension; **WARNING**: each time `sed`/`comment`/`uncomment` is called will overwrite this backup
**flags** [`gMS`]

**Flags to modify the search. Valid values are:**

- `g`: Replace all occurrences of the pattern, not just the first.
- `I`: Ignore case.
- `L`: Make `\w`, `\W`, `\b`, `\B`, `\s` and `\S` dependent on the locale.
- `M`: Treat multiple lines as a single line.
- `S`: Make `.` match all characters, including newlines.
- `U`: Make `\w`, `\W`, `\b`, `\B`, `\d`, `\D`, `\s` and `\S` dependent on Unicode.
- `X`: Verbose (whitespace is ignored).

**multi**: **`False`** If True, treat the entire file as a single line

Forward slashes and single quotes will be escaped automatically in the `before` and `after` patterns.

CLI Example:

```
salt '*' file.sed /etc/httpd/httpd.conf 'LogLevel warn' 'LogLevel info'
```

salt.modules.file.**readdir**(*path*)

New in version 2014.1.0.

Return a list containing the contents of a directory

CLI Example:

```
salt '*' file.readdir /path/to/dir/
```

salt.modules.file.**readlink**(*path*, *canonicalize=False*)

New in version 2014.1.0.

Return the path that a symlink points to If canonicalize is set to True, then it return the final target

CLI Example:

```
salt '*' file.readlink /path/to/link
```

salt.modules.file.**remove**(*path*)

Remove the named file. If a directory is supplied, it will be recursively deleted.

CLI Example:

```
salt '*' file.remove /tmp/foo
```

salt.modules.file.**rename**(*src*, *dst*)

Rename a file or directory

CLI Example:

```
salt '*' file.rename /path/to/src /path/to/dst
```

salt.modules.file.**replace**(*path*, *pattern*, *repl*, *count=0*, *flags=8*, *bufsize=1*, *append_if_not_found=False*, *prepend_if_not_found=False*, *not_found_content=None*, *backup='.bak'*, *dry_run=False*, *search_only=False*, *show_changes=True*, *ignore_if_missing=False*, *preserve_inode=True*)

New in version 0.17.0.

Replace occurrences of a pattern in a file. If `show_changes` is `True`, then a diff of what changed will be returned, otherwise a `True` will be returned when changes are made, and `False` when no changes are made.

This is a pure Python implementation that wraps Python's `sub()`.

**path** Filesystem path to the file to be edited

**pattern** A regular expression, to be matched using Python's `search()`.

**repl** The replacement text

**count** [0] Maximum number of pattern occurrences to be replaced. If count is a positive integer `n`, only `n` occurrences will be replaced, otherwise all occurrences will be replaced.

**flags (list or int)** A list of flags defined in the re module documentation. Each list item should be a string that will correlate to the human-friendly flag name. E.g., `['IGNORECASE','MULTILINE']`. Optionally, `flags` may be an int, with a value corresponding to the XOR (`|`) of all the desired flags. Defaults to 8 (which supports `MULTILINE').

**bufsize (int or str)** How much of the file to buffer into memory at once. The default value `1` processes one line at a time. The special value `file` may be specified which will read the entire file into memory before processing.

**append_if_not_found** [False] New in version 2014.7.0.

If set to `True`, and pattern is not found, then the content will be appended to the file.

**prepend_if_not_found** [False] New in version 2014.7.0.

If set to `True` and pattern is not found, then the content will be prepended to the file.

**not_found_content** New in version 2014.7.0.

Content to use for append/prepend if not found. If None (default), uses `repl`. Useful when `repl` uses references to group in pattern.

**backup** [.bak] The file extension to use for a backup of the file before editing. Set to `False` to skip making a backup.

**dry_run** [False] If set to `True`, no changes will be made to the file, the function will just return the changes that would have been made (or a `True`/`False` value if `show_changes` is set to `False`).

**search_only** [False] If set to true, this no changes will be performed on the file, and this function will simply return `True` if the pattern was matched, and `False` if not.

**show_changes** [True] If `True`, return a diff of changes made. Otherwise, return `True` if changes were made, and `False` if not.

---

**Note:** Using this option will store two copies of the file in memory (the original version and the edited version) in order to generate the diff. This may not normally be a concern, but could impact performance if used with large files.

---

**ignore_if_missing** [False] New in version 2015.8.0.

If set to `True`, this function will simply return `False` if the file doesn't exist. Otherwise, an error will be thrown.

**preserve_inode** [True] New in version 2015.8.0.

Preserve the inode of the file, so that any hard links continue to share the inode with the original filename. This works by *copying* the file, reading from the copy, and writing to the file at the original inode. If `False`, the file will be *moved* rather than copied, and a new file will be written to a new inode, but using the original filename. Hard links will then share an inode with the backup, instead (if using `backup` to create a backup copy).

If an equal sign (=) appears in an argument to a Salt command it is interpreted as a keyword argument in the format `key=val`. That processing can be bypassed in order to pass an equal sign through to the remote shell command by manually specifying the kwarg:

```
salt '*' file.replace /path/to/file pattern='=' repl=':'
salt '*' file.replace /path/to/file pattern="bind-address\s*=" repl='bind-address:
 ↪'
```

CLI Examples:

```
salt '*' file.replace /etc/httpd/httpd.conf pattern='LogLevel warn' repl=
 ↪'LogLevel info'
salt '*' file.replace /some/file pattern='before' repl='after' flags='[MULTILINE,
 ↪IGNORECASE]'
```

`salt.modules.file.`**`restore_backup`**(*path*, *backup_id*)

New in version 0.17.0.

Restore a previous version of a file that was backed up using Salt's *file state backup* system.

**path** The path on the minion to check for backups

**backup_id** The numeric id for the backup you wish to restore, as found using *`file.list_backups`*

CLI Example:

```
salt '*' file.restore_backup /foo/bar/baz.txt 0
```

`salt.modules.file.`**`restorecon`**(*path*, *recursive=False*)

Reset the SELinux context on a given path

CLI Example:

```
salt '*' file.restorecon /home/user/.ssh/authorized_keys
```

salt.modules.file.**rmdir**(*path*)

New in version 2014.1.0.

Remove the specified directory. Fails if a directory is not empty.

CLI Example:

```
salt '*' file.rmdir /tmp/foo/
```

salt.modules.file.**search**(*path*, *pattern*, *flags=8*, *bufsize=1*, *ignore_if_missing=False*, *multiline=False*)

New in version 0.17.0.

Search for occurrences of a pattern in a file

Except for multiline, params are identical to *replace()*.

**multiline** If true, inserts `MULTILINE' into `flags` and sets `bufsize` to `file'.

New in version 2015.8.0.

CLI Example:

```
salt '*' file.search /etc/crontab 'mymaintenance.sh'
```

salt.modules.file.**sed**(*path*, *before*, *after*, *limit=''*, *backup='.bak'*, *options='-r -e'*, *flags='g'*, *escape_all=False*, *negate_match=False*)

Deprecated since version 0.17.0: Use *replace()* instead.

Make a simple edit to a file

Equivalent to:

```
sed <backup> <options> "/<limit>/ s/<before>/<after>/<flags> <file>"
```

**path** The full path to the file to be edited
**before** A pattern to find in order to replace with `after`
**after** Text that will replace `before`
**limit** [`''`] An initial pattern to search for before searching for `before`
**backup** [`.bak`] The file will be backed up before edit with this file extension; **WARNING**: each time `sed`/`comment`/`uncomment` is called will overwrite this backup
**options** [`-r -e`] Options to pass to sed
**flags** [`g`] Flags to modify the sed search; e.g., `i` for case-insensitive pattern matching
**negate_match** [False] Negate the search command (`!`)

New in version 0.17.0.

Forward slashes and single quotes will be escaped automatically in the `before` and `after` patterns.

CLI Example:

```
salt '*' file.sed /etc/httpd/httpd.conf 'LogLevel warn' 'LogLevel info'
```

salt.modules.file.**sed_contains**(*path*, *text*, *limit=''*, *flags='g'*)

Deprecated since version 0.17.0: Use *search()* instead.

Return True if the file at `path` contains `text`. Utilizes sed to perform the search (line-wise search).

Note: the `p` flag will be added to any flags you pass in.

CLI Example:

```
salt '*' file.contains /etc/crontab 'mymaintenance.sh'
```

salt.modules.file.**seek_read**(*path*, *size*, *offset*)
New in version 2014.1.0.

Seek to a position on a file and read it
**path** path to file
**seek** amount to read at once
**offset** offset to start into the file
CLI Example:

```
salt '*' file.seek_read /path/to/file 4096 0
```

salt.modules.file.**seek_write**(*path*, *data*, *offset*)
New in version 2014.1.0.

Seek to a position on a file and write to it
**path** path to file
**data** data to write to file
**offset** position in file to start writing
CLI Example:

```
salt '*' file.seek_write /path/to/file 'some data' 4096
```

salt.modules.file.**set_mode**(*path*, *mode*)
Set the mode of a file
**path** file or directory of which to set the mode
**mode** mode to set the path to
CLI Example:

```
salt '*' file.set_mode /etc/passwd 0644
```

salt.modules.file.**set_selinux_context**(*path*, *user=None*, *role=None*, *type=None*, *range=None*)
Set a specific SELinux label on a given path

CLI Example:

```
salt '*' file.set_selinux_context path <role> <type> <range>
```

salt.modules.file.**source_list**(*source*, *source_hash*, *saltenv*)
Check the source list and return the source to use

CLI Example:

```
salt '*' file.source_list salt://http/httpd.conf '{hash_type: 'md5', 'hsum':
↪<md5sum>}' base
```

salt.modules.file.**stats**(*path*, *hash_type=None*, *follow_symlinks=True*)
Return a dict containing the stats for a given file

CLI Example:

```
salt '*' file.stats /etc/passwd
```

salt.modules.file.**statvfs**(*path*)
New in version 2014.1.0.

Perform a statvfs call against the filesystem that the file resides on

CLI Example:

```
salt '*' file.statvfs /path/to/file
```

salt.modules.file.**symlink**(*src*, *path*)

Create a symbolic link (symlink, soft link) to a file

CLI Example:

```
salt '*' file.symlink /path/to/file /path/to/link
```

salt.modules.file.**touch**(*name*, *atime=None*, *mtime=None*)

New in version 0.9.5.

Just like the `touch` command, create a file if it doesn't exist or simply update the atime and mtime if it already does.

**atime**: Access time in Unix epoch time

**mtime**: Last modification in Unix epoch time

CLI Example:

```
salt '*' file.touch /var/log/emptyfile
```

salt.modules.file.**truncate**(*path*, *length*)

New in version 2014.1.0.

Seek to a position on a file and delete everything after that point

**path** path to file

**length** offset into file to truncate

CLI Example:

```
salt '*' file.truncate /path/to/file 512
```

salt.modules.file.**uid_to_user**(*uid*)

Convert a uid to a user name

**uid** uid to convert to a username

CLI Example:

```
salt '*' file.uid_to_user 0
```

salt.modules.file.**uncomment**(*path*, *regex*, *char='#'*, *backup='.bak'*)

Deprecated since version 0.17.0: Use *replace()* instead.

Uncomment specified commented lines in a file

**path** The full path to the file to be edited

**regex** A regular expression used to find the lines that are to be uncommented. This regex should not include the comment character. A leading `^` character will be stripped for convenience (for easily switching between comment() and uncomment()).

**char** [#] The character to remove in order to uncomment a line

**backup** [`.bak`] The file will be backed up before edit with this file extension; **WARNING**: each time `sed`/`comment`/`uncomment` is called will overwrite this backup

CLI Example:

```
salt '*' file.uncomment /etc/hosts.deny 'ALL: PARANOID'
```

salt.modules.file.**user_to_uid**(*user*)

Convert user name to a uid

**user** user name to convert to its uid

CLI Example:

```
salt '*' file.user_to_uid root
```

salt.modules.file.**write**(*path*, **args*, ***kwargs*)

New in version 2014.7.0.

Write text to a file, overwriting any existing contents.
**path** path to file
***args** strings to write to the file
CLI Example:

```
salt '*' file.write /etc/motd \
        "With all thine offerings thou shalt offer salt."
```

---

**Attention**

If you need to pass a string to append and that string contains an equal sign, you **must** include the argument name, args. For example:

```
salt '*' file.write /etc/motd args='cheese=spam'

salt '*' file.write /etc/motd args="['cheese=spam','spam=cheese']"
```

---

### 13.6.91 salt.modules.firewalld

Support for firewalld.

New in version 2015.2.0.

salt.modules.firewalld.**add_interface**(*zone*, *interface*)

Bind an interface to a zone

New in version 2016.3.0.

CLI Example:

```
salt '*' firewalld.add_interface zone eth0
```

salt.modules.firewalld.**add_masquerade**(*zone*)

Enable masquerade on a zone.

New in version 2015.8.0.

CLI Example:

```
salt '*' firewalld.add_masquerade
```

salt.modules.firewalld.**add_port**(*zone*, *port*, *permanent=True*)

Allow specific ports in a zone.

New in version 2015.8.0.

CLI Example:

```
salt '*' firewalld.add_port internal 443/tcp
```

salt.modules.firewalld.**add_port_fwd**(*zone*, *src*, *dest*, *proto='tcp'*, *dstaddr=''*)
Add port forwarding.

New in version 2015.8.0.

CLI Example:

```
salt '*' firewalld.add_port_fwd public 80 443 tcp
```

salt.modules.firewalld.**add_service**(*name*, *zone=None*, *permanent=True*)
Add a service for zone. If zone is omitted, default zone will be used.

CLI Example:

```
salt '*' firewalld.add_service ssh
```

To assign a service to a specific zone:

```
salt '*' firewalld.add_service ssh my_zone
```

salt.modules.firewalld.**add_source**(*zone*, *source*)
Bind a source to a zone

New in version 2016.3.0.

CLI Example:

```
salt '*' firewalld.add_source zone 192.168.1.0/24
```

salt.modules.firewalld.**allow_icmp**(*zone*, *icmp*)
Allow a specific ICMP type on a zone

New in version 2015.8.0.

CLI Example:

```
salt '*' firewalld.allow_icmp zone echo-reply
```

salt.modules.firewalld.**block_icmp**(*zone*, *icmp*)
Block a specific ICMP type on a zone

New in version 2015.8.0.

CLI Example:

```
salt '*' firewalld.block_icmp zone echo-reply
```

salt.modules.firewalld.**default_zone**()
Print default zone for connections and interfaces

CLI Example:

```
salt '*' firewalld.default_zone
```

salt.modules.firewalld.**delete_service**(*name*, *restart=True*)
Delete an existing service

CLI Example:

```
salt '*' firewalld.delete_service my_service
```

By default firewalld will be reloaded. However, to avoid reloading you need to specify the restart as False

```
salt '*' firewalld.delete_service my_service False
```

salt.modules.firewalld.**delete_zone**(*zone*, *restart=True*)
Delete an existing zone

CLI Example:

```
salt '*' firewalld.delete_zone my_zone
```

By default firewalld will be reloaded. However, to avoid reloading you need to specify the restart as False

```
salt '*' firewalld.delete_zone my_zone False
```

salt.modules.firewalld.**get_icmp_types**()
Print predefined icmptypes

CLI Example:

```
salt '*' firewalld.get_icmp_types
```

salt.modules.firewalld.**get_interfaces**(*zone*)
List interfaces bound to a zone

New in version 2016.3.0.

CLI Example:

```
salt '*' firewalld.get_interfaces zone
```

salt.modules.firewalld.**get_masquerade**(*zone*)
Show if masquerading is enabled on a zone

CLI Example:

```
salt '*' firewalld.get_masquerade zone
```

salt.modules.firewalld.**get_services**()
Print predefined services

CLI Example:

```
salt '*' firewalld.get_services
```

salt.modules.firewalld.**get_sources**(*zone*)
List sources bound to a zone

New in version 2016.3.0.

CLI Example:

```
salt '*' firewalld.get_sources zone
```

salt.modules.firewalld.**get_zones**()
Print predefined zones

CLI Example:

```
salt '*' firewalld.get_zones
```

salt.modules.firewalld.**list_all**(*zone=None*)
List everything added for or enabled in a zone

CLI Example:

```
salt '*' firewalld.list_all
```

List a specific zone

```
salt '*' firewalld.list_all my_zone
```

salt.modules.firewalld.**list_icmp_block**(*zone*)
List ICMP blocks on a zone

New in version 2015.8.0.

CLI Example:

```
salt '*' firewlld.list_icmp_block zone
```

salt.modules.firewalld.**list_port_fwd**(*zone*)
List port forwarding

New in version 2015.8.0.

CLI Example:

```
salt '*' firewalld.list_port_fwd public
```

salt.modules.firewalld.**list_ports**(*zone*)
List all ports in a zone.

New in version 2015.8.0.

CLI Example:

```
salt '*' firewalld.list_ports
```

salt.modules.firewalld.**list_services**(*zone=None*)
List services added for zone as a space separated list. If zone is omitted, default zone will be used.

CLI Example:

```
salt '*' firewalld.list_services
```

List a specific zone

```
salt '*' firewalld.list_services my_zone
```

salt.modules.firewalld.**list_zones**()
List everything added for or enabled in all zones

CLI Example:

```
salt '*' firewalld.list_zones
```

salt.modules.firewalld.**make_permanent**()
Make current runtime configuration permanent.

New in version 2016.3.0.

CLI Example:

```
salt '*' firewalld.make_permanent
```

salt.modules.firewalld.**new_service**(*name*, *restart=True*)

Add a new service

CLI Example:

```
salt '*' firewalld.new_service my_service
```

By default firewalld will be reloaded. However, to avoid reloading you need to specify the restart as False

```
salt '*' firewalld.new_service my_service False
```

salt.modules.firewalld.**new_zone**(*zone*, *restart=True*)

Add a new zone

CLI Example:

```
salt '*' firewalld.new_zone my_zone
```

By default firewalld will be reloaded. However, to avoid reloading you need to specify the restart as False

```
salt '*' firewalld.new_zone my_zone False
```

salt.modules.firewalld.**remove_interface**(*zone*, *interface*)

Remove an interface bound to a zone

New in version 2016.3.0.

CLI Example:

```
salt '*' firewalld.remove_interface zone eth0
```

salt.modules.firewalld.**remove_masquerade**(*zone*)

Remove masquerade on a zone.

New in version 2015.8.0.

CLI Example:

```
salt '*' firewalld.remove_masquerade
```

salt.modules.firewalld.**remove_port**(*zone*, *port*, *permanent=True*)

Remove a specific port from a zone.

New in version 2015.8.0.

CLI Example:

```
salt '*' firewalld.remove_port internal 443/tcp
```

salt.modules.firewalld.**remove_port_fwd**(*zone*, *src*, *dest*, *proto='tcp'*)

Remove Port Forwarding.

New in version 2015.8.0.

CLI Example:

```
salt '*' firewalld.remove_port_fwd public 80 443 tcp
```

salt.modules.firewalld.**remove_service**(*name*, *zone=None*, *permanent=True*)
Remove a service from zone. This option can be specified multiple times. If zone is omitted, default zone will be used.

CLI Example:

```
salt '*' firewalld.remove_service ssh
```

To remove a service from a specific zone

```
salt '*' firewalld.remove_service ssh dmz
```

salt.modules.firewalld.**remove_source**(*zone*, *source*)
Remove a source bound to a zone

New in version 2016.3.0.

CLI Example:

```
salt '*' firewalld.remove_source zone 192.168.1.0/24
```

salt.modules.firewalld.**set_default_zone**(*zone*)
Set default zone

CLI Example:

```
salt '*' firewalld.set_default_zone damian
```

salt.modules.firewalld.**version**()
Return version from firewall-cmd

CLI Example:

```
salt '*' firewalld.version
```

### 13.6.92 salt.modules.freebsd_sysctl

Module for viewing and modifying sysctl parameters

salt.modules.freebsd_sysctl.**assign**(*name*, *value*)
Assign a single sysctl parameter for this minion

CLI Example:

```
salt '*' sysctl.assign net.inet.icmp.icmplim 50
```

salt.modules.freebsd_sysctl.**get**(*name*)
Return a single sysctl parameter for this minion

CLI Example:

```
salt '*' sysctl.get hw.physmem
```

salt.modules.freebsd_sysctl.**persist**(*name*, *value*, *config='/etc/sysctl.conf'*)
Assign and persist a simple sysctl parameter for this minion

CLI Example:

```
salt '*' sysctl.persist net.inet.icmp.icmplim 50
salt '*' sysctl.persist coretemp_load NO config=/boot/loader.conf
```

salt.modules.freebsd_sysctl.**show**(*config_file=False*)
Return a list of sysctl parameters for this minion

CLI Example:

```
salt '*' sysctl.show
```

### 13.6.93 salt.modules.freebsdjail

The jail module for FreeBSD

salt.modules.freebsdjail.**fstab**(*jail*)
Display contents of a fstab(5) file defined in specified jail's configuration. If no file is defined, return False.

CLI Example:

```
salt '*' jail.fstab <jail name>
```

salt.modules.freebsdjail.**get_enabled**()
Return which jails are set to be run

CLI Example:

```
salt '*' jail.get_enabled
```

salt.modules.freebsdjail.**is_enabled**()
See if jail service is actually enabled on boot

CLI Example:

```
salt '*' jail.is_enabled <jail name>
```

salt.modules.freebsdjail.**restart**(*jail=''*)
Restart the specified jail or all, if none specified

CLI Example:

```
salt '*' jail.restart [<jail name>]
```

salt.modules.freebsdjail.**show_config**(*jail*)
Display specified jail's configuration

CLI Example:

```
salt '*' jail.show_config <jail name>
```

salt.modules.freebsdjail.**start**(*jail=''*)
Start the specified jail or all, if none specified

CLI Example:

```
salt '*' jail.start [<jail name>]
```

salt.modules.freebsdjail.**status**(*jail*)
See if specified jail is currently running

CLI Example:

```
salt '*' jail.status <jail name>
```

salt.modules.freebsdjail.**stop**(*jail=''*)
Stop the specified jail or all, if none specified

CLI Example:

```
salt '*' jail.stop [<jail name>]
```

salt.modules.freebsdjail.**sysctl**()
Dump all jail related kernel states (sysctl)

CLI Example:

```
salt '*' jail.sysctl
```

### 13.6.94 salt.modules.freebsdkmod

Module to manage FreeBSD kernel modules

salt.modules.freebsdkmod.**available**()
Return a list of all available kernel modules

CLI Example:

```
salt '*' kmod.available
```

salt.modules.freebsdkmod.**check_available**(*mod*)
Check to see if the specified kernel module is available

CLI Example:

```
salt '*' kmod.check_available vmm
```

salt.modules.freebsdkmod.**is_loaded**(*mod*)
Check to see if the specified kernel module is loaded

CLI Example:

```
salt '*' kmod.is_loaded vmm
```

salt.modules.freebsdkmod.**load**(*mod, persist=False*)
Load the specified kernel module
**mod** Name of the module to add
**persist** Write the module to sysrc kld_modules to make it load on system reboot
CLI Example:

```
salt '*' kmod.load bhyve
```

salt.modules.freebsdkmod.**lsmod**()
Return a dict containing information about currently loaded modules

CLI Example:

```
salt '*' kmod.lsmod
```

salt.modules.freebsdkmod.**mod_list**(*only_persist=False*)
Return a list of the loaded module names

CLI Example:

```
salt '*' kmod.mod_list
```

salt.modules.freebsdkmod.**remove**(*mod*, *persist=False*)
Remove the specified kernel module

CLI Example:

```
salt '*' kmod.remove vmm
```

### 13.6.95 salt.modules.freebsdpkg

Remote package support using `pkg_add(1)`

**Important**: If you feel that Salt should be using this module to manage packages on a minion, and it is using a different module (or gives an error similar to *`pkg.install' is not available*), see *here*.

**Warning**: This module has been completely rewritten. Up to and including version 0.17.0, it supported `pkg_add(1)`, but checked for the existence of a pkgng local database and, if found, would provide some of pkgng's functionality. The rewrite of this module has removed all pkgng support, and moved it to the *pkgng* execution module. For versions <= 0.17.0, the documentation here should not be considered accurate. If your Minion is running one of these versions, then the documentation for this module can be viewed using the `sys.doc` function:

```
salt bsdminion sys.doc pkg
```

This module acts as the default package provider for FreeBSD 9 and older. If you need to use pkgng on a FreeBSD 9 system, you will need to override the `pkg` provider by setting the *`providers`* parameter in your Minion config file, in order to use pkgng.

```
providers:
  pkg: pkgng
```

More information on pkgng support can be found in the documentation for the *pkgng* module.

This module will respect the `PACKAGEROOT` and `PACKAGESITE` environment variables, if set, but these values can also be overridden in several ways:

1. **Salt configuration parameters**. The configuration parameters `freebsdpkg.PACKAGEROOT` and `freebsdpkg.PACKAGESITE` are recognized. These config parameters are looked up using *`config.get`* and can thus be specified in the Master config file, Grains, Pillar, or in the Minion config file. Example:

   ```
   freebsdpkg.PACKAGEROOT: ftp://ftp.freebsd.org/
   freebsdpkg.PACKAGESITE: ftp://ftp.freebsd.org/pub/FreeBSD/ports/ia64/packages-9-
   ↪stable/Latest/
   ```

2. **CLI arguments**. Both the `packageroot` (used interchangeably with `fromrepo` for API compatibility) and `packagesite` CLI arguments are recognized, and override their config counterparts from section 1 above.

```
    salt -G 'os:FreeBSD' pkg.install zsh fromrepo=ftp://ftp2.freebsd.org/
    salt -G 'os:FreeBSD' pkg.install zsh packageroot=ftp://ftp2.freebsd.org/
    salt -G 'os:FreeBSD' pkg.install zsh packagesite=ftp://ftp2.freebsd.org/pub/
 ↪FreeBSD/ports/ia64/packages-9-stable/Latest/

.. note::

    These arguments can also be passed through in states:

    .. code-block:: yaml

        zsh:
          pkg.installed:
            - fromrepo: ftp://ftp2.freebsd.org/
```

salt.modules.freebsdpkg.**file_dict**(**packages*)

List the files that belong to a package, grouped by package. Not specifying any packages will return a list of _every_ file on the system's package database (not generally recommended).

CLI Examples:

```
salt '*' pkg.file_list httpd
salt '*' pkg.file_list httpd postfix
salt '*' pkg.file_list
```

salt.modules.freebsdpkg.**file_list**(**packages*)

List the files that belong to a package. Not specifying any packages will return a list of _every_ file on the system's package database (not generally recommended).

CLI Examples:

```
salt '*' pkg.file_list httpd
salt '*' pkg.file_list httpd postfix
salt '*' pkg.file_list
```

salt.modules.freebsdpkg.**install**(*name=None*, *refresh=False*, *fromrepo=None*, *pkgs=None*, *sources=None*, ***kwargs*)

Install package(s) using `pkg_add(1)`

**name** The name of the package to be installed.

**refresh** Whether or not to refresh the package database before installing.

**fromrepo or packageroot** Specify a package repository from which to install. Overrides the system default, as well as the PACKAGEROOT environment variable.

**packagesite** Specify the exact directory from which to install the remote package. Overrides the PACKAGESITE environment variable, if present.

Multiple Package Installation Options:

**pkgs** A list of packages to install from a software repository. Must be passed as a python list.

CLI Example:

```
salt '*' pkg.install pkgs='["foo", "bar"]'
```

**sources** A list of packages to install. Must be passed as a list of dicts, with the keys being package names, and the values being the source URI or local path to the package.

CLI Example:

```
salt '*' pkg.install sources='[{"foo": "salt://foo.deb"}, {"bar": "salt://bar.
 ↪deb"}]'
```

Return a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

CLI Example:

```
salt '*' pkg.install <package name>
```

salt.modules.freebsdpkg.**latest_version**(**names*, ***kwargs*)

`pkg_add(1)` is not capable of querying for remote packages, so this function will always return results as if there is no package available for install or upgrade.

CLI Example:

```
salt '*' pkg.latest_version <package name>
salt '*' pkg.latest_version <package1> <package2> <package3> ...
```

salt.modules.freebsdpkg.**list_pkgs**(*versions_as_list=False*, *with_origin=False*, ***kwargs*)

List the packages currently installed as a dict:

```
{'<package_name>': '<version>'}
```

**with_origin** [False] Return a nested dictionary containing both the origin name and version for each installed package.

New in version 2014.1.0.

CLI Example:

```
salt '*' pkg.list_pkgs
```

salt.modules.freebsdpkg.**refresh_db**()

`pkg_add(1)` does not use a local database of available packages, so this function simply returns `True`. it exists merely for API compatibility.

CLI Example:

```
salt '*' pkg.refresh_db
```

salt.modules.freebsdpkg.**remove**(*name=None*, *pkgs=None*, ***kwargs*)

Remove packages using `pkg_delete(1)`

**name** The name of the package to be deleted.

Multiple Package Options:

**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.remove <package name>
salt '*' pkg.remove <package1>,<package2>,<package3>
salt '*' pkg.remove pkgs='["foo", "bar"]'
```

salt.modules.freebsdpkg.**upgrade**()

Upgrades are not supported with `pkg_add(1)`. This function is included for API compatibility only and always returns an empty dict.

CLI Example:

```
salt '*' pkg.upgrade
```

salt.modules.freebsdpkg.**version**(**names*, ***kwargs*)

Returns a string representing the package version or an empty string if not installed. If more than one package name is specified, a dict of name/version pairs is returned.

**with_origin** [False] Return a nested dictionary containing both the origin name and version for each specified package.

New in version 2014.1.0.

CLI Example:

```
salt '*' pkg.version <package name>
salt '*' pkg.version <package1> <package2> <package3> ...
```

### 13.6.96 salt.modules.freebsdports

Install software from the FreeBSD `ports(7)` system

New in version 2014.1.0.

This module allows you to install ports using `BATCH=yes` to bypass configuration prompts. It is recommended to use the `ports state` to install ports, but it it also possible to use this module exclusively from the command line.

```
salt minion-id ports.config security/nmap IPV6=off
salt minion-id ports.install security/nmap
```

salt.modules.freebsdports.**config**(*name*, *reset=False*, ***kwargs*)

Modify configuration options for a given port. Multiple options can be specified. To see the available options for a port, use *ports.showconfig*.

**name** The port name, in `category/name` format

**reset** [False] If `True`, runs a `make rmconfig` for the port, clearing its configuration before setting the desired options

CLI Examples:

```
salt '*' ports.config security/nmap IPV6=off
```

salt.modules.freebsdports.**deinstall**(*name*)

De-install a port.

CLI Example:

```
salt '*' ports.deinstall security/nmap
```

salt.modules.freebsdports.**install**(*name*, *clean=True*)

Install a port from the ports tree. Installs using `BATCH=yes` for non-interactive building. To set config options for a given port, use *ports.config*.

**clean** [True] If `True`, cleans after installation. Equivalent to running `make install clean BATCH=yes`.

**Note**: It may be helpful to run this function using the `-t` option to set a higher timeout, since compiling a port may cause the Salt command to exceed the default timeout.

CLI Example:

```
salt -t 1200 '*' ports.install security/nmap
```

salt.modules.freebsdports.**list_all**()

Lists all ports available.

CLI Example:

```
salt '*' ports.list_all
```

**Warning**: Takes a while to run, and returns a **LOT** of output

salt.modules.freebsdports.**rmconfig**(*name*)

Clear the cached options for the specified port; run a `make rmconfig`

**name** The name of the port to clear

CLI Example:

```
salt '*' ports.rmconfig security/nmap
```

salt.modules.freebsdports.**search**(*name*)

Search for matches in the ports tree. Globs are supported, and the category is optional

CLI Examples:

```
salt '*' ports.search 'security/*'
salt '*' ports.search 'security/n*'
salt '*' ports.search nmap
```

**Warning**: Takes a while to run

salt.modules.freebsdports.**showconfig**(*name*, *default=False*, *dict_return=False*)

Show the configuration options for a given port.

**default** [False] Show the default options for a port (not necessarily the same as the current configuration)

**dict_return** [False] Instead of returning the output of `make showconfig`, return the data in an dictionary

CLI Example:

```
salt '*' ports.showconfig security/nmap
salt '*' ports.showconfig security/nmap default=True
```

salt.modules.freebsdports.**update**(*extract=False*)

Update the ports tree

**extract** [False] If `True`, runs a `portsnap extract` after fetching, should be used for first-time installation of the ports tree.

CLI Example:

```
salt '*' ports.update
```

### 13.6.97 salt.modules.freebsdservice

The service module for FreeBSD

**Important**: If you feel that Salt should be using this module to manage services on a minion, and it is using a different module (or gives an error similar to *`service.start' is not available*), see *here*.

salt.modules.freebsdservice.**available**(*name*)
Check that the given service is available.

CLI Example:

```
salt '*' service.available sshd
```

salt.modules.freebsdservice.**disable**(*name*, ***kwargs*)
Disable the named service to start at boot

Arguments the same as for enable()

CLI Example:

```
salt '*' service.disable <service name>
```

salt.modules.freebsdservice.**disabled**(*name*)
Return True if the named service is enabled, false otherwise

CLI Example:

```
salt '*' service.disabled <service name>
```

salt.modules.freebsdservice.**enable**(*name*, ***kwargs*)
Enable the named service to start at boot
**name** service name
**config** [/etc/rc.conf] Config file for managing service. If config value is empty string, then /etc/rc.conf.d/<service> used. See man rc.conf(5) for details.

Also service.config variable can be used to change default.
CLI Example:

```
salt '*' service.enable <service name>
```

salt.modules.freebsdservice.**enabled**(*name*, ***kwargs*)
Return True if the named service is enabled, false otherwise
**name** Service name
CLI Example:

```
salt '*' service.enabled <service name>
```

salt.modules.freebsdservice.**get_all**()
Return a list of all available services

CLI Example:

```
salt '*' service.get_all
```

salt.modules.freebsdservice.**get_disabled**()
Return what services are available but not enabled to start at boot

CLI Example:

```
salt '*' service.get_disabled
```

salt.modules.freebsdservice.**get_enabled**()
Return what services are set to run on boot

CLI Example:

```
salt '*' service.get_enabled
```

salt.modules.freebsdservice.**missing**(*name*)
The inverse of service.available. Returns `True` if the specified service is not available, otherwise returns `False`.

CLI Example:

```
salt '*' service.missing sshd
```

salt.modules.freebsdservice.**reload**(*name*)
Restart the named service

CLI Example:

```
salt '*' service.reload <service name>
```

salt.modules.freebsdservice.**restart**(*name*)
Restart the named service

CLI Example:

```
salt '*' service.restart <service name>
```

salt.modules.freebsdservice.**start**(*name*)
Start the specified service

CLI Example:

```
salt '*' service.start <service name>
```

salt.modules.freebsdservice.**status**(*name*, *sig=None*)
Return the status for a service (True or False).
**name** Name of service
CLI Example:

```
salt '*' service.status <service name>
```

salt.modules.freebsdservice.**stop**(*name*)
Stop the specified service

CLI Example:

```
salt '*' service.stop <service name>
```

### 13.6.98 salt.modules.gem

Manage ruby gems.

salt.modules.gem.**install**(*gems*, *ruby=None*, *gem_bin=None*, *runas=None*, *version=None*, *rdoc=False*, *ri=False*, *pre_releases=False*, *proxy=None*, *source=None*)
Installs one or several gems.
**Parameters**

- **gems** -- string The gems to install
- **gem_bin** -- string : None Full path to `gem` binary to use.
- **ruby** -- string : None If RVM or rbenv are installed, the ruby version and gemset to use. Ignored if `gem_bin` is specified.
- **runas** -- string : None The user to run gem as.
- **version** -- string : None Specify the version to install for the gem. Doesn't play nice with multiple gems at once
- **rdoc** -- boolean : False Generate RDoc documentation for the gem(s).
- **ri** -- boolean : False Generate RI documentation for the gem(s).
- **pre_releases** -- boolean : False Include pre-releases in the available versions
- **proxy** -- string : None Use the specified HTTP proxy server for all outgoing traffic. Format: http://hostname{[}:port]

**source** [None] Use the specified HTTP gem source server to download gem. Format: http://hostname{[}:port]

CLI Example:

```
salt '*' gem.install vagrant

salt '*' gem.install redphone gem_bin=/opt/sensu/embedded/bin/gem
```

`salt.modules.gem.`**`list`**(*prefix=''*, *ruby=None*, *runas=None*, *gem_bin=None*)

List locally installed gems.

**Parameters**

- **prefix** -- string : Only list gems when the name matches this prefix.
- **gem_bin** -- string : None Full path to `gem` binary to use.
- **ruby** -- string : None If RVM or rbenv are installed, the ruby version and gemset to use. Ignored if `gem_bin` is specified.
- **runas** -- string : None The user to run gem as.

CLI Example:

```
salt '*' gem.list
```

`salt.modules.gem.`**`list_upgrades`**(*ruby=None*, *runas=None*, *gem_bin=None*)

New in version 2015.8.0.

Check if an upgrade is available for installed gems

**gem_bin** [None] Full path to `gem` binary to use.

**ruby** [None] If RVM or rbenv are installed, the ruby version and gemset to use. Ignored if `gem_bin` is specified.

**runas** [None] The user to run gem as.

CLI Example:

```
salt '*' gem.list_upgrades
```

`salt.modules.gem.`**`sources_add`**(*source_uri*, *ruby=None*, *runas=None*, *gem_bin=None*)

Add a gem source.

**Parameters**

- **source_uri** -- string The source URI to add.

- **gem_bin** -- string : None Full path to `gem` binary to use.
- **ruby** -- string : None If RVM or rbenv are installed, the ruby version and gemset to use. Ignored if `gem_bin` is specified.
- **runas** -- string : None The user to run gem as.

CLI Example:

```
salt '*' gem.sources_add http://rubygems.org/
```

salt.modules.gem.**sources_list**(*ruby=None*, *runas=None*, *gem_bin=None*)

List the configured gem sources.

**Parameters**

- **gem_bin** -- string : None Full path to `gem` binary to use.
- **ruby** -- string : None If RVM or rbenv are installed, the ruby version and gemset to use. Ignored if `gem_bin` is specified.
- **runas** -- string : None The user to run gem as.

CLI Example:

```
salt '*' gem.sources_list
```

salt.modules.gem.**sources_remove**(*source_uri*, *ruby=None*, *runas=None*, *gem_bin=None*)

Remove a gem source.

**Parameters**

- **source_uri** -- string The source URI to remove.
- **gem_bin** -- string : None Full path to `gem` binary to use.
- **ruby** -- string : None If RVM or rbenv are installed, the ruby version and gemset to use. Ignored if `gem_bin` is specified.
- **runas** -- string : None The user to run gem as.

CLI Example:

```
salt '*' gem.sources_remove http://rubygems.org/
```

salt.modules.gem.**uninstall**(*gems*, *ruby=None*, *runas=None*, *gem_bin=None*)

Uninstall one or several gems.

**Parameters**

- **gems** -- string The gems to uninstall.
- **gem_bin** -- string : None Full path to `gem` binary to use.
- **ruby** -- string : None If RVM or rbenv are installed, the ruby version and gemset to use. Ignored if `gem_bin` is specified.
- **runas** -- string : None The user to run gem as.

CLI Example:

```
salt '*' gem.uninstall vagrant
```

salt.modules.gem.**update**(*gems*, *ruby=None*, *runas=None*, *gem_bin=None*)

Update one or several gems.

**Parameters**

- **gems** -- string The gems to update.
- **gem_bin** -- string : None Full path to `gem` binary to use.

- **ruby** -- string : None If RVM or rbenv are installed, the ruby version and gemset to use. Ignored if `gem_bin` is specified.
- **runas** -- string : None The user to run gem as.

CLI Example:

```
salt '*' gem.update vagrant
```

`salt.modules.gem.`**`update_system`**(*version=''*, *ruby=None*, *runas=None*, *gem_bin=None*)

Update rubygems.

**Parameters**

- **version** -- string : (newest) The version of rubygems to install.
- **gem_bin** -- string : None Full path to `gem` binary to use.
- **ruby** -- string : None If RVM or rbenv are installed, the ruby version and gemset to use. Ignored if `gem_bin` is specified.
- **runas** -- string : None The user to run gem as.

CLI Example:

```
salt '*' gem.update_system
```

### 13.6.99 salt.modules.genesis

Module for managing container and VM images

New in version 2014.7.0.

`salt.modules.genesis.`**`avail_platforms`**()

Return which platforms are available

CLI Example:

```
salt myminion genesis.avail_platforms
```

`salt.modules.genesis.`**`bootstrap`**(*platform*, *root*, *img_format='dir'*, *fs_format='ext2'*, *fs_opts=None*, *arch=None*, *flavor=None*, *repo_url=None*, *static_qemu=None*, *img_size=None*, *mount_dir=None*, *pkg_cache=None*, *pkgs=None*, *exclude_pkgs=None*, *epel_url='http://download.fedoraproject.org/pub/epel/6/i386/epel-release-6-8.noarch.rpm'*)

Create an image for a specific platform.

Please note that this function *MUST* be run as root, as images that are created make files belonging to root.

**platform** Which platform to use to create the image. Currently supported platforms are rpm, deb and pacman.

**root** Local path to create the root of the image filesystem.

**img_format** Which format to create the image in. By default, just copies files into a directory on the local filesystem (`dir`). Future support will exist for `sparse`.

**fs_format** When using a non-`dir` `img_format`, which filesystem to format the image to. By default, `ext2`.

**fs_opts** When using a non-`dir` `img_format`, a dict of opts may be specified.

**arch** Architecture to install packages for, if supported by the underlying bootstrap tool. Currently only used for deb.

**flavor** Which flavor of operating system to install. This correlates to a specific directory on the distribution repositories. For instance, `wheezy` on Debian.

**repo_url** Mainly important for Debian-based repos. Base URL for the mirror to install from. (e.x.: http://ftp.debian.org/debian/)

**static_qemu** Local path to the static qemu binary required for this arch. (e.x.: /usr/bin/qemu-amd64-static)

**pkg_confs** The location of the conf files to copy into the image, to point the installer to the right repos and configuration.

**img_size** If img_format is not `dir`, then the size of the image must be specified.

**mount_dir** If img_format is not `dir`, then the image must be mounted somewhere. If the `mount_dir` is not specified, then it will be created at `/opt/salt-genesis.<random_uuid>`. This directory will be unmounted and removed when the process is finished.

**pkg_cache** This points to a directory containing a cache of package files to be copied to the image. It does not need to be specified.

**pkgs** A list of packages to be installed on this image. For RedHat, this will include `yum`, `centos-release` and `iputils` by default.

**exclude_pkgs** A list of packages to be excluded. If you do not want to install the defaults, you need to include them in this list.

**epel_url** The URL to download the EPEL release package from.

CLI Examples:

```
salt myminion genesis.bootstrap pacman /root/arch
salt myminion genesis.bootstrap rpm /root/redhat
salt myminion genesis.bootstrap deb /root/wheezy arch=amd64
 ↪flavor=wheezy static_qemu=/usr/bin/qemu-x86_64-static
```

`salt.modules.genesis.`**`ldd_deps`**(*filename*, *ret=None*)

Recurse through a set of dependencies reported by `ldd`, to find associated dependencies.

Please note that this does not necessarily resolve all (non-package) dependencies for a file; but it does help.

CLI Example:

salt myminion genesis.ldd_deps bash salt myminion genesis.ldd_deps /bin/bash

`salt.modules.genesis.`**`mksls`**(*fmt*, *src*, *dst=None*)

Convert an installation file/script to an SLS file. Currently supports `kickstart`, `preseed`, and `autoyast`.

CLI Examples:

salt <minion> genesis.mksls kickstart /path/to/kickstart.cfg salt <minion> genesis.mksls kickstart /path/to/kickstart.cfg /path/to/dest.sls

New in version Beryllium.

`salt.modules.genesis.`**`pack`**(*name*, *root*, *path=None*, *pack_format='tar'*, *compress='bzip2'*)

Pack up a directory structure, into a specific format

CLI Examples:

```
salt myminion genesis.pack centos /root/centos
salt myminion genesis.pack centos /root/centos pack_format='tar'
```

`salt.modules.genesis.`**`unpack`**(*name*, *dest=None*, *path=None*, *pack_format='tar'*, *compress='bz2'*)

Unpack an image into a directory structure

CLI Example:

```
salt myminion genesis.unpack centos /root/centos
```

### 13.6.100 salt.modules.gentoo_service

Top level package command wrapper, used to translate the os detected by grains to the correct service manager

**Important**: If you feel that Salt should be using this module to manage services on a minion, and it is using a different module (or gives an error similar to *`service.start' is not available*), see *here*.

salt.modules.gentoo_service.**available**(*name*)
Returns `True` if the specified service is available, otherwise returns `False`.

CLI Example:

```
salt '*' service.available sshd
```

salt.modules.gentoo_service.**disable**(*name*, ***kwargs*)
Disable the named service to start at boot

CLI Example:

```
salt '*' service.disable <service name>
```

salt.modules.gentoo_service.**disabled**(*name*)
Return True if the named service is enabled, false otherwise

CLI Example:

```
salt '*' service.disabled <service name>
```

salt.modules.gentoo_service.**enable**(*name*, ***kwargs*)
Enable the named service to start at boot

CLI Example:

```
salt '*' service.enable <service name>
```

salt.modules.gentoo_service.**enabled**(*name*, ***kwargs*)
Return True if the named service is enabled, false otherwise

CLI Example:

```
salt '*' service.enabled <service name>
```

salt.modules.gentoo_service.**get_all**()
Return all available boot services

CLI Example:

```
salt '*' service.get_all
```

salt.modules.gentoo_service.**get_disabled**()
Return a set of services that are installed but disabled

CLI Example:

```
salt '*' service.get_disabled
```

salt.modules.gentoo_service.**get_enabled**()
Return a list of service that are enabled on boot

CLI Example:

```
salt '*' service.get_enabled
```

salt.modules.gentoo_service.**missing**(*name*)

The inverse of service.available. Returns `True` if the specified service is not available, otherwise returns `False`.

CLI Example:

```
salt '*' service.missing sshd
```

salt.modules.gentoo_service.**restart**(*name*)

Restart the named service

CLI Example:

```
salt '*' service.restart <service name>
```

salt.modules.gentoo_service.**start**(*name*)

Start the specified service

CLI Example:

```
salt '*' service.start <service name>
```

salt.modules.gentoo_service.**status**(*name*, *sig=None*)

Return the status for a service, returns the PID or an empty string if the service is running or not, pass a signature to use to find the service via ps

CLI Example:

```
salt '*' service.status <service name> [service signature]
```

salt.modules.gentoo_service.**stop**(*name*)

Stop the specified service

CLI Example:

```
salt '*' service.stop <service name>
```

### 13.6.101 salt.modules.gentoolkitmod

Support for Gentoolkit

salt.modules.gentoolkitmod.**eclean_dist**(*destructive=False*, *package_names=False*, *size_limit=0*, *time_limit=0*, *fetch_restricted=False*, *exclude_file='/etc/eclean/distfiles.exclude'*)

Clean obsolete portage sources

**destructive** Only keep minimum for reinstallation

**package_names** Protect all versions of installed packages. Only meaningful if used with destructive=True

**size_limit <size>** Don't delete distfiles bigger than <size>. <size> is a size specification: ``10M'' is ``ten megabytes'', ``200K'' is ``two hundreds kilobytes'', etc. Units are: G, M, K and B.

**time_limit <time>** Don't delete distfiles files modified since <time> <time> is an amount of time: ``1y'' is ``one year'', ``2w'' is ``two weeks'', etc. Units are: y (years), m (months), w (weeks), d (days) and h (hours).

**fetch_restricted** Protect fetch-restricted files. Only meaningful if used with destructive=True

**exclude_file** Path to exclusion file. Default is /etc/eclean/distfiles.exclude This is the same default eclean-dist uses. Use None if this file exists and you want to ignore.

Returns a dict containing the cleaned, saved, and deprecated dists:

```
{'cleaned': {<dist file>: <size>},
 'deprecated': {<package>: <dist file>},
 'saved': {<package>: <dist file>},
 'total_cleaned': <size>}
```

CLI Example:

```
salt '*' gentoolkit.eclean_dist destructive=True
```

salt.modules.gentoolkitmod.**eclean_pkg**(*destructive=False, package_names=False, time_limit=0, exclude_file='/etc/eclean/packages.exclude'*)

Clean obsolete binary packages

**destructive** Only keep minimum for reinstallation

**package_names** Protect all versions of installed packages. Only meaningful if used with destructive=True

**time_limit <time>** Don't delete distfiles files modified since <time> <time> is an amount of time: ``1y'' is ``one year'', ``2w'' is ``two weeks'', etc. Units are: y (years), m (months), w (weeks), d (days) and h (hours).

**exclude_file** Path to exclusion file. Default is /etc/eclean/packages.exclude This is the same default eclean-pkg uses. Use None if this file exists and you want to ignore.

Returns a dict containing the cleaned binary packages:

```
{'cleaned': {<dist file>: <size>},
 'total_cleaned': <size>}
```

CLI Example:

```
salt '*' gentoolkit.eclean_pkg destructive=True
```

salt.modules.gentoolkitmod.**glsa_check_list**(*glsa_list*)

List the status of Gentoo Linux Security Advisories

**glsa_list** can contain an arbitrary number of GLSA ids, filenames containing GLSAs or the special identifiers `all' and `affected'

Returns a dict containing glsa ids with a description, status, and CVEs:

```
{<glsa_id>: {'description': <glsa_description>,
 'status': <glsa status>,
 'CVEs': [<list of CVEs>]}}
```

CLI Example:

```
salt '*' gentoolkit.glsa_check_list 'affected'
```

salt.modules.gentoolkitmod.**revdep_rebuild**(*lib=None*)

Fix up broken reverse dependencies

**lib** Search for reverse dependencies for a particular library rather than every library on the system. It can be a full path to a library or basic regular expression.

CLI Example:

```
salt '*' gentoolkit.revdep_rebuild
```

### 13.6.102 salt.modules.git

Support for the Git SCM

salt.modules.git.**add**(*cwd*, *filename*, *opts=''*, *user=None*, *password=None*, *ignore_retcode=False*)

Changed in version 2015.8.0: The `--verbose` command line argument is now implied

Interface to git-add(1)

**cwd** The path to the git checkout

**filename** The location of the file/directory to add, relative to `cwd`

**opts** Any additional options to add to the command line, in a single string

> **Note:** On the Salt CLI, if the opts are preceded with a dash, it is necessary to precede them with `opts=` (as in the CLI examples below) to avoid causing errors with Salt's own argument parsing.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

> Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Examples:

```
salt myminion git.add /path/to/repo foo/bar.py
salt myminion git.add /path/to/repo foo/bar.py opts='--dry-run'
```

salt.modules.git.**archive**(*cwd*, *output*, *rev='HEAD'*, *fmt=None*, *prefix=None*, *user=None*, *password=None*, *ignore_retcode=False*, ***kwargs*)

Changed in version 2015.8.0: Returns `True` if successful, raises an error if not.

Interface to git-archive(1), exports a tarball/zip file of the repository

**cwd** The path to be archived

> **Note:** `git archive` permits a partial archive to be created. Thus, this path does not need to be the root of the git repository. Only the files within the directory specified by `cwd` (and its subdirectories) will be in the resulting archive. For example, if there is a git checkout at `/tmp/foo`, then passing `/tmp/foo/bar` as the `cwd` will result in just the files underneath `/tmp/foo/bar` to be exported as an archive.

**output** The path of the archive to be created

**overwrite** [False] Unless set to `True`, Salt will over overwrite an existing archive at the path specified by the `output` argument.

New in version 2015.8.0.

**rev** [HEAD] The revision from which to create the archive

**format** Manually specify the file format of the resulting archive. This argument can be omitted, and `git archive` will attempt to guess the archive type (and compression) from the filename. `zip`, `tar`, `tar.gz`, and `tgz` are extensions that are recognized automatically, and git can be configured to support other archive types with the addition of git configuration keys.

See the git-archive(1) manpage explanation of the `--format` argument (as well as the `CONFIGURATION` section of the manpage) for further information.

New in version 2015.8.0.

**fmt** Replaced by `format` in version 2015.8.0

Deprecated since version 2015.8.0.

**prefix** Prepend `<prefix>` to every filename in the archive. If unspecified, the name of the directory at the top level of the repository will be used as the prefix (e.g. if `cwd` is set to `/foo/bar/baz`, the prefix will be `baz`, and the resulting archive will contain a top-level directory by that name).

---

**Note:** The default behavior if the `--prefix` option for `git archive` is not specified is to not prepend a prefix, so Salt's behavior differs slightly from `git archive` in this respect. Use `prefix=''` to create an archive with no prefix.

---

Changed in version 2015.8.0: The behavior of this argument has been changed slightly. As of this version, it is necessary to include the trailing slash when specifying a prefix, if the prefix is intended to create a top-level directory.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Example:

```
salt myminion git.archive /path/to/repo /path/to/archive.tar
```

`salt.modules.git.`**`branch`**(*cwd*, *name=None*, *opts=''*, *user=None*, *password=None*, *ignore_retcode=False*)

Interface to git-branch(1)

**cwd** The path to the git checkout

**name** Name of the branch on which to operate. If not specified, the current branch will be assumed.

**opts** Any additional options to add to the command line, in a single string

---

**Note:** To create a branch based on something other than HEAD, pass the name of the revision as `opts`. If the revision is in the format `remotename/branch`, then this will also set the remote tracking branch.

Additionally, on the Salt CLI, if the opts are preceded with a dash, it is necessary to precede them with `opts=` (as in the CLI examples below) to avoid causing errors with Salt's own argument parsing.

---

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Examples:

```
# Set remote tracking branch
salt myminion git.branch /path/to/repo mybranch opts='--set-upstream-to origin/
↪mybranch'
# Create new branch
salt myminion git.branch /path/to/repo mybranch upstream/somebranch
# Delete branch
salt myminion git.branch /path/to/repo mybranch opts='-d'
# Rename branch (2015.8.0 and later)
salt myminion git.branch /path/to/repo newbranch opts='-m oldbranch'
```

salt.modules.git.**checkout**(*cwd*, *rev=None*, *force=False*, *opts=''*, *user=None*, *password=None*, *ignore_retcode=False*)

Interface to git-checkout(1)

**cwd** The path to the git checkout

**opts** Any additional options to add to the command line, in a single string

> **Note:** On the Salt CLI, if the opts are preceded with a dash, it is necessary to precede them with `opts=` (as in the CLI examples below) to avoid causing errors with Salt's own argument parsing.

**rev** The remote branch or revision to checkout.

Changed in version 2015.8.0: Optional when using `-b` or `-B` in `opts`.

**force** [False] Force a checkout even if there might be overwritten changes

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Examples:

```
# Checking out local local revisions
salt myminion git.checkout /path/to/repo somebranch user=jeff
salt myminion git.checkout /path/to/repo opts='testbranch -- conf/file1 file2'
salt myminion git.checkout /path/to/repo rev=origin/mybranch opts='--track'
# Checking out remote revision into new branch
salt myminion git.checkout /path/to/repo upstream/master opts='-b newbranch'
# Checking out current revision into new branch (2015.8.0 and later)
salt myminion git.checkout /path/to/repo opts='-b newbranch'
```

salt.modules.git.**clone**(*cwd*, *url=None*, *name=None*, *opts=''*, *user=None*, *password=None*, *identity=None*, *https_user=None*, *https_pass=None*, *ignore_retcode=False*, *repository=None*, *saltenv='base'*)

Interface to git-clone(1)

**cwd** Location of git clone

Changed in version 2015.8.0: If `name` is passed, then the clone will be made *within* this directory.

**url** The URL of the repository to be cloned

Changed in version 2015.8.0: Argument renamed from `repository` to `url`

**name** Optional alternate name for the top-level directory to be created by the clone

New in version 2015.8.0.

**opts** Any additional options to add to the command line, in a single string

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**identity** Path to a private key to use for ssh URLs

> **Warning:** Unless Salt is invoked from the minion using `salt-call`, the key(s) must be passphraseless. For greater security with passphraseless private keys, see the sshd(8) manpage for information on securing the keypair from the remote side in the `authorized_keys` file.

Changed in version 2015.8.7: Salt will no longer attempt to use passphrase-protected keys unless invoked from the minion using `salt-call`, to prevent blocking waiting for user input.

Key can also be specified as a SaltStack file server URL, eg. salt://location/identity_file

Changed in version 2016.3.0.

**https_user** Set HTTP Basic Auth username. Only accepted for HTTPS URLs.

New in version 20515.5.0.

**https_pass** Set HTTP Basic Auth password. Only accepted for HTTPS URLs.

New in version 2015.5.0.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

**saltenv** The default salt environment to pull sls files from

New in version 2016.3.1.

CLI Example:

```
salt myminion git.clone /path/to/repo_parent_dir git://github.com/saltstack/salt.
↪git
```

`salt.modules.git.`**`commit`**(*cwd*, *message*, *opts=''*, *user=None*, *password=None*, *filename=None*, *ignore_retcode=False*)

Interface to git-commit(1)

**cwd** The path to the git checkout

**message** Commit message

**opts** Any additional options to add to the command line, in a single string

> **Note:** On the Salt CLI, if the opts are preceded with a dash, it is necessary to precede them with `opts=` (as in the CLI examples below) to avoid causing errors with Salt's own argument parsing.
>
> The `-m` option should not be passed here, as the commit message will be defined by the `message` argument.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**filename** The location of the file/directory to commit, relative to `cwd`. This argument is optional, and can be used to commit a file without first staging it.

---

**Note:** This argument only works on files which are already tracked by the git repository.

---

New in version 2015.8.0.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Examples:

```
salt myminion git.commit /path/to/repo 'The commit message'
salt myminion git.commit /path/to/repo 'The commit message' filename=foo/bar.py
```

`salt.modules.git.`**`config_get`**(*key*, *cwd=None*, *user=None*, *password=None*, *ignore_retcode=False*, ***kwargs*)

Get the value of a key in the git configuration file

**key** The name of the configuration key to get

Changed in version 2015.8.0: Argument renamed from `setting_name` to `key`

**cwd** The path to the git checkout

Changed in version 2015.8.0: Now optional if `global` is set to `True`

**global** [False] If `True`, query the global git configuration. Otherwise, only the local git configuration will be queried.

New in version 2015.8.0.

**all** [False] If `True`, return a list of all values set for `key`. If the key does not exist, `None` will be returned.

New in version 2015.8.0.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Examples:

```
salt myminion git.config_get user.name cwd=/path/to/repo
salt myminion git.config_get user.email global=True
salt myminion git.config_get core.gitproxy cwd=/path/to/repo all=True
```

`salt.modules.git.`**`config_get_regexp`**(*key*, *value_regex=None*, *cwd=None*, *user=None*, *password=None*, *ignore_retcode=False*, ***kwargs*)

New in version 2015.8.0.

Get the value of a key or keys in the git configuration file using regexes for more flexible matching. The return data is a dictionary mapping keys to lists of values matching the `value_regex`. If no values match, an empty

dictionary will be returned.

**key** Regex on which key names will be matched

**value_regex** If specified, return all values matching this regex. The return data will be a dictionary mapping keys to lists of values matching the regex.

---

**Important:** Only values matching the `value_regex` will be part of the return data. So, if `key` matches a multivar, then it is possible that not all of the values will be returned. To get all values set for a multivar, simply omit the `value_regex` argument.

---

**cwd** The path to the git checkout

**global** [False] If `True`, query the global git configuration. Otherwise, only the local git configuration will be queried.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

CLI Examples:

```
# Matches any values for key 'foo.bar'
salt myminion git.config_get_regexp /path/to/repo foo.bar
# Matches any value starting with 'baz' set for key 'foo.bar'
salt myminion git.config_get_regexp /path/to/repo foo.bar 'baz.*'
# Matches any key starting with 'user.'
salt myminion git.config_get_regexp '^user\.' global=True
```

`salt.modules.git.`**`config_set`**(*key*, *value=None*, *multivar=None*, *cwd=None*, *user=None*, *password=None*, *ignore_retcode=False*, ***kwargs*)

Changed in version 2015.8.0: Return the value(s) of the key being set

Set a key in the git configuration file

**cwd** The path to the git checkout. Must be an absolute path, or the word `global` to indicate that a global key should be set.

Changed in version 2014.7.0: Made `cwd` argument optional if `is_global=True`

**key** The name of the configuration key to set

Changed in version 2015.8.0: Argument renamed from `setting_name` to `key`

**value** The value to set for the specified key. Incompatible with the `multivar` argument.

Changed in version 2015.8.0: Argument renamed from `setting_value` to `value`

**add** [False] Add a value to a key, creating/updating a multivar

New in version 2015.8.0.

**multivar** Set a multivar all at once. Values can be comma-separated or passed as a Python list. Incompatible with the `value` argument.

New in version 2015.8.0.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

**global** [False] If `True`, set a global variable

**is_global** [False] If `True`, set a global variable

Deprecated since version 2015.8.0: Use `global` instead

CLI Example:

```
salt myminion git.config_set user.email me@example.com cwd=/path/to/repo
salt myminion git.config_set user.email foo@bar.com global=True
```

`salt.modules.git.`**`config_unset`**(*key*, *value_regex=None*, *cwd=None*, *user=None*, *password=None*, *ignore_retcode=False*, ***kwargs*)

New in version 2015.8.0.

Unset a key in the git configuration file

**cwd** The path to the git checkout. Must be an absolute path, or the word `global` to indicate that a global key should be unset.

**key** The name of the configuration key to unset

**value_regex** Regular expression that matches exactly one key, used to delete a single value from a multivar. Ignored if `all` is set to `True`.

**all** [False] If `True` unset all values for a multivar. If `False`, and `key` is a multivar, an error will be raised.

**global** [False] If `True`, unset set a global variable. Otherwise, a local variable will be unset.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

CLI Example:

```
salt myminion git.config_unset /path/to/repo foo.bar
salt myminion git.config_unset /path/to/repo foo.bar all=True
```

`salt.modules.git.`**`current_branch`**(*cwd*, *user=None*, *password=None*, *ignore_retcode=False*)

Returns the current branch name of a local checkout. If HEAD is detached, return the SHA1 of the revision which is currently checked out.

**cwd** The path to the git checkout

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Example:

```
salt myminion git.current_branch /path/to/repo
```

salt.modules.git.**describe**(*cwd*, *rev='HEAD'*, *user=None*, *password=None*, *ignore_retcode=False*)

Returns the git-describe(1) string (or the SHA1 hash if there are no tags) for the given revision.

**cwd** The path to the git checkout

**rev** [HEAD] The revision to describe

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Examples:

```
salt myminion git.describe /path/to/repo
salt myminion git.describe /path/to/repo develop
```

salt.modules.git.**diff**(*cwd*, *item1=None*, *item2=None*, *opts=''*, *user=None*, *password=None*, *no_index=False*, *cached=False*, *paths=None*)

New in version 2015.8.12,2016.3.3,2016.11.0.

Interface to git-diff(1)

**cwd** The path to the git checkout

**item1 and item2** Revision(s) to pass to the `git diff` command. One or both of these arguments may be ignored if some of the options below are set to `True`. When `cached` is `False`, and no revisions are passed to this function, then the current working tree will be compared against the index (i.e. unstaged changes). When two revisions are passed, they will be compared to each other.

**opts** Any additional options to add to the command line, in a single string

---

**Note:** On the Salt CLI, if the opts are preceded with a dash, it is necessary to precede them with `opts=` (as in the CLI examples below) to avoid causing errors with Salt's own argument parsing.

---

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**no_index** [False] When it is necessary to diff two files in the same repo against each other, and not diff two different revisions, set this option to `True`. If this is left `False` in these instances, then a normal `git diff` will be performed against the index (i.e. unstaged changes), and files in the `paths` option will be used to narrow down the diff output.

---

**Note:** Requires Git 1.5.1 or newer. Additionally, when set to `True`, `item1` and `item2` will be ignored.

---

**cached** [False] If `True`, compare staged changes to `item1` (if specified), otherwise compare them to the most recent commit.

**Note:** `item2` is ignored if this option is is set to `True`.

**paths** File paths to pass to the `git diff` command. Can be passed as a comma-separated list or a Python list.

CLI Example:

```
# Perform diff against the index (staging area for next commit)
salt myminion git.diff /path/to/repo
# Compare staged changes to the most recent commit
salt myminion git.diff /path/to/repo cached=True
# Compare staged changes to a specific revision
salt myminion git.diff /path/to/repo mybranch cached=True
# Perform diff against the most recent commit (includes staged changes)
salt myminion git.diff /path/to/repo HEAD
# Diff two commits
salt myminion git.diff /path/to/repo abcdef1 aabbccd
# Diff two commits, only showing differences in the specified paths
salt myminion git.diff /path/to/repo abcdef1 aabbccd paths=path/to/file1,path/to/
↪file2
# Diff two files with one being outside the working tree
salt myminion git.diff /path/to/repo no_index=True paths=path/to/file1,/absolute/
↪path/to/file2
```

`salt.modules.git.`**`fetch`**(*cwd*, *remote=None*, *force=False*, *refspecs=None*, *opts=''*, *user=None*, *password=None*, *identity=None*, *ignore_retcode=False*, *saltenv='base'*)

Changed in version 2015.8.2: Return data is now a dictionary containing information on branches and tags that were added/updated

Interface to git-fetch(1)

**cwd** The path to the git checkout

**remote** Optional remote name to fetch. If not passed, then git will use its default behavior (as detailed in git-fetch(1)).

New in version 2015.8.0.

**force** Force the fetch even when it is not a fast-forward.

New in version 2015.8.0.

**refspecs** Override the refspec(s) configured for the remote with this argument. Multiple refspecs can be passed, comma-separated.

New in version 2015.8.0.

**opts** Any additional options to add to the command line, in a single string

**Note:** On the Salt CLI, if the opts are preceded with a dash, it is necessary to precede them with `opts=` (as in the CLI examples below) to avoid causing errors with Salt's own argument parsing.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**identity** Path to a private key to use for ssh URLs

> **Warning:** Unless Salt is invoked from the minion using `salt-call`, the key(s) must be passphraseless. For greater security with passphraseless private keys, see the sshd(8) manpage for information on securing the keypair from the remote side in the `authorized_keys` file.

Changed in version 2015.8.7: Salt will no longer attempt to use passphrase-protected keys unless invoked from the minion using `salt-call`, to prevent blocking waiting for user input.

Key can also be specified as a SaltStack file server URL, eg. salt://location/identity_file

Changed in version 2016.3.0.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

**saltenv** The default salt environment to pull sls files from

New in version 2016.3.1.

CLI Example:

```
salt myminion git.fetch /path/to/repo upstream
salt myminion git.fetch /path/to/repo identity=/root/.ssh/id_rsa
```

`salt.modules.git.`**`init`**(*cwd*, *bare=False*, *template=None*, *separate_git_dir=None*, *shared=None*, *opts=''*, *user=None*, *password=None*, *ignore_retcode=False*)

Interface to git-init(1)

**cwd** The path to the directory to be initialized

**bare** [False] If `True`, init a bare repository

New in version 2015.8.0.

**template** Set this argument to specify an alternate template directory

New in version 2015.8.0.

**separate_git_dir** Set this argument to specify an alternate `$GIT_DIR`

New in version 2015.8.0.

**shared** Set sharing permissions on git repo. See git-init(1) for more details.

New in version 2015.8.0.

**opts** Any additional options to add to the command line, in a single string

> **Note:** On the Salt CLI, if the opts are preceded with a dash, it is necessary to precede them with `opts=` (as in the CLI examples below) to avoid causing errors with Salt's own argument parsing.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Examples:

```
salt myminion git.init /path/to/repo
# Init a bare repo (before 2015.8.0)
salt myminion git.init /path/to/bare/repo.git opts='--bare'
# Init a bare repo (2015.8.0 and later)
salt myminion git.init /path/to/bare/repo.git bare=True
```

salt.modules.git.**is_worktree**(*cwd*, *user=None*, *password=None*)

New in version 2015.8.0.

This function will attempt to determine if `cwd` is part of a worktree by checking its `.git` to see if it is a file containing a reference to another gitdir.

**cwd** path to the worktree to be removed

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

CLI Example:

```
salt myminion git.is_worktree /path/to/repo
```

salt.modules.git.**list_branches**(*cwd*, *remote=False*, *user=None*, *password=None*, *ignore_retcode=False*)

New in version 2015.8.0.

Return a list of branches

**cwd** The path to the git checkout

**remote** [False] If `True`, list remote branches. Otherwise, local branches will be listed.

> **Warning:** This option will only return remote branches of which the local checkout is aware, use *git.fetch* to update remotes.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Examples:

```
salt myminion git.list_branches /path/to/repo
salt myminion git.list_branches /path/to/repo remote=True
```

salt.modules.git.**list_tags**(*cwd*, *user=None*, *password=None*, *ignore_retcode=False*)

New in version 2015.8.0.

Return a list of tags

**cwd** The path to the git checkout

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Examples:

```
salt myminion git.list_tags /path/to/repo
```

`salt.modules.git.`**`list_worktrees`**(*cwd*, *stale=False*, *user=None*, *password=None*, ***kwargs*)

New in version 2015.8.0.

Returns information on worktrees

Changed in version 2015.8.4: Version 2.7.0 added the `list` subcommand to git-worktree(1) which provides a lot of additional information. The return data has been changed to include this information, even for pre-2.7.0 versions of git. In addition, if a worktree has a detached head, then any tags which point to the worktree's HEAD will be included in the return data.

---

**Note**: By default, only worktrees for which the worktree directory is still present are returned, but this can be changed using the `all` and `stale` arguments (described below).

---

**cwd** The path to the git checkout

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**all** [False] If `True`, then return all worktrees tracked under $GIT_DIR/worktrees, including ones for which the gitdir is no longer present.

**stale** [False] If `True`, return *only* worktrees whose gitdir is no longer present.

---

**Note**: Only one of `all` and `stale` can be set to `True`.

---

CLI Examples:

```
salt myminion git.list_worktrees /path/to/repo
salt myminion git.list_worktrees /path/to/repo all=True
salt myminion git.list_worktrees /path/to/repo stale=True
```

`salt.modules.git.`**`ls_remote`**(*cwd=None*, *remote='origin'*, *ref=None*, *opts=''*, *user=None*, *password=None*, *identity=None*, *https_user=None*, *https_pass=None*, *ignore_retcode=False*, *saltenv='base'*)

Interface to git-ls-remote(1). Returns the upstream hash for a remote reference.

**cwd** The path to the git checkout. Optional (and ignored if present) when `remote` is set to a URL instead of a remote name.

**remote** [origin] The name of the remote to query. Can be the name of a git remote (which exists in the git checkout defined by the `cwd` parameter), or the URL of a remote repository.

Changed in version 2015.8.0: Argument renamed from `repository` to `remote`

**ref** The name of the ref to query. Optional, if not specified, all refs are returned. Can be a branch or tag name, or the full name of the reference (for example, to get the hash for a Github pull request number 1234, `ref` can be set to `refs/pull/1234/head`

Changed in version 2015.8.0: Argument renamed from `branch` to `ref`

Changed in version 2015.8.4: Defaults to returning all refs instead of master.

**opts** Any additional options to add to the command line, in a single string

New in version 2015.8.0.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**identity** Path to a private key to use for ssh URLs

> **Warning:** Unless Salt is invoked from the minion using `salt-call`, the key(s) must be passphraseless. For greater security with passphraseless private keys, see the sshd(8) manpage for information on securing the keypair from the remote side in the `authorized_keys` file.

Changed in version 2015.8.7: Salt will no longer attempt to use passphrase-protected keys unless invoked from the minion using `salt-call`, to prevent blocking waiting for user input.

Key can also be specified as a SaltStack file server URL, eg. salt://location/identity_file

Changed in version 2016.3.0.

**https_user** Set HTTP Basic Auth username. Only accepted for HTTPS URLs.

New in version 2015.5.0.

**https_pass** Set HTTP Basic Auth password. Only accepted for HTTPS URLs.

New in version 2015.5.0.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

**saltenv** The default salt environment to pull sls files from

New in version 2016.3.1.

CLI Example:

```
salt myminion git.ls_remote /path/to/repo origin master
salt myminion git.ls_remote remote=https://mydomain.tld/repo.git ref=mytag opts='-
↪-tags'
```

`salt.modules.git.`**`merge`**(*cwd*, *rev=None*, *opts=''*, *user=None*, *password=None*, *ignore_retcode=False*, ***kwargs*)

Interface to git-merge(1)

**cwd** The path to the git checkout

**rev** Revision to merge into the current branch. If not specified, the remote tracking branch will be merged.

New in version 2015.8.0.

**branch** The remote branch or revision to merge into the current branch Revision to merge into the current branch

Deprecated since version 2015.8.0: Use `rev` instead.

**opts** Any additional options to add to the command line, in a single string

---

**Note:** On the Salt CLI, if the opts are preceded with a dash, it is necessary to precede them with `opts=` (as in the CLI examples below) to avoid causing errors with Salt's own argument parsing.

---

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Example:

```
# Fetch first...
salt myminion git.fetch /path/to/repo
# ... then merge the remote tracking branch
salt myminion git.merge /path/to/repo
# .. or merge another rev
salt myminion git.merge /path/to/repo rev=upstream/foo
```

`salt.modules.git.`**`merge_base`**(*cwd*, *refs=None*, *octopus=False*, *is_ancestor=False*, *independent=False*, *fork_point=None*, *opts=''*, *user=None*, *password=None*, *ignore_retcode=False*, ***kwargs*)

New in version 2015.8.0.

Interface to git-merge-base(1).

**cwd** The path to the git checkout

**refs** Any refs/commits to check for a merge base. Can be passed as a comma-separated list or a Python list.

**all** [False] Return a list of all matching merge bases. Not compatible with any of the below options except for `octopus`.

**octopus** [False] If `True`, then this function will determine the best common ancestors of all specified commits, in preparation for an n-way merge. See here for a description of how these bases are determined.

Set `all` to `True` with this option to return all computed merge bases, otherwise only the ``best'' will be returned.

**is_ancestor** [False] If `True`, then instead of returning the merge base, return a boolean telling whether or not the first commit is an ancestor of the second commit.

---

**Note:** This option requires two commits to be passed.

---

Changed in version 2015.8.2: Works properly in git versions older than 1.8.0, where the `--is-ancestor` CLI option is not present.

**independent** [False] If `True`, this function will return the IDs of the refs/commits passed which cannot be reached by another commit.

**fork_point** If passed, then this function will return the commit where the commit diverged from the ref specified by `fork_point`. If no fork point is found, `None` is returned.

**Note:** At most one commit is permitted to be passed if a `fork_point` is specified. If no commits are passed, then `HEAD` is assumed.

**opts** Any additional options to add to the command line, in a single string

**Note:** On the Salt CLI, if the opts are preceded with a dash, it is necessary to precede them with `opts=` (as in the CLI examples below) to avoid causing errors with Salt's own argument parsing.

This option should not be necessary unless new CLI arguments are added to git-merge-base(1) and are not yet supported in Salt.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] if `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

CLI Examples:

```
salt myminion git.merge_base /path/to/repo HEAD upstream/mybranch
salt myminion git.merge_base /path/to/repo 8f2e542,4ad8cab,cdc9886 octopus=True
salt myminion git.merge_base /path/to/repo refs=8f2e542,4ad8cab,cdc9886
↪independent=True
salt myminion git.merge_base /path/to/repo refs=8f2e542,4ad8cab is_ancestor=True
salt myminion git.merge_base /path/to/repo fork_point=upstream/master
salt myminion git.merge_base /path/to/repo refs=mybranch fork_point=upstream/
↪master
```

`salt.modules.git.`**`merge_tree`**(*cwd*, *ref1*, *ref2*, *base=None*, *user=None*, *password=None*, *ignore_retcode=False*)

New in version 2015.8.0.

Interface to git-merge-tree(1), shows the merge results and conflicts from a 3-way merge without touching the index.

**cwd** The path to the git checkout

**ref1** First ref/commit to compare

**ref2** Second ref/commit to compare

**base** The base tree to use for the 3-way-merge. If not provided, then *`git.merge_base`* will be invoked on `ref1` and `ref2` to determine the merge base to use.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] if `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

CLI Examples:

```
salt myminion git.merge_tree /path/to/repo HEAD upstream/dev
salt myminion git.merge_tree /path/to/repo HEAD upstream/dev base=aaf3c3d
```

salt.modules.git.**pull**(*cwd*, *opts=''*, *user=None*, *password=None*, *identity=None*, *ignore_retcode=False*, *saltenv='base'*)

Interface to git-pull(1)

**cwd** The path to the git checkout

**opts** Any additional options to add to the command line, in a single string

> **Note:** On the Salt CLI, if the opts are preceded with a dash, it is necessary to precede them with `opts=` (as in the CLI examples below) to avoid causing errors with Salt's own argument parsing.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

> Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**identity** Path to a private key to use for ssh URLs

> **Warning:** Unless Salt is invoked from the minion using `salt-call`, the key(s) must be passphraseless. For greater security with passphraseless private keys, see the sshd(8) manpage for information on securing the keypair from the remote side in the `authorized_keys` file.

Changed in version 2015.8.7: Salt will no longer attempt to use passphrase-protected keys unless invoked from the minion using `salt-call`, to prevent blocking waiting for user input.

Key can also be specified as a SaltStack file server URL, eg. salt://location/identity_file

Changed in version 2016.3.0.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

**saltenv** The default salt environment to pull sls files from

New in version 2016.3.1.

CLI Example:

```
salt myminion git.pull /path/to/repo opts='--rebase origin master'
```

salt.modules.git.**push**(*cwd*, *remote=None*, *ref=None*, *opts=''*, *user=None*, *password=None*, *identity=None*, *ignore_retcode=False*, *saltenv='base'*, ***kwargs*)

Interface to git-push(1)

**cwd** The path to the git checkout

**remote** Name of the remote to which the ref should being pushed

New in version 2015.8.0.

**ref** [master] Name of the ref to push

> **Note:** Being a refspec, this argument can include a colon to define local and remote ref names.

**branch** Name of the ref to push

Deprecated since version 2015.8.0: Use `ref` instead

**opts** Any additional options to add to the command line, in a single string

> **Note:** On the Salt CLI, if the opts are preceded with a dash, it is necessary to precede them with `opts=` (as in the CLI examples below) to avoid causing errors with Salt's own argument parsing.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**identity** Path to a private key to use for ssh URLs

> **Warning:** Unless Salt is invoked from the minion using `salt-call`, the key(s) must be passphraseless. For greater security with passphraseless private keys, see the sshd(8) manpage for information on securing the keypair from the remote side in the `authorized_keys` file.

Changed in version 2015.8.7: Salt will no longer attempt to use passphrase-protected keys unless invoked from the minion using `salt-call`, to prevent blocking waiting for user input.

Key can also be specified as a SaltStack file server URL, eg. salt://location/identity_file

Changed in version 2016.3.0.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

**saltenv** The default salt environment to pull sls files from

New in version 2016.3.1.

CLI Example:

```
# Push master as origin/master
salt myminion git.push /path/to/repo origin master
# Push issue21 as upstream/develop
salt myminion git.push /path/to/repo upstream issue21:develop
# Delete remote branch 'upstream/temp'
salt myminion git.push /path/to/repo upstream :temp
```

`salt.modules.git.`**`rebase`**(*cwd*, *rev='master'*, *opts=''*, *user=None*, *password=None*, *ignore_retcode=False*)

Interface to git-rebase(1)

**cwd** The path to the git checkout

**rev** [master] The revision to rebase onto the current branch

**opts** Any additional options to add to the command line, in a single string

> **Note:** On the Salt CLI, if the opts are preceded with a dash, it is necessary to precede them with `opts=` (as in the CLI examples below) to avoid causing errors with Salt's own argument parsing.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Example:

```
salt myminion git.rebase /path/to/repo master
salt myminion git.rebase /path/to/repo 'origin master'
salt myminion git.rebase /path/to/repo origin/master opts='--onto newbranch'
```

`salt.modules.git.`**`remote_get`**(*cwd*, *remote='origin'*, *user=None*, *password=None*, *redact_auth=True*, *ignore_retcode=False*)

Get the fetch and push URL for a specific remote

**cwd** The path to the git checkout

**remote** [origin] Name of the remote to query

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**redact_auth** [True] Set to `False` to include the username/password if the remote uses HTTPS Basic Auth. Otherwise, this information will be redacted.

> **Warning:** Setting this to `False` will not only reveal any HTTPS Basic Auth that is configured, but the return data will also be written to the job cache. When possible, it is recommended to use SSH for authentication.

New in version 2015.5.6.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Examples:

```
salt myminion git.remote_get /path/to/repo
salt myminion git.remote_get /path/to/repo upstream
```

`salt.modules.git.`**`remote_refs`**(*url*, *heads=False*, *tags=False*, *user=None*, *password=None*, *identity=None*, *https_user=None*, *https_pass=None*, *ignore_retcode=False*, *saltenv='base'*)

New in version 2015.8.0.

Return the remote refs for the specified URL

**url** URL of the remote repository

**heads** [False] Restrict output to heads. Can be combined with `tags`.

**tags** [False] Restrict output to tags. Can be combined with `heads`.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**identity** Path to a private key to use for ssh URLs

> **Warning:** Unless Salt is invoked from the minion using `salt-call`, the key(s) must be passphraseless. For greater security with passphraseless private keys, see the sshd(8) manpage for information on securing the keypair from the remote side in the `authorized_keys` file.

Changed in version 2015.8.7: Salt will no longer attempt to use passphrase-protected keys unless invoked from the minion using `salt-call`, to prevent blocking waiting for user input.

Key can also be specified as a SaltStack file server URL, eg. salt://location/identity_file

Changed in version 2016.3.0.

**https_user** Set HTTP Basic Auth username. Only accepted for HTTPS URLs.

**https_pass** Set HTTP Basic Auth password. Only accepted for HTTPS URLs.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

**saltenv** The default salt environment to pull sls files from

New in version 2016.3.1.

CLI Example:

```
salt myminion git.remote_refs https://github.com/saltstack/salt.git
```

salt.modules.git.**remote_set**(*cwd*, *url*, *remote='origin'*, *user=None*, *password=None*, *https_user=None*, *https_pass=None*, *push_url=None*, *push_https_user=None*, *push_https_pass=None*, *ignore_retcode=False*)

**cwd** The path to the git checkout

**url** Remote URL to set

**remote** [origin] Name of the remote to set

**push_url** If unset, the push URL will be identical to the fetch URL.

New in version 2015.8.0.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**https_user** Set HTTP Basic Auth username. Only accepted for HTTPS URLs.

New in version 2015.5.0.

**https_pass** Set HTTP Basic Auth password. Only accepted for HTTPS URLs.

New in version 2015.5.0.

**push_https_user** Set HTTP Basic Auth user for `push_url`. Ignored if `push_url` is unset. Only accepted for HTTPS URLs.

New in version 2015.8.0.

**push_https_pass** Set HTTP Basic Auth password for `push_url`. Ignored if `push_url` is unset. Only accepted for HTTPS URLs.

New in version 2015.8.0.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Examples:

```
salt myminion git.remote_set /path/to/repo git@github.com:user/repo.git
salt myminion git.remote_set /path/to/repo git@github.com:user/repo.git
 ↪remote=upstream
salt myminion git.remote_set /path/to/repo https://github.com/user/repo.git
 ↪remote=upstream push_url=git@github.com:user/repo.git
```

`salt.modules.git.`**`remotes`**(*cwd*, *user=None*, *password=None*, *redact_auth=True*, *ignore_retcode=False*)

Get fetch and push URLs for each remote in a git checkout

**cwd** The path to the git checkout

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**redact_auth** [True] Set to `False` to include the username/password for authenticated remotes in the return data. Otherwise, this information will be redacted.

> **Warning:** Setting this to `False` will not only reveal any HTTPS Basic Auth that is configured, but the return data will also be written to the job cache. When possible, it is recommended to use SSH for authentication.

New in version 2015.5.6.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Example:

```
salt myminion git.remotes /path/to/repo
```

`salt.modules.git.`**`reset`**(*cwd*, *opts=''*, *user=None*, *password=None*, *ignore_retcode=False*)

Interface to git-reset(1), returns the stdout from the git command

**cwd** The path to the git checkout

**opts** Any additional options to add to the command line, in a single string

> **Note:** On the Salt CLI, if the opts are preceded with a dash, it is necessary to precede them with `opts=` (as in the CLI examples below) to avoid causing errors with Salt's own argument parsing.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Examples:

```
# Soft reset to a specific commit ID
salt myminion git.reset /path/to/repo ac3ee5c
# Hard reset
salt myminion git.reset /path/to/repo opts='--hard origin/master'
```

`salt.modules.git.`**`rev_parse`**(*cwd*, *rev=None*, *opts=''*, *user=None*, *password=None*, *ignore_retcode=False*)

New in version 2015.8.0.

Interface to git-rev-parse(1)

**cwd** The path to the git checkout

**rev** Revision to parse. See the SPECIFYING REVISIONS section of the git-rev-parse(1) manpage for details on how to format this argument.

This argument is optional when using the options in the *Options for Files* section of the git-rev-parse(1) manpage.

**opts** Any additional options to add to the command line, in a single string

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

CLI Examples:

```
# Get the full SHA1 for HEAD
salt myminion git.rev_parse /path/to/repo HEAD
# Get the short SHA1 for HEAD
salt myminion git.rev_parse /path/to/repo HEAD opts='--short'
# Get the develop branch's upstream tracking branch
salt myminion git.rev_parse /path/to/repo 'develop@{upstream}' opts='--abbrev-ref'
# Get the SHA1 for the commit corresponding to tag v1.2.3
salt myminion git.rev_parse /path/to/repo 'v1.2.3^{commit}'
# Find out whether or not the repo at /path/to/repo is a bare repository
salt myminion git.rev_parse /path/to/repo opts='--is-bare-repository'
```

`salt.modules.git.`**`revision`**(*cwd*, *rev='HEAD'*, *short=False*, *user=None*, *password=None*, *ignore_retcode=False*)

Returns the SHA1 hash of a given identifier (hash, branch, tag, HEAD, etc.)

**cwd** The path to the git checkout

**rev** [HEAD] The revision

**short** [False] If `True`, return an abbreviated SHA1 git hash

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Example:

```
salt myminion git.revision /path/to/repo mybranch
```

`salt.modules.git.`**`rm`**(*cwd*, *filename*, *opts=''*, *user=None*, *password=None*, *ignore_retcode=False*)

Interface to git-rm(1)

**cwd** The path to the git checkout

**filename** The location of the file/directory to remove, relative to `cwd`

---

**Note:** To remove a directory, `-r` must be part of the `opts` parameter.

---

**opts** Any additional options to add to the command line, in a single string

---

**Note:** On the Salt CLI, if the opts are preceded with a dash, it is necessary to precede them with `opts=` (as in the CLI examples below) to avoid causing errors with Salt's own argument parsing.

---

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Examples:

```
salt myminion git.rm /path/to/repo foo/bar.py
salt myminion git.rm /path/to/repo foo/bar.py opts='--dry-run'
salt myminion git.rm /path/to/repo foo/baz opts='-r'
```

`salt.modules.git.`**`stash`**(*cwd*, *action='save'*, *opts=''*, *user=None*, *password=None*, *ignore_retcode=False*)

Interface to git-stash(1), returns the stdout from the git command

**cwd** The path to the git checkout

**opts** Any additional options to add to the command line, in a single string. Use this to complete the `git stash` command by adding the remaining arguments (i.e. `'save <stash comment>'`, `'apply stash@{2}'`, `'show'`, etc.). Omitting this argument will simply run `git stash`.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Examples:

```
salt myminion git.stash /path/to/repo save opts='work in progress'
salt myminion git.stash /path/to/repo apply opts='stash@{1}'
salt myminion git.stash /path/to/repo drop opts='stash@{1}'
salt myminion git.stash /path/to/repo list
```

salt.modules.git.**status**(*cwd*, *user=None*, *password=None*, *ignore_retcode=False*)

Changed in version 2015.8.0: Return data has changed from a list of lists to a dictionary

Returns the changes to the repository

**cwd** The path to the git checkout

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Example:

```
salt myminion git.status /path/to/repo
```

salt.modules.git.**submodule**(*cwd*, *command*, *opts='`*, *user=None*, *password=None*, *identity=None*, *ignore_retcode=False*, *saltenv='base'*, ***kwargs*)

Changed in version 2015.8.0: Added the `command` argument to allow for operations other than `update` to be run on submodules, and deprecated the `init` argument. To do a submodule update with `init=True` moving forward, use `command=update opts='--init'`

Interface to git-submodule(1)

**cwd** The path to the submodule

**command** Submodule command to run, see *git-submodule(1) <git submodule>* for more information. Any additional arguments after the command (such as the URL when adding a submodule) must be passed in the `opts` parameter.

New in version 2015.8.0.

**opts** Any additional options to add to the command line, in a single string

---

**Note:** On the Salt CLI, if the opts are preceded with a dash, it is necessary to precede them with `opts=` (as in the CLI examples below) to avoid causing errors with Salt's own argument parsing.

---

**init** [False] If `True`, ensures that new submodules are initialized

Deprecated since version 2015.8.0: Pass `init` as the `command` parameter, or include `--init` in the `opts` param with `command` set to update.

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**identity** Path to a private key to use for ssh URLs

> **Warning:** Unless Salt is invoked from the minion using `salt-call`, the key(s) must be passphraseless. For greater security with passphraseless private keys, see the sshd(8) manpage for information on securing the keypair from the remote side in the `authorized_keys` file.

Changed in version 2015.8.7: Salt will no longer attempt to use passphrase-protected keys unless invoked from the minion using `salt-call`, to prevent blocking waiting for user input.

Key can also be specified as a SaltStack file server URL, eg. salt://location/identity_file

Changed in version 2016.3.0.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

**saltenv** The default salt environment to pull sls files from

New in version 2016.3.1.

CLI Example:

```
# Update submodule and ensure it is initialized (before 2015.8.0)
salt myminion git.submodule /path/to/repo/sub/repo init=True
# Update submodule and ensure it is initialized (2015.8.0 and later)
salt myminion git.submodule /path/to/repo/sub/repo update opts='--init'

# Rebase submodule (2015.8.0 and later)
salt myminion git.submodule /path/to/repo/sub/repo update opts='--rebase'

# Add submodule (2015.8.0 and later)
salt myminion git.submodule /path/to/repo/sub/repo add opts='https://mydomain.tld/
↪repo.git'

# Unregister submodule (2015.8.0 and later)
salt myminion git.submodule /path/to/repo/sub/repo deinit
```

`salt.modules.git.`**`symbolic_ref`**(*cwd*, *ref*, *value=None*, *opts=''*, *user=None*, *password=None*, *ignore_retcode=False*)

New in version 2015.8.0.

Interface to git-symbolic-ref(1)

**cwd** The path to the git checkout

**ref** Symbolic ref to read/modify

**value** If passed, then the symbolic ref will be set to this value and an empty string will be returned.

If not passed, then the ref to which `ref` points will be returned, unless `--delete` is included in `opts` (in which case the symbolic ref will be deleted).

**opts** Any additional options to add to the command line, in a single string

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Examples:

```
# Get ref to which HEAD is pointing
salt myminion git.symbolic_ref /path/to/repo HEAD
# Set/overwrite symbolic ref 'FOO' to local branch 'foo'
salt myminion git.symbolic_ref /path/to/repo FOO refs/heads/foo
# Delete symbolic ref 'FOO'
salt myminion git.symbolic_ref /path/to/repo FOO opts='--delete'
```

salt.modules.git.**version**(*versioninfo=False*)

New in version 2015.8.0.

Returns the version of Git installed on the minion

**versioninfo** [False] If `True`, return the version in a versioninfo list (e.g. `[2,5,0]`)

CLI Example:

```
salt myminion git.version
```

salt.modules.git.**worktree_add**(*cwd*, *worktree_path*, *ref=None*, *reset_branch=None*, *force=None*, *detach=False*, *opts=''*, *user=None*, *password=None*, *ignore_retcode=False*, ***kwargs*)

New in version 2015.8.0.

Interface to git-worktree(1), adds a worktree

**cwd** The path to the git checkout

**worktree_path** Path to the new worktree. Can be either absolute, or relative to `cwd`.

**branch** Name of new branch to create. If omitted, will be set to the basename of the `worktree_path`. For example, if the `worktree_path` is `/foo/bar/baz`, then `branch` will be `baz`.

**ref** Name of the ref on which to base the new worktree. If omitted, then `HEAD` is use, and a new branch will be created, named for the basename of the `worktree_path`. For example, if the `worktree_path` is `/foo/bar/baz` then a new branch `baz` will be created, and pointed at `HEAD`.

**reset_branch** [False] If `False`, then git-worktree(1) will fail to create the worktree if the targeted branch already exists. Set this argument to `True` to reset the targeted branch to point at `ref`, and checkout the newly-reset branch into the new worktree.

**force** [False] By default, git-worktree(1) will not permit the same branch to be checked out in more than one worktree. Set this argument to `True` to override this.

**opts** Any additional options to add to the command line, in a single string

---

**Note:** On the Salt CLI, if the opts are preceded with a dash, it is necessary to precede them with `opts=` to avoid causing errors with Salt's own argument parsing.

All CLI options for adding worktrees as of Git 2.5.0 are already supported by this function as of Salt 2015.8.0, so using this argument is unnecessary unless new CLI arguments are added to git-worktree(1) and are not yet supported in Salt.

---

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Examples:

```
salt myminion git.worktree_add /path/to/repo/main ../hotfix ref=origin/master
salt myminion git.worktree_add /path/to/repo/main ../hotfix branch=hotfix21
 ↪ref=v2.1.9.3
```

salt.modules.git.**worktree_prune**(*cwd*, *dry_run=False*, *verbose=True*, *expire=None*, *opts=''*, *user=None*, *password=None*, *ignore_retcode=False*)

New in version 2015.8.0.

Interface to git-worktree(1), prunes stale worktree administrative data from the gitdir

**cwd** The path to the main git checkout or a linked worktree

**dry_run** [False] If `True`, then this function will report what would have been pruned, but no changes will be made.

**verbose** [True] Report all changes made. Set to `False` to suppress this output.

**expire** Only prune unused worktree data older than a specific period of time. The date format for this parameter is described in the documentation for the `gc.pruneWorktreesExpire` config param in the git-config(1) manpage.

**opts** Any additional options to add to the command line, in a single string

---

**Note:** On the Salt CLI, if the opts are preceded with a dash, it is necessary to precede them with `opts=` to avoid causing errors with Salt's own argument parsing.

All CLI options for pruning worktrees as of Git 2.5.0 are already supported by this function as of Salt 2015.8.0, so using this argument is unnecessary unless new CLI arguments are added to git-worktree(1) and are not yet supported in Salt.

---

**user** User under which to run the git command. By default, the command is run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**ignore_retcode** [False] If `True`, do not log an error to the minion log if the git command returns a nonzero exit status.

New in version 2015.8.0.

CLI Examples:

```
salt myminion git.worktree_prune /path/to/repo
salt myminion git.worktree_prune /path/to/repo dry_run=True
salt myminion git.worktree_prune /path/to/repo expire=1.day.ago
```

salt.modules.git.**worktree_rm**(*cwd*, *user=None*)

New in version 2015.8.0.

Recursively removes the worktree located at `cwd`, returning `True` if successful. This function will attempt to determine if `cwd` is actually a worktree by invoking *`git.is_worktree`*. If the path does not correspond to a worktree, then an error will be raised and no action will be taken.

**Warning:** There is no undoing this action. Be **VERY** careful before running this function.

**cwd** Path to the worktree to be removed

**user** Used for path expansion when `cwd` is not an absolute path. By default, when `cwd` is not absolute, the path will be assumed to be relative to the home directory of the user under which the minion is running. Setting this option will change the home directory from which path expansion is performed.

CLI Examples:

```
salt myminion git.worktree_rm /path/to/worktree
```

### 13.6.103 salt.modules.github module

Module for interacting with the GitHub v3 API.

New in version 2016.3.0..

**depends** PyGithub python module

#### Configuration

Configure this module by specifying the name of a configuration profile in the minion config, minion pillar, or master config. The module will use the `github' key by default, if defined.

For example:

```
github:
  token: abc1234
  org_name: my_organization
  # optional: only some functions, such as 'add_user',
  # require a dev_team_id
  dev_team_id: 1234
```

`salt.modules.github.`**`add_user`**(*name*, *profile='github'*)

Add a GitHub user.

**name** The user for which to obtain information.

**profile** The name of the profile configuration to use. Defaults to `github`.

CLI Example:

```
salt myminion github.add_user github-handle
```

`salt.modules.github.`**`get_user`**(*name*, *profile='github'*, *user_details=False*)

Get a GitHub user by name.

**name** The user for which to obtain information.

**profile** The name of the profile configuration to use. Defaults to `github`.

**user_details** Prints user information details. Defaults to `False`. If the user is already in the organization and user_details is set to False, the get_user function returns `True`. If the user is not already present in the organization, user details will be printed by default.

CLI Example:

```
salt myminion github.get_user github-handle
salt myminion github.get_user github-handle user_details=true
```

`salt.modules.github.`**`list_users`**(*profile='github'*)

List all users within the organization.

**profile** The name of the profile configuration to use. Defaults to `github`.

CLI Example:

```
salt myminion github.list_users
salt myminion github.list_users profile='my-github-profile'
```

salt.modules.github.**remove_user**(*name*, *profile='github'*)

Remove a Github user by name.

**name** The user for which to obtain information.

**profile** The name of the profile configuration to use. Defaults to `github`.

CLI Example:

```
salt myminion github.remove_user github-handle
```

### 13.6.104 salt.modules.glance

Module for handling openstack glance calls.

**optdepends**

- glanceclient Python adapter

**configuration** This module is not usable until the following are specified either in a pillar or in the minion's config file:

```
keystone.user: admin
keystone.password: verybadpass
keystone.tenant: admin
keystone.insecure: False   #(optional)
keystone.auth_url: 'http://127.0.0.1:5000/v2.0/'
```

If configuration for multiple openstack accounts is required, they can be set up as different configuration profiles: For example:

```
openstack1:
  keystone.user: admin
  keystone.password: verybadpass
  keystone.tenant: admin
  keystone.auth_url: 'http://127.0.0.1:5000/v2.0/'

openstack2:
  keystone.user: admin
  keystone.password: verybadpass
  keystone.tenant: admin
  keystone.auth_url: 'http://127.0.0.2:5000/v2.0/'
```

With this configuration in place, any of the glance functions can make use of a configuration profile by declaring it explicitly. For example:

```
salt '*' glance.image_list profile=openstack1
```

salt.modules.glance.**image_create**(*name*, *location=None*, *profile=None*, *visibility=None*, *container_format='bare'*, *disk_format='raw'*, *protected=None*, *copy_from=None*, *is_public=None*)

Create an image (glance image-create)

CLI Example, old format:

```
salt '*' glance.image_create name=f16-jeos is_public=true \
        disk_format=qcow2 container_format=ovf \
       copy_from=http://berrange.fedorapeople.org/                images/2012-
↪02-29/f16-x86_64-openstack-sda.qcow2
```

CLI Example, new format resembling Glance API v2:

```
salt '*' glance.image_create name=f16-jeos visibility=public \
        disk_format=qcow2 container_format=ovf \
       copy_from=http://berrange.fedorapeople.org/                images/2012-
↪02-29/f16-x86_64-openstack-sda.qcow2
```

The parameter `visibility' defaults to `public' if neither `visibility' nor `is_public' is specified.

salt.modules.glance.**image_delete**(*id=None*, *name=None*, *profile=None*)
Delete an image (glance image-delete)

CLI Examples:

```
salt '*' glance.image_delete c2eb2eb0-53e1-4a80-b990-8ec887eae7df
salt '*' glance.image_delete id=c2eb2eb0-53e1-4a80-b990-8ec887eae7df
salt '*' glance.image_delete name=f16-jeos
```

salt.modules.glance.**image_list**(*id=None*, *profile=None*, *name=None*)
Return a list of available images (glance image-list)

CLI Example:

```
salt '*' glance.image_list
```

salt.modules.glance.**image_schema**(*profile=None*)
Returns names and descriptions of the schema ``image```s properties for this profile's instance of glance

CLI Example:

```
salt '*' glance.image_schema
```

salt.modules.glance.**image_show**(*id=None*, *name=None*, *profile=None*)
Return details about a specific image (glance image-show)

CLI Example:

```
salt '*' glance.image_show
```

salt.modules.glance.**image_update**(*id=None*, *name=None*, *profile=None*, ***kwargs*)
Update properties of given image. Known to work for: - min_ram (in MB) - protected (bool) - visibility (`public' or `private')

CLI Example:

```
salt '*' glance.image_update id=c2eb2eb0-53e1-4a80-b990-8ec887eae7df
salt '*' glance.image_update name=f16-jeos
```

salt.modules.glance.**schema_get**(*name*, *profile=None*)
**Known valid names of schemas are**:

- image
- images

- member
- members

CLI Example:

```
salt '*' glance.schema_get name=f16-jeos
```

### 13.6.105 salt.modules.glusterfs

Manage a glusterfs pool

salt.modules.glusterfs.**add_volume_bricks**(*name*, *bricks*)

Add brick(s) to an existing volume

**name** Volume name

**bricks** List of bricks to add to the volume

salt.modules.glusterfs.**create**(*name*, *bricks*, *stripe=False*, *replica=False*, *device_vg=False*, *transport='tcp'*, *start=False*, *force=False*)

Create a glusterfs volume.

**name** Name of the gluster volume

**bricks** Bricks to create volume from, in <peer>:<brick path> format. For multiple bricks use list format: `["<peer1>:<brick1>", ``<peer2>:<brick2>"]'

**stripe** Stripe count, the number of bricks should be a multiple of the stripe count for a distributed striped volume

**replica** Replica count, the number of bricks should be a multiple of the replica count for a distributed replicated volume

**device_vg** If true, specifies volume should use block backend instead of regular posix backend. Block device backend volume does not support multiple bricks

**transport** Transport protocol to use, can be `tcp', `rdma' or `tcp,rdma'

**start** Start the volume after creation

**force** Force volume creation, this works even if creating in root FS

CLI Example:

```
salt host1 glusterfs.create newvolume host1:/brick

salt gluster1 glusterfs.create vol2 '["gluster1:/export/vol2/brick",
↪"gluster2:/export/vol2/brick"]' replica=2 start=True
```

salt.modules.glusterfs.**delete**(*target*, *stop=True*)

Deletes a gluster volume

**target** Volume to delete

**stop** Stop volume before delete if it is started, True by default

salt.modules.glusterfs.**info**(*name*)

New in version 2015.8.4.

Return the gluster volume info.

**name** Volume name

CLI Example:

```
salt '*' glusterfs.info myvolume
```

salt.modules.glusterfs.**list_peers**()

Return a list of gluster peers

CLI Example:

```
salt '*' glusterfs.list_peers
```

GLUSTER direct CLI example (to show what salt is sending to gluster):
$ gluster peer status
GLUSTER CLI 3.4.4 return example (so we know what we are parsing):
Number of Peers: 2

Hostname: ftp2 Port: 24007 Uuid: cbcb256b-e66e-4ec7-a718-21082d396c24 State: Peer in Cluster (Connected)

Hostname: ftp3 Uuid: 5ea10457-6cb2-427b-a770-7897509625e9 State: Peer in Cluster (Connected)

salt.modules.glusterfs.**list_volumes**()
List configured volumes

CLI Example:

```
salt '*' glusterfs.list_volumes
```

salt.modules.glusterfs.**peer**(*name*)
Add another node into the peer list.
**name** The remote host to probe.
CLI Example:

```
salt 'one.gluster.*' glusterfs.peer two
```

GLUSTER direct CLI example (to show what salt is sending to gluster):
$ gluster peer probe ftp2

**GLUSTER CLI 3.4.4 return example (so we know what we are parsing)**: #if the ``peer'' is the local host: peer probe: success: on localhost not needed

#if the peer was just added: peer probe: success

#if the peer was already part of the cluster: peer probe: success: host ftp2 port 24007 already in peer list

salt.modules.glusterfs.**start_volume**(*name*, *force=False*)
Start a gluster volume.
**name** Volume name
**force** Force the volume start even if the volume is started .. versionadded:: 2015.8.4
CLI Example:

```
salt '*' glusterfs.start mycluster
```

salt.modules.glusterfs.**status**(*name*)
Check the status of a gluster volume.
**name** Volume name
CLI Example:

```
salt '*' glusterfs.status myvolume
```

salt.modules.glusterfs.**stop_volume**(*name*, *force=False*)
Stop a gluster volume.
**name** Volume name
**force** Force stop the volume .. versionadded:: 2015.8.4
CLI Example:

```
salt '*' glusterfs.stop_volume mycluster
```

### 13.6.106 salt.modules.gnomedesktop

GNOME implementations

salt.modules.gnomedesktop.**get**(*schema=None*, *key=None*, *user=None*, ***kwargs*)
Get key in a particular GNOME schema

CLI Example:

```
salt '*' gnome.get user=<username> schema=org.gnome.desktop.screensaver key=idle-
↪activation-enabled
```

salt.modules.gnomedesktop.**getClockFormat**(***kwargs*)
Return the current clock format, either 12h or 24h format.

CLI Example:

```
salt '*' gnome.getClockFormat user=<username>
```

salt.modules.gnomedesktop.**getClockShowDate**(***kwargs*)
Return the current setting, if the date is shown in the clock

CLI Example:

```
salt '*' gnome.getClockShowDate user=<username>
```

salt.modules.gnomedesktop.**getIdleActivation**(***kwargs*)
Get whether the idle activation is enabled

CLI Example:

```
salt '*' gnome.getIdleActivation user=<username>
```

salt.modules.gnomedesktop.**getIdleDelay**(***kwargs*)
Return the current idle delay setting in seconds

CLI Example:

```
salt '*' gnome.getIdleDelay user=<username>
```

salt.modules.gnomedesktop.**ping**(***kwargs*)
A test to ensure the GNOME module is loaded

CLI Example:

```
salt '*' gnome.ping user=<username>
```

salt.modules.gnomedesktop.**setClockFormat**(*clockFormat*, ***kwargs*)
Set the clock format, either 12h or 24h format.

CLI Example:

```
salt '*' gnome.setClockFormat <12h|24h> user=<username>
```

salt.modules.gnomedesktop.**setClockShowDate**(*kvalue*, ***kwargs*)
Set whether the date is visible in the clock

CLI Example:

```
salt '*' gnome.setClockShowDate <True|False> user=<username>
```

salt.modules.gnomedesktop.**setIdleActivation**(*kvalue*, ***kwargs*)
Set whether the idle activation is enabled

CLI Example:

```
salt '*' gnome.setIdleActivation <True|False> user=<username>
```

salt.modules.gnomedesktop.**setIdleDelay**(*delaySeconds*, ***kwargs*)
Set the current idle delay setting in seconds

CLI Example:

```
salt '*' gnome.setIdleDelay <seconds> user=<username>
```

salt.modules.gnomedesktop.**set**(*schema=None*, *key=None*, *user=None*, *value=None*, ***kwargs*)
Set key in a particular GNOME schema

CLI Example:

```
salt '*' gnome.set user=<username> schema=org.gnome.desktop.screensaver key=idle-
↪activation-enabled value=False
```

### 13.6.107 salt.modules.gpg

Manage a GPG keychains, add keys, create keys, retrieve keys from keyservers. Sign, encrypt and sign plus encrypt text and files.

New in version 2015.5.0.

---

**Note**: The `python-gnupg` library and `gpg` binary are required to be installed.

---

salt.modules.gpg.**create_key**(**args*, ***kwargs*)
Create a key in the GPG keychain

---

**Note**: GPG key generation requires *a lot* of entropy and randomness. Difficult to do over a remote connection, consider having another process available which is generating randomness for the machine. Also especially difficult on virtual machines, consider the rng-tools package.

The create_key process takes awhile so increasing the timeout may be necessary, e.g. -t 15.

---

**key_type** The type of the primary key to generate. It must be capable of signing. `RSA' or `DSA'.
**key_length** The length of the primary key in bits.
**name_real** The real name of the user identity which is represented by the key.
**name_comment** A comment to attach to the user id.
**name_email** An email address for the user.
**subkey_type** The type of the secondary key to generate.
**subkey_length** The length of the secondary key in bits.
**expire_date** The expiration date for the primary and any secondary key. You can specify an ISO date, A number of days/weeks/months/years, an epoch value, or 0 for a non-expiring key.
**use_passphrase** Whether to use a passphrase with the signing key. Passphrase is received from Pillar.
**user** Which user's keychain to access, defaults to user Salt is running as. Passing the user as `salt` will set the GnuPG home directory to the `/etc/salt/gpgkeys`.
**gnupghome** Specify the location where GPG keyring and related files are stored.

CLI Example:

```
salt -t 15 '*' gpg.create_key
```

salt.modules.gpg.**decrypt**(*user=None*, *text=None*, *filename=None*, *output=None*, *use_passphrase=False*, *gnupghome=None*, *bare=False*)

Decrypt a message or file

**user** Which user's keychain to access, defaults to user Salt is running as. Passing the user as `salt` will set the GnuPG home directory to the `/etc/salt/gpgkeys`.

**text** The encrypted text to decrypt.

**filename** The encrypted filename to decrypt.

**output** The filename where the decrypted data will be written, default is standard out.

**use_passphrase** Whether to use a passphrase with the signing key. Passphrase is received from Pillar.

**gnupghome** Specify the location where GPG keyring and related files are stored.

**bare** If `True`, return the (armored) decrypted block as a string without the standard comment/res dict.

CLI Example:

```
salt '*' gpg.decrypt filename='/path/to/important.file.gpg'

salt '*' gpg.decrypt filename='/path/to/important.file.gpg' use_pasphrase=True
```

salt.modules.gpg.**delete_key**(*keyid=None*, *fingerprint=None*, *delete_secret=False*, *user=None*, *gnupghome=None*)

Get a key from the GPG keychain

**keyid** The keyid of the key to be deleted.

**fingerprint** The fingerprint of the key to be deleted.

**delete_secret** Whether to delete a corresponding secret key prior to deleting the public key. Secret keys must be deleted before deleting any corresponding public keys.

**user** Which user's keychain to access, defaults to user Salt is running as. Passing the user as `salt` will set the GnuPG home directory to the `/etc/salt/gpgkeys`.

**gnupghome** Specify the location where GPG keyring and related files are stored.

CLI Example:

```
salt '*' gpg.delete_key keyid=3FAD9F1E

salt '*' gpg.delete_key fingerprint=53C96788253E58416D20BCD352952C84C3252192

salt '*' gpg.delete_key keyid=3FAD9F1E user=username

salt '*' gpg.delete_key keyid=3FAD9F1E user=username delete_secret=True
```

salt.modules.gpg.**encrypt**(*user=None*, *recipients=None*, *text=None*, *filename=None*, *output=None*, *sign=None*, *use_passphrase=False*, *gnupghome=None*, *bare=False*)

Encrypt a message or file

**user** Which user's keychain to access, defaults to user Salt is running as. Passing the user as `salt` will set the GnuPG home directory to the `/etc/salt/gpgkeys`.

**recipients** The fingerprints for those recipient whom the data is being encrypted for.

**text** The text to encrypt.

**filename** The filename to encrypt.

**output** The filename where the signed file will be written, default is standard out.

**sign** Whether to sign, in addition to encrypt, the data. `True` to use default key or fingerprint to specify a different key to sign with.

**use_passphrase** Whether to use a passphrase with the signing key. Passphrase is received from Pillar.

**gnupghome** Specify the location where GPG keyring and related files are stored.

**bare** If `True`, return the (armored) encrypted block as a string without the standard comment/res dict.

CLI Example:

```
salt '*' gpg.encrypt text='Hello there.  How are you?'

salt '*' gpg.encrypt filename='/path/to/important.file'

salt '*' gpg.encrypt filename='/path/to/important.file' use_pasphrase=True
```

salt.modules.gpg.**export_key**(*keyids=None*, *secret=False*, *user=None*, *gnupghome=None*)

Export a key from the GPG keychain

**keyids** The key ID(s) of the key(s) to be exported. Can be specified as a comma separated string or a list. Anything which GnuPG itself accepts to identify a key - for example, the key ID or the fingerprint could be used.

**secret** Export the secret key identified by the `keyids` information passed.

**user** Which user's keychain to access, defaults to user Salt is running as. Passing the user as `salt` will set the GnuPG home directory to the `/etc/salt/gpgkeys`.

**gnupghome** Specify the location where GPG keyring and related files are stored.

CLI Example:

```
salt '*' gpg.export_key keyids=3FAD9F1E

salt '*' gpg.export_key keyids=3FAD9F1E secret=True

salt '*' gpg.export_key keyids="['3FAD9F1E','3FBD8F1E']" user=username
```

salt.modules.gpg.**get_key**(*keyid=None*, *fingerprint=None*, *user=None*, *gnupghome=None*)

Get a key from the GPG keychain

**keyid** The key ID (short or long) of the key to be retrieved.

**fingerprint** The fingerprint of the key to be retrieved.

**user** Which user's keychain to access, defaults to user Salt is running as. Passing the user as `salt` will set the GnuPG home directory to the `/etc/salt/gpgkeys`.

**gnupghome** Specify the location where GPG keyring and related files are stored.

CLI Example:

```
salt '*' gpg.get_key keyid=3FAD9F1E

salt '*' gpg.get_key fingerprint=53C96788253E58416D20BCD352952C84C3252192

salt '*' gpg.get_key keyid=3FAD9F1E user=username
```

salt.modules.gpg.**get_secret_key**(*keyid=None*, *fingerprint=None*, *user=None*, *gnupghome=None*)

Get a key from the GPG keychain

**keyid** The key ID (short or long) of the key to be retrieved.

**fingerprint** The fingerprint of the key to be retrieved.

**user** Which user's keychain to access, defaults to user Salt is running as. Passing the user as `salt` will set the GnuPG home directory to the `/etc/salt/gpgkeys`.

**gnupghome** Specify the location where GPG keyring and related files are stored.

CLI Example:

```
salt '*' gpg.get_secret_key keyid=3FAD9F1E

salt '*' gpg.get_secret_key fingerprint=53C96788253E58416D20BCD352952C84C3252192

salt '*' gpg.get_secret_key keyid=3FAD9F1E user=username
```

salt.modules.gpg.**import_key**(**args*, ***kwargs*)

Import a key from text or file

**text** The text containing to import.

**filename** The filename containing the key to import.
**user** Which user's keychain to access, defaults to user Salt is running as. Passing the user as `salt` will set the GnuPG home directory to the `/etc/salt/gpgkeys`.
**gnupghome** Specify the location where GPG keyring and related files are stored.
CLI Example:

```
salt '*' gpg.import_key text='-----BEGIN PGP PUBLIC KEY BLOCK-----\n ... -----END
↪PGP PUBLIC KEY BLOCK-----'
salt '*' gpg.import_key filename='/path/to/public-key-file'
```

`salt.modules.gpg.`**`list_keys`**(*user=None*, *gnupghome=None*)
List keys in GPG keychain
**user** Which user's keychain to access, defaults to user Salt is running as. Passing the user as `salt` will set the GnuPG home directory to the `/etc/salt/gpgkeys`.
**gnupghome** Specify the location where GPG keyring and related files are stored.
CLI Example:

```
salt '*' gpg.list_keys
```

`salt.modules.gpg.`**`list_secret_keys`**(*user=None*, *gnupghome=None*)
List secret keys in GPG keychain
**user** Which user's keychain to access, defaults to user Salt is running as. Passing the user as `salt` will set the GnuPG home directory to the `/etc/salt/gpgkeys`.
**gnupghome** Specify the location where GPG keyring and related files are stored.
CLI Example:

```
salt '*' gpg.list_secret_keys
```

`salt.modules.gpg.`**`receive_keys`**(**args*, ***kwargs*)
Receive key(s) from keyserver and add them to keychain
**keyserver** Keyserver to use for searching for GPG keys, defaults to pgp.mit.edu
**keys** The keyID(s) to retrieve from the keyserver. Can be specified as a comma separated string or a list.
**user** Which user's keychain to access, defaults to user Salt is running as. Passing the user as `salt` will set the GnuPG home directory to the `/etc/salt/gpgkeys`.
**gnupghome** Specify the location where GPG keyring and related files are stored.
CLI Example:

```
salt '*' gpg.receive_keys keys='3FAD9F1E'

salt '*' gpg.receive_keys keys="['3FAD9F1E','3FBD9F2E']"

salt '*' gpg.receive_keys keys=3FAD9F1E user=username
```

`salt.modules.gpg.`**`search_keys`**(*text*, *keyserver=None*, *user=None*)
Search keys from keyserver
**text** Text to search the keyserver for, e.g. email address, keyID or fingerprint.
**keyserver** Keyserver to use for searching for GPG keys, defaults to pgp.mit.edu.
**user** Which user's keychain to access, defaults to user Salt is running as. Passing the user as `salt` will set the GnuPG home directory to the `/etc/salt/gpgkeys`.
CLI Example:

```
salt '*' gpg.search_keys user@example.com

salt '*' gpg.search_keys user@example.com keyserver=keyserver.ubuntu.com

salt '*' gpg.search_keys user@example.com keyserver=keyserver.ubuntu.com
↪user=username
```

salt.modules.gpg.**sign**(*user=None*, *keyid=None*, *text=None*, *filename=None*, *output=None*, *use_passphrase=False*, *gnupghome=None*)

Sign message or file

**user** Which user's keychain to access, defaults to user Salt is running as. Passing the user as `salt` will set the GnuPG home directory to the `/etc/salt/gpgkeys`.

**keyid** The keyid of the key to set the trust level for, defaults to first key in the secret keyring.

**text** The text to sign.

**filename** The filename to sign.

**output** The filename where the signed file will be written, default is standard out.

**use_passphrase** Whether to use a passphrase with the signing key. Passphrase is received from Pillar.

**gnupghome** Specify the location where GPG keyring and related files are stored.

CLI Example:

```
salt '*' gpg.sign text='Hello there.  How are you?'

salt '*' gpg.sign filename='/path/to/important.file'

salt '*' gpg.sign filename='/path/to/important.file' use_passphrase=True
```

salt.modules.gpg.**trust_key**(*keyid=None*, *fingerprint=None*, *trust_level=None*, *user=None*)

Set the trust level for a key in GPG keychain

**keyid** The keyid of the key to set the trust level for.

**fingerprint** The fingerprint of the key to set the trust level for.

**trust_level** The trust level to set for the specified key, must be one of the following: expired, unknown, not_trusted, marginally, fully, ultimately

**user** Which user's keychain to access, defaults to user Salt is running as. Passing the user as `salt` will set the GnuPG home directory to the `/etc/salt/gpgkeys`.

CLI Example:

```
salt '*' gpg.trust_key keyid='3FAD9F1E' trust_level='marginally'
salt '*' gpg.trust_key fingerprint='53C96788253E58416D20BCD352952C84C3252192'
 ↪trust_level='not_trusted'
salt '*' gpg.trust_key keys=3FAD9F1E trust_level='ultimately' user='username'
```

salt.modules.gpg.**verify**(*text=None*, *user=None*, *filename=None*, *gnupghome=None*)

Verify a message or file

**text** The text to verify.

**filename** The filename to verify.

**user** Which user's keychain to access, defaults to user Salt is running as. Passing the user as `salt` will set the GnuPG home directory to the `/etc/salt/gpgkeys`.

**gnupghome** Specify the location where GPG keyring and related files are stored.

CLI Example:

```
salt '*' gpg.verify text='Hello there.  How are you?'

salt '*' gpg.verify filename='/path/to/important.file'

salt '*' gpg.verify filename='/path/to/important.file' use_passphrase=True
```

### 13.6.108 salt.modules.grains

Return/control aspects of the grains data

salt.modules.grains.**append**(*key*, *val*, *convert=False*, *delimiter=':'*)

New in version 0.17.0.

Append a value to a list in the grains config file. If the grain doesn't exist, the grain key is added and the value is appended to the new grain as a list item.

**key** The grain key to be appended to

**val** The value to append to the grain key

**convert** If convert is True, convert non-list contents into a list. If convert is False and the grain contains non-list contents, an error is given. Defaults to False.

**delimiter** The key can be a nested dict key. Use this parameter to specify the delimiter you use, instead of the default `:`. You can now append values to a list in nested dictionary grains. If the list doesn't exist at this level, it will be created.

New in version 2014.7.6.

CLI Example:

```
salt '*' grains.append key val
```

salt.modules.grains.**delval**(*key*, *destructive=False*)

New in version 0.17.0.

Delete a grain from the grains config file

**key** The grain key from which to delete the value.

**destructive** Delete the key, too. Defaults to False.

CLI Example:

```
salt '*' grains.delval key
```

salt.modules.grains.**fetch**(*key*, *default='`*, *delimiter=':'*)

Attempt to retrieve the named value from grains, if the named value is not available return the passed default. The default return is an empty string.

The value can also represent a value in a nested dict using a ":" delimiter for the dict. This means that if a dict in grains looks like this:

```
{'pkg': {'apache': 'httpd'}}
```

To retrieve the value associated with the apache key in the pkg dict this key can be passed:

```
pkg:apache
```

**Parameters** **delimiter** -- Specify an alternate delimiter to use when traversing a nested dict. This is useful for when the desired key contains a colon. See CLI example below for usage.

New in version 2014.7.0.

CLI Example:

```
salt '*' grains.get pkg:apache
salt '*' grains.get abc::def|ghi delimiter='|'
```

salt.modules.grains.**filter_by**(*lookup_dict*, *grain='os_family'*, *merge=None*, *default='default'*, *base=None*)

New in version 0.17.0.

Look up the given grain in a given dictionary for the current OS and return the result

Although this may occasionally be useful at the CLI, the primary intent of this function is for use in Jinja to make short work of creating lookup tables for OS-specific data. For example:

```
{% set apache = salt['grains.filter_by']({
    'Debian': {'pkg': 'apache2', 'srv': 'apache2'},
    'RedHat': {'pkg': 'httpd', 'srv': 'httpd'},
}, default='Debian') %}

myapache:
  pkg.installed:
    - name: {{ apache.pkg }}
  service.running:
    - name: {{ apache.srv }}
```

Values in the lookup table may be overridden by values in Pillar. An example Pillar to override values in the example above could be as follows:

```
apache:
  lookup:
    pkg: apache_13
    srv: apache
```

The call to `filter_by()` would be modified as follows to reference those Pillar values:

```
{% set apache = salt['grains.filter_by']({
    ...
}, merge=salt['pillar.get']('apache:lookup')) %}
```

**Parameters**

- **`lookup_dict`** -- A dictionary, keyed by a grain, containing a value or values relevant to systems matching that grain. For example, a key could be the grain for an OS and the value could the name of a package on that particular OS.
- **`grain`** -- The name of a grain to match with the current system's grains. For example, the value of the ``os_family'' grain for the current system could be used to pull values from the `lookup_dict` dictionary.
- **`merge`** -- A dictionary to merge with the results of the grain selection from `lookup_dict`. This allows Pillar to override the values in the `lookup_dict`. This could be useful, for example, to override the values for non-standard package names such as when using a different Python version from the default Python version provided by the OS (e.g., `python26-mysql` instead of `python-mysql`).
- **`default`** -- default lookup_dict's key used if the grain does not exists or if the grain value has no match on lookup_dict. If unspecified the value is ``default''.

  New in version 2014.1.0.
- **`base`** -- A lookup_dict key to use for a base dictionary. The grain-selected `lookup_dict` is merged over this and then finally the `merge` dictionary is merged. This allows common values for each case to be collected in the base and overridden by the grain selection dictionary and the merge dictionary. Default is unset.

  New in version 2015.5.0.

CLI Example:

```
salt '*' grains.filter_by '{Debian: Debheads rule, RedHat: I love my hat}'
# this one will render {D: {E: I, G: H}, J: K}
salt '*' grains.filter_by '{A: B, C: {D: {E: F,G: H}}}' 'xxx' '{D: {E: I},J: K}' 'C'
# next one renders {A: {B: G}, D: J}
```

```
salt '*' grains.filter_by '{default: {A: {B: C}, D: E}, F: {A: {B: G}}, H: {D: I}}
 ↪' 'xxx' '{D: J}' 'F' 'default'
# next same as above when default='H' instead of 'F' renders {A: {B: C}, D: J}
```

salt.modules.grains.**get**(*key*, *default=''*, *delimiter=':'*)

Attempt to retrieve the named value from grains, if the named value is not available return the passed default. The default return is an empty string.

The value can also represent a value in a nested dict using a ":" delimiter for the dict. This means that if a dict in grains looks like this:

```
{'pkg': {'apache': 'httpd'}}
```

To retrieve the value associated with the apache key in the pkg dict this key can be passed:

```
pkg:apache
```

**Parameters** **delimiter** -- Specify an alternate delimiter to use when traversing a nested dict. This is useful for when the desired key contains a colon. See CLI example below for usage.

New in version 2014.7.0.

CLI Example:

```
salt '*' grains.get pkg:apache
salt '*' grains.get abc::def|ghi delimiter='|'
```

salt.modules.grains.**get_or_set_hash**(*name*, *length=8*, *chars='abcdefghijklmnopqrstuvwxyz0123456789!@#$%^&*(-_=+)'*)

Perform a one-time generation of a hash and write it to the local grains. If that grain has already been set return the value instead.

This is useful for generating passwords or keys that are specific to a single minion that don't need to be stored somewhere centrally.

State Example:

```
some_mysql_user:
  mysql_user:
    - present
    - host: localhost
    - password: {{ salt['grains.get_or_set_hash']('mysql:some_mysql_user') }}
```

CLI Example:

```
salt '*' grains.get_or_set_hash 'django:SECRET_KEY' 50
```

**Warning**: This function could return strings which may contain characters which are reserved as directives by the YAML parser, such as strings beginning with %. To avoid issues when using the output of this function in an SLS file containing YAML+Jinja, surround the call with single quotes.

salt.modules.grains.**has_value**(*key*)

Determine whether a named value exists in the grains dictionary.

Given a grains dictionary that contains the following structure:

```
{'pkg': {'apache': 'httpd'}}
```

One would determine if the apache key in the pkg dict exists by:

```
pkg:apache
```

CLI Example:

```
salt '*' grains.has_value pkg:apache
```

salt.modules.grains.**item**(**args*, ***kwargs*)

Return one or more grains

CLI Example:

```
salt '*' grains.item os
salt '*' grains.item os osrelease oscodename
```

Sanitized CLI Example:

```
salt '*' grains.item host sanitize=True
```

salt.modules.grains.**items**(*sanitize=False*)

Return all of the minion's grains

CLI Example:

```
salt '*' grains.items
```

Sanitized CLI Example:

```
salt '*' grains.items sanitize=True
```

salt.modules.grains.**ls**()

Return a list of all available grains

CLI Example:

```
salt '*' grains.ls
```

salt.modules.grains.**remove**(*key*, *val*, *delimiter=':'*)

New in version 0.17.0.

Remove a value from a list in the grains config file

**key** The grain key to remove.

**val** The value to remove.

**delimiter** The key can be a nested dict key. Use this parameter to specify the delimiter you use, instead of the default **:**. You can now append values to a list in nested dictionary grains. If the list doesn't exist at this level, it will be created.

New in version 2015.8.2.

CLI Example:

```
salt '*' grains.remove key val
```

salt.modules.grains.**set**(*key*, *val=''*, *force=False*, *destructive=False*, *delimiter=':'*)

Set a key to an arbitrary value. It is used like setval but works with nested keys.

This function is conservative. It will only overwrite an entry if its value and the given one are not a list or a dict. The `force` parameter is used to allow overwriting in all cases.

New in version 2015.8.0.

**Parameters**

- **`force`** -- Force writing over existing entry if given or existing values are list or dict. Defaults to False.
- **`destructive`** -- If an operation results in a key being removed, delete the key, too. Defaults to False.
- **`delimiter`** -- Specify an alternate delimiter to use when traversing a nested dict, the default being `:`

CLI Example:

```
salt '*' grains.set 'apps:myApp:port' 2209
salt '*' grains.set 'apps:myApp' '{port: 2209}'
```

`salt.modules.grains.`**`setval`**(*key*, *val*, *destructive=False*)

Set a grains value in the grains config file

**key** The grain key to be set.

**val** The value to set the grain key to.

**destructive** If an operation results in a key being removed, delete the key, too. Defaults to False.

CLI Example:

```
salt '*' grains.setval key val
salt '*' grains.setval key "{'sub-key': 'val', 'sub-key2': 'val2'}"
```

`salt.modules.grains.`**`setvals`**(*grains*, *destructive=False*)

Set new grains values in the grains config file

**destructive** If an operation results in a key being removed, delete the key, too. Defaults to False.

CLI Example:

```
salt '*' grains.setvals "{'key1': 'val1', 'key2': 'val2'}"
```

### 13.6.109 salt.modules.groupadd

Manage groups on Linux, OpenBSD and NetBSD

---

**Important**: If you feel that Salt should be using this module to manage groups on a minion, and it is using a different module (or gives an error similar to *`group.info' is not available*), see *here*.

---

`salt.modules.groupadd.`**`add`**(*name*, *gid=None*, *system=False*, *root=None*)

Add the specified group

CLI Example:

```
salt '*' group.add foo 3456
```

`salt.modules.groupadd.`**`adduser`**(*name*, *username*, *root=None*)

Add a user in the group.

CLI Example:

```
salt '*' group.adduser foo bar
```

Verifies if a valid username `bar' as a member of an existing group `foo', if not then adds it.

salt.modules.groupadd.**chgid**(*name*, *gid*, *root=None*)
Change the gid for a named group

CLI Example:

```
salt '*' group.chgid foo 4376
```

salt.modules.groupadd.**delete**(*name*, *root=None*)
Remove the named group

CLI Example:

```
salt '*' group.delete foo
```

salt.modules.groupadd.**deluser**(*name*, *username*, *root=None*)
Remove a user from the group.

CLI Example:

```
salt '*' group.deluser foo bar
```

Removes a member user `bar' from a group `foo'. If group is not present then returns True.

salt.modules.groupadd.**getent**(*refresh=False*)
Return info on all groups

CLI Example:

```
salt '*' group.getent
```

salt.modules.groupadd.**info**(*name*)
Return information about a group

CLI Example:

```
salt '*' group.info foo
```

salt.modules.groupadd.**members**(*name*, *members_list*, *root=None*)
Replaces members of the group with a provided list.

CLI Example:
salt `*' group.members foo `user1,user2,user3,...'

**Replaces a membership list for a local group `foo'.** foo:x:1234:user1,user2,user3,...

### 13.6.110 salt.modules.grub_legacy

Support for GRUB Legacy

salt.modules.grub_legacy.**conf**()
Parse GRUB conf file

CLI Example:

```
salt '*' grub.conf
```

salt.modules.grub_legacy.**version**()
Return server version from grub --version

CLI Example:

```
salt '*' grub.version
```

### 13.6.111 salt.modules.guestfs

Interact with virtual machine images via libguestfs

**depends**

- libguestfs

salt.modules.guestfs.**mount**(*location*, *access='rw'*, *root=None*)
Mount an image

CLI Example:

```
salt '*' guest.mount /srv/images/fedora.qcow
```

### 13.6.112 salt.modules.hadoop

Support for hadoop

**maintainer** Yann Jouanin <yann.jouanin@intelunix.fr>

**maturity** new

**depends**

**platform** linux

salt.modules.hadoop.**dfs**(*command=None*, **args*)
Execute a command on DFS

CLI Example:

```
salt '*' hadoop.dfs ls /
```

salt.modules.hadoop.**dfs_absent**(*path*)
Check if a file or directory is absent on the distributed FS.

CLI Example:

```
salt '*' hadoop.dfs_absent /some_random_file
```

Returns True if the file is absent

salt.modules.hadoop.**dfs_present**(*path*)
Check if a file or directory is present on the distributed FS.

CLI Example:

```
salt '*' hadoop.dfs_present /some_random_file
```

Returns True if the file is present

salt.modules.hadoop.**namenode_format**(*force=None*)
Format a name node

```
salt '*' hadoop.namenode_format force=True
```

salt.modules.hadoop.**version**()
Return version from hadoop version

CLI Example:

```
salt '*' hadoop.version
```

### 13.6.113 salt.modules.haproxyconn

Support for haproxy

New in version 2014.7.0.

salt.modules.haproxyconn.**disable_server**(*name*, *backend*, *socket='/var/run/haproxy.sock'*)
Disable server in haproxy.
**name** Server to disable
**backend** haproxy backend, or all backends if ``*'' is supplied
**socket** haproxy stats socket
CLI Example:

```
salt '*' haproxy.disable_server db1.example.com mysql
```

salt.modules.haproxyconn.**enable_server**(*name*, *backend*, *socket='/var/run/haproxy.sock'*)
Enable Server in haproxy
**name** Server to enable
**backend** haproxy backend, or all backends if ``*'' is supplied
**socket** haproxy stats socket
CLI Example:

```
salt '*' haproxy.enable_server web1.example.com www
```

salt.modules.haproxyconn.**get_weight**(*name*, *backend*, *socket='/var/run/haproxy.sock'*)
Get server weight
**name** Server name
**backend** haproxy backend
**socket** haproxy stats socket
CLI Example:

```
salt '*' haproxy.get_weight web1.example.com www
```

salt.modules.haproxyconn.**list_servers**(*backend*, *socket='/var/run/haproxy.sock'*, *objectify=False*)
List servers in haproxy backend.
**backend** haproxy backend
**socket** haproxy stats socket
CLI Example:

```
salt '*' haproxy.list_servers mysql
```

salt.modules.haproxyconn.**set_weight**(*name*, *backend*, *weight=0*, *socket='/var/run/haproxy.sock'*)

Set server weight
**name** Server name
**backend** haproxy backend
**weight** Server Weight
**socket** haproxy stats socket
CLI Example:

```
salt '*' haproxy.set_weight web1.example.com www 13
```

salt.modules.haproxyconn.**show_backends**(*socket='/var/run/haproxy.sock'*)

Show HaProxy Backends
**socket** haproxy stats socket
CLI Example:

```
salt '*' haproxy.show_backends
```

salt.modules.haproxyconn.**show_frontends**(*socket='/var/run/haproxy.sock'*)

Show HaProxy frontends
**socket** haproxy stats socket
CLI Example:

```
salt '*' haproxy.show_frontends
```

### 13.6.114 salt.modules.hashutil

A collection of hashing and encoding functions

salt.modules.hashutil.**base64_b64decode**(*instr*)

Decode a base64-encoded string using the ``modern'' Python interface

New in version 2016.3.0.

CLI Example:

```
salt '*' hashutil.base64_b64decode 'Z2V0IHNhbHRlZA=='
```

salt.modules.hashutil.**base64_b64encode**(*instr*)

Encode a string as base64 using the ``modern'' Python interface.

Among other possible differences, the ``modern'' encoder does not include newline (`n') characters in the encoded output.

New in version 2016.3.0.

CLI Example:

```
salt '*' hashutil.base64_b64encode 'get salted'
```

salt.modules.hashutil.**base64_decodefile**(*instr*, *outfile*)

Decode a base64-encoded string and write the result to a file

New in version 2015.2.0.

CLI Example:

```
salt '*' hashutil.base64_decodefile instr='Z2V0IHNhbHRlZAo=' outfile='/path/to/
↪binary_file'
```

salt.modules.hashutil.**base64_decodestring**(*instr*)

Decode a base64-encoded string using the ``legacy'' Python interface

New in version 2014.7.0.

CLI Example:

```
salt '*' hashutil.base64_decodestring instr='Z2V0IHNhbHRlZAo='
```

salt.modules.hashutil.**base64_encodefile**(*fname*)

Read a file from the file system and return as a base64 encoded string

New in version 2016.3.0.

Pillar example:

```
path:
  to:
    data: |
      {{ salt.hashutil.base64_encodefile('/path/to/binary_file') | indent(6) }}
```

The *file.decode* state function can be used to decode this data and write it to disk.

CLI Example:

```
salt '*' hashutil.base64_encodefile /path/to/binary_file
```

salt.modules.hashutil.**base64_encodestring**(*instr*)

Encode a string as base64 using the ``legacy'' Python interface.

Among other possible differences, the ``legacy'' encoder includes a newline (`n') character after every 76 characters and always at the end of the encoded string.

New in version 2014.7.0.

CLI Example:

```
salt '*' hashutil.base64_encodestring 'get salted'
```

salt.modules.hashutil.**digest**(*instr*, *checksum='md5'*)

Return a checksum digest for a string

**instr** A string

**checksum** [md5] The hashing algorithm to use to generate checksums. Valid options: md5, sha256, sha512.

CLI Example:

```
salt '*' hashutil.digest 'get salted'
```

salt.modules.hashutil.**digest_file**(*infile*, *checksum='md5'*)

Return a checksum digest for a file

**infile** A file path

**checksum** [md5] The hashing algorithm to use to generate checksums. Wraps the *hashutil.digest* execution function.

CLI Example:

```
salt '*' hashutil.digest_file /path/to/file
```

salt.modules.hashutil.**hmac_signature**(*string*, *shared_secret*, *challenge_hmac*)
Verify a challenging hmac signature against a string / shared-secret

New in version 2014.7.0.

Returns a boolean if the verification succeeded or failed.

CLI Example:

```
salt '*' hashutil.hmac_signature 'get salted' 'shared secret'
 ↪'eBWf9bstXg+NiP5AOwppB5HMvZiYMPzEM9W5YMm/AmQ='
```

salt.modules.hashutil.**md5_digest**(*instr*)
Generate an md5 hash of a given string

New in version 2014.7.0.

CLI Example:

```
salt '*' hashutil.md5_digest 'get salted'
```

salt.modules.hashutil.**sha256_digest**(*instr*)
Generate an sha256 hash of a given string

New in version 2014.7.0.

CLI Example:

```
salt '*' hashutil.sha256_digest 'get salted'
```

salt.modules.hashutil.**sha512_digest**(*instr*)
Generate an sha512 hash of a given string

New in version 2014.7.0.

CLI Example:

```
salt '*' hashutil.sha512_digest 'get salted'
```

### 13.6.115 salt.modules.hg

Support for the Mercurial SCM

salt.modules.hg.**archive**(*cwd*, *output*, *rev='tip'*, *fmt=None*, *prefix=None*, *user=None*)
Export a tarball from the repository
**cwd** The path to the Mercurial repository
**output** The path to the archive tarball
**rev**: **tip** The revision to create an archive from
**fmt**: **None** Format of the resulting archive. Mercurial supports: tar, tbz2, tgz, zip, uzip, and files formats.
**prefix** [None] Prepend <prefix>/ to every filename in the archive
**user** [None] Run hg as a user other than what the minion runs as
If `prefix` is not specified it defaults to the basename of the repo directory.

CLI Example:

```
salt '*' hg.archive /path/to/repo output=/tmp/archive.tgz fmt=tgz
```

salt.modules.hg.**clone**(*cwd*, *repository*, *opts=None*, *user=None*, *identity=None*)
Clone a new repository
**cwd** The path to the Mercurial repository

**repository** The hg URI of the repository
**opts** [None] Any additional options to add to the command line
**user** [None] Run hg as a user other than what the minion runs as
**identity** [None] Private SSH key on the minion server for authentication (ssh://)

New in version 2015.5.0.

CLI Example:

```
salt '*' hg.clone /path/to/repo https://bitbucket.org/birkenfeld/sphinx
```

salt.modules.hg.**describe**(*cwd*, *rev='tip'*, *user=None*)

Mimic git describe and return an identifier for the given revision
**cwd** The path to the Mercurial repository
**rev**: **tip** The path to the archive tarball
**user** [None] Run hg as a user other than what the minion runs as
CLI Example:

```
salt '*' hg.describe /path/to/repo
```

salt.modules.hg.**pull**(*cwd*, *opts=None*, *user=None*, *identity=None*, *repository=None*)

Perform a pull on the given repository
**cwd** The path to the Mercurial repository
**repository** [None] Perform pull from the repository different from .hg/hgrc:[paths]:default
**opts** [None] Any additional options to add to the command line
**user** [None] Run hg as a user other than what the minion runs as
**identity** [None] Private SSH key on the minion server for authentication (ssh://)

New in version 2015.5.0.

CLI Example:

```
salt '*' hg.pull /path/to/repo opts=-u
```

salt.modules.hg.**revision**(*cwd*, *rev='tip'*, *short=False*, *user=None*)

Returns the long hash of a given identifier (hash, branch, tag, HEAD, etc)
**cwd** The path to the Mercurial repository
**rev**: **tip** The revision
**short**: **False** Return an abbreviated commit hash
**user** [None] Run hg as a user other than what the minion runs as
CLI Example:

```
salt '*' hg.revision /path/to/repo mybranch
```

salt.modules.hg.**status**(*cwd*, *opts=None*, *user=None*)

Show changed files of the given repository
**cwd** The path to the Mercurial repository
**opts** [None] Any additional options to add to the command line
**user** [None] Run hg as a user other than what the minion runs as
CLI Example:

```
salt '*' hg.status /path/to/repo
```

salt.modules.hg.**update**(*cwd*, *rev*, *force=False*, *user=None*)

Update to a given revision
**cwd** The path to the Mercurial repository
**rev** The revision to update to
**force** [False] Force an update

**user** [None] Run hg as a user other than what the minion runs as
CLI Example:

```
salt devserver1 hg.update /path/to/repo somebranch
```

### 13.6.116 salt.modules.hipchat

Module for sending messages to hipchat.

New in version 2015.5.0.

**configuration** This module can be used by either passing an api key and version directly or by specifying both in a configuration profile in the salt master/minion config.

For example:

```
hipchat:
  api_key: peWcBiMOS9HrZG15peWcBiMOS9HrZG15
  api_version: v1
```

salt.modules.hipchat.**find_room**(*name*, *api_key=None*, *api_version=None*)
Find a room by name and return it. :param name: The room name. :param api_key: The HipChat admin api key. :param api_version: The HipChat api version, if not specified in the configuration. :return: The room object.

CLI Example:

```
salt '*' hipchat.find_room name="Development Room"

salt '*' hipchat.find_room name="Development Room" api_
↪key=peWcBiMOS9HrZG15peWcBiMOS9HrZG15 api_version=v1
```

salt.modules.hipchat.**find_user**(*name*, *api_key=None*, *api_version=None*)
Find a user by name and return it. :param name: The user name. :param api_key: The HipChat admin api key. :param api_version: The HipChat api version, if not specified in the configuration. :return: The user object.

CLI Example:

```
salt '*' hipchat.find_user name="Thomas Hatch"

salt '*' hipchat.find_user name="Thomas Hatch" api_
↪key=peWcBiMOS9HrZG15peWcBiMOS9HrZG15 api_version=v1
```

salt.modules.hipchat.**list_rooms**(*api_key=None*, *api_version=None*)
List all HipChat rooms.

**Parameters**

- **api_key** -- The HipChat admin api key.
- **api_version** -- The HipChat api version, if not specified in the configuration.

**Returns** The room list.

CLI Example:

```
salt '*' hipchat.list_rooms

salt '*' hipchat.list_rooms api_key=peWcBiMOS9HrZG15peWcBiMOS9HrZG15 api_
↪version=v1
```

salt.modules.hipchat.**list_users**(*api_key=None*, *api_version=None*)
List all HipChat users. :param api_key: The HipChat admin api key. :param api_version: The HipChat api version, if not specified in the configuration. :return: The user list.

CLI Example:

```
salt '*' hipchat.list_users

salt '*' hipchat.list_users api_key=peWcBiMOS9HrZG15peWcBiMOS9HrZG15 api_
↪version=v1
```

salt.modules.hipchat.**send_message**(*room_id*, *message*, *from_name*, *api_key=None*, *api_version=None*, *color='yellow'*, *notify=False*)
Send a message to a HipChat room. :param room_id: The room id or room name, either will work. :param message: The message to send to the HipChat room. :param from_name: Specify who the message is from. :param api_key: The HipChat api key, if not specified in the configuration. :param api_version: The HipChat api version, if not specified in the configuration. :param color: The color for the message, default: yellow. :param notify: Whether to notify the room, default: False. :return: Boolean if message was sent successfully.

CLI Example:

```
salt '*' hipchat.send_message room_id="Development Room" message="Build is done"
↪from_name="Build Server"

salt '*' hipchat.send_message room_id="Development Room" message="Build failed"
↪from_name="Build Server" color="red" notify=True
```

### 13.6.117 salt.modules.hosts

Manage the information in the hosts file

salt.modules.hosts.**add_host**(*ip*, *alias*)
Add a host to an existing entry, if the entry is not in place then create it with the given host

CLI Example:

```
salt '*' hosts.add_host <ip> <alias>
```

salt.modules.hosts.**get_alias**(*ip*)
Return the list of aliases associated with an ip

Aliases (host names) are returned in the order in which they appear in the hosts file. If there are no aliases associated with the IP, an empty list is returned.

CLI Example:

```
salt '*' hosts.get_alias <ip addr>
```

salt.modules.hosts.**get_ip**(*host*)
Return the ip associated with the named host

CLI Example:

```
salt '*' hosts.get_ip <hostname>
```

salt.modules.hosts.**has_pair**(*ip*, *alias*)
Return true if the alias is set

CLI Example:

```
salt '*' hosts.has_pair <ip> <alias>
```

salt.modules.hosts.**list_hosts**()

Return the hosts found in the hosts file in this format:

```
{'<ip addr>': ['alias1', 'alias2', ...]}
```

CLI Example:

```
salt '*' hosts.list_hosts
```

salt.modules.hosts.**rm_host**(*ip*, *alias*)

Remove a host entry from the hosts file

CLI Example:

```
salt '*' hosts.rm_host <ip> <alias>
```

salt.modules.hosts.**set_host**(*ip*, *alias*)

Set the host entry in the hosts file for the given ip, this will overwrite any previous entry for the given ip

Changed in version 2016.3.0: If `alias` does not include any host names (it is the empty string or contains only whitespace), all entries for the given IP address are removed.

CLI Example:

```
salt '*' hosts.set_host <ip> <alias>
```

### 13.6.118 salt.modules.htpasswd

Support for htpasswd command. Requires the apache2-utils package for Debian-based distros.

New in version 2014.1.0.

The functions here will load inside the webutil module. This allows other functions that don't use htpasswd to use the webutil module name.

salt.modules.htpasswd.**useradd**(*pwfile*, *user*, *password*, *opts=''*, *runas=None*)

Add a user to htpasswd file using the htpasswd command. If the htpasswd file does not exist, it will be created.

**pwfile** Path to htpasswd file

**user** User name

**password** User password

**opts** Valid options that can be passed are:

- *n* Don't update file; display results on stdout.
- *m* Force MD5 encryption of the password (default).
- *d* Force CRYPT encryption of the password.
- *p* Do not encrypt the password (plaintext).
- *s* Force SHA encryption of the password.

**runas** The system user to run htpasswd command with

CLI Examples:

```
salt '*' webutil.useradd /etc/httpd/htpasswd larry badpassword
salt '*' webutil.useradd /etc/httpd/htpasswd larry badpass opts=ns
```

salt.modules.htpasswd.**useradd_all**(*pwfile*, *user*, *password*, *opts='`*, *runas=None*)
Add a user to htpasswd file using the htpasswd command. If the htpasswd file does not exist, it will be created.

Deprecated since version 2016.3.0.
**pwfile** Path to htpasswd file
**user** User name
**password** User password
**opts** Valid options that can be passed are:

- *n* Don't update file; display results on stdout.
- *m* Force MD5 encryption of the password (default).
- *d* Force CRYPT encryption of the password.
- *p* Do not encrypt the password (plaintext).
- *s* Force SHA encryption of the password.

**runas** The system user to run htpasswd command with
CLI Examples:

```
salt '*' webutil.useradd /etc/httpd/htpasswd larry badpassword
salt '*' webutil.useradd /etc/httpd/htpasswd larry badpass opts=ns
```

salt.modules.htpasswd.**userdel**(*pwfile*, *user*, *runas=None*)
Delete a user from the specified htpasswd file.
**pwfile** Path to htpasswd file
**user** User name
**runas** The system user to run htpasswd command with
CLI Examples:

```
salt '*' webutil.userdel /etc/httpd/htpasswd larry
```

### 13.6.119 salt.modules.http

Module for making various web calls. Primarily designed for webhooks and the like, but also useful for basic http testing.

New in version 2015.5.0.

salt.modules.http.**query**(*url*, ***kwargs*)
Query a resource, and decode the return data

New in version 2015.5.0.

CLI Example:

```
salt '*' http.query http://somelink.com/
salt '*' http.query http://somelink.com/ method=POST            params='key1=val1&
↪key2=val2'
salt '*' http.query http://somelink.com/ method=POST             data='<xml>
↪somecontent</xml>'
```

salt.modules.http.**update_ca_bundle**(*target=None*, *source=None*, *merge_files=None*)
Update the local CA bundle file from a URL

New in version 2015.5.0.

CLI Example:

```
salt '*' http.update_ca_bundle
salt '*' http.update_ca_bundle target=/path/to/cacerts.pem
salt '*' http.update_ca_bundle source=https://example.com/cacerts.pem
```

If the `target` is not specified, it will be pulled from the `ca_cert` configuration variable available to the minion. If it cannot be found there, it will be placed at `<<FILE_ROOTS>>/cacerts.pem`.

If the `source` is not specified, it will be pulled from the `ca_cert_url` configuration variable available to the minion. If it cannot be found, it will be downloaded from the cURL website, using an http (not https) URL. USING THE DEFAULT URL SHOULD BE AVOIDED!

`merge_files` may also be specified, which includes a string or list of strings representing a file or files to be appended to the end of the CA bundle, once it is downloaded.

CLI Example:

```
salt '*' http.update_ca_bundle merge_files=/path/to/mycert.pem
```

### 13.6.120 salt.modules.ifttt

Support for IFTTT

New in version 2015.8.0.

Requires an `api_key` in `/etc/salt/minion`:

`salt.modules.ifttt.`**`trigger_event`**(*event=None*, ***kwargs*)

Trigger a configured event in IFTTT.

**Parameters** **`event`** -- The name of the event to trigger.

**Returns** A dictionary with status, text, and error if result was failure.

### 13.6.121 salt.modules.ilo

Manage HP ILO

**depends** hponcfg (SmartStart Scripting Toolkit Linux Edition)

`salt.modules.ilo.`**`change_password`**(*username*, *password*)

Reset a users password

CLI Example:

```
salt '*' ilo.change_password damianMyerscough
```

`salt.modules.ilo.`**`change_username`**(*old_username*, *new_username*)

Change a username

CLI Example:

```
salt '*' ilo.change_username damian diana
```

`salt.modules.ilo.`**`configure_network`**(*ip*, *netmask*, *gateway*)

Configure Network Interface

CLI Example:

```
salt '*' ilo.configure_network [IP ADDRESS] [NETMASK] [GATEWAY]
```

salt.modules.ilo.**configure_snmp**(*community*, *snmp_port=161*, *snmp_trapport=161*)
Configure SNMP

CLI Example:

```
salt '*' ilo.configure_snmp [COMMUNITY STRING] [SNMP PORT] [SNMP TRAP PORT]
```

salt.modules.ilo.**create_user**(*name*, *password*, **privileges*)
Create user

CLI Example:

```
salt '*' ilo.create_user damian secretagent VIRTUAL_MEDIA_PRIV
```

If no permissions are specify the user will only have a read-only account.

Supported privelges:
- •ADMIN_PRIV Enables the user to administer user accounts.
- •REMOTE_CONS_PRIV Enables the user to access the Remote Console functionality.
- •RESET_SERVER_PRIV Enables the user to remotely manipulate the server power setting.
- •VIRTUAL_MEDIA_PRIV Enables the user permission to access the virtual media functionality.
- •CONFIG_ILO_PRIV Enables the user to configure iLO settings.

salt.modules.ilo.**delete_ssh_key**(*username*)
Delete a users SSH key from the ILO

CLI Example:

```
salt '*' ilo.delete_user_sshkey damian
```

salt.modules.ilo.**delete_user**(*username*)
Delete a user

CLI Example:

```
salt '*' ilo.delete_user damian
```

salt.modules.ilo.**disable_dhcp**()
Disable DHCP

CLI Example:

```
salt '*' ilo.disable_dhcp
```

salt.modules.ilo.**disable_ssh**()
Disable the SSH daemon

CLI Example:

```
salt '*' ilo.disable_ssh
```

salt.modules.ilo.**enable_dhcp**()
Enable DHCP

CLI Example:

```
salt '*' ilo.enable_dhcp
```

salt.modules.ilo.**enable_ssh**()
Enable the SSH daemon

CLI Example:

```
salt '*' ilo.enable_ssh
```

salt.modules.ilo.**get_user**(*username*)
Returns local user information, excluding the password

CLI Example:

```
salt '*' ilo.get_user damian
```

salt.modules.ilo.**global_settings**()
Show global settings

CLI Example:

```
salt '*' ilo.global_settings
```

salt.modules.ilo.**list_users**()
List all users

CLI Example:

```
salt '*' ilo.list_users
```

salt.modules.ilo.**list_users_info**()
List all users in detail

CLI Example:

```
salt '*' ilo.list_users_info
```

salt.modules.ilo.**network**()
Grab the current network settings

CLI Example:

```
salt '*' ilo.network
```

salt.modules.ilo.**set_http_port**(*port=80*)
Configure the port HTTP should listen on

CLI Example:

```
salt '*' ilo.set_http_port 8080
```

salt.modules.ilo.**set_https_port**(*port=443*)
Configure the port HTTPS should listen on

CLI Example:

```
salt '*' ilo.set_https_port 4334
```

salt.modules.ilo.**set_ssh_key**(*public_key*)
Configure SSH public keys for specific users

CLI Example:

```
salt '*' ilo.set_ssh_key "ssh-dss AAAAB3NzaC1kc3MAAACBA... damian"
```

The SSH public key needs to be DSA and the last argument in the key needs to be the username (case-senstive) of the ILO username.

salt.modules.ilo.**set_ssh_port**(*port=22*)
Enable SSH on a user defined port

CLI Example:

```
salt '*' ilo.set_ssh_port 2222
```

### 13.6.122 salt.modules.img

Virtual machine image management tools

Deprecated since version 2016.3.0.

salt.modules.img.**bootstrap**(*location*, *size*, *fmt*)
HIGHLY EXPERIMENTAL Bootstrap a virtual machine image
**location**: The location to create the image
**size**: The size of the image to create in megabytes
**fmt**: The image format, raw or qcow2
CLI Example:

```
salt '*' img.bootstrap /srv/salt-images/host.qcow 4096 qcow2
```

salt.modules.img.**mount_image**(*location*)
Mount the named image and return the mount point

CLI Example:

```
salt '*' img.mount_image /tmp/foo
```

salt.modules.img.**umount_image**(*mnt*)
Unmount an image mountpoint

CLI Example:

```
salt '*' img.umount_image /mnt/foo
```

### 13.6.123 salt.modules.incron

Work with incron

salt.modules.incron.**list_tab**(*user*)
Return the contents of the specified user's incrontab

CLI Example:

```
salt '*' incron.list_tab root
```

salt.modules.incron.**ls**(*user*)
This function is an alias of `list_tab`.

Return the contents of the specified user's incrontab

CLI Example:

```
salt '*' incron.list_tab root
```

salt.modules.incron.**raw_incron**(*user*)

Return the contents of the user's incrontab

CLI Example:

```
salt '*' incron.raw_incron root
```

salt.modules.incron.**raw_system_incron**()

Return the contents of the system wide incrontab

CLI Example:

```
salt '*' incron.raw_system_incron
```

salt.modules.incron.**rm**(*user*, *path*, *mask*, *cmd*)

This function is an alias of `rm_job`.

Remove a incron job for a specified user. If any of the day/time params are specified, the job will only be removed if the specified params match.

CLI Example:

```
salt '*' incron.rm_job root /path
```

salt.modules.incron.**rm_job**(*user*, *path*, *mask*, *cmd*)

Remove a incron job for a specified user. If any of the day/time params are specified, the job will only be removed if the specified params match.

CLI Example:

```
salt '*' incron.rm_job root /path
```

salt.modules.incron.**set_job**(*user*, *path*, *mask*, *cmd*)

Sets an incron job up for a specified user.

CLI Example:

```
salt '*' incron.set_job root '/root' 'IN_MODIFY' 'echo "$$ $@ $# $% $&"'
```

salt.modules.incron.**write_incron_file**(*user*, *path*)

Writes the contents of a file to a user's incrontab

CLI Example:

```
salt '*' incron.write_incron_file root /tmp/new_incron
```

salt.modules.incron.**write_incron_file_verbose**(*user*, *path*)

Writes the contents of a file to a user's incrontab and return error message on error

CLI Example:

```
salt '*' incron.write_incron_file_verbose root /tmp/new_incron
```

### 13.6.124 salt.modules.influx

InfluxDB - A distributed time series database

Module to provide InfluxDB compatibility to Salt (compatible with InfluxDB version 0.5+)

New in version 2014.7.0.

**depends**

- influxdb Python module

**configuration** This module accepts connection configuration details either as parameters or as configuration settings in /etc/salt/minion on the relevant minions:

```
influxdb.host: 'localhost'
influxdb.port: 8086
influxdb.user: 'root'
influxdb.password: 'root'
```

This data can also be passed into pillar. Options passed into opts will overwrite options passed into pillar.

salt.modules.influx.**db_create**(*name*, *user=None*, *password=None*, *host=None*, *port=None*)

Create a database

**name** Database name to create

**user** The user to connect as

**password** The password of the user

**host** The host to connect to

**port** The port to connect to

CLI Example:

```
salt '*' influxdb.db_create <name>
salt '*' influxdb.db_create <name> <user> <password> <host> <port>
```

salt.modules.influx.**db_exists**(*name*, *user=None*, *password=None*, *host=None*, *port=None*)

Checks if a database exists in InfluxDB

**name** Database name to create

**user** The user to connect as

**password** The password of the user

**host** The host to connect to

**port** The port to connect to

CLI Example:

```
salt '*' influxdb.db_exists <name>
salt '*' influxdb.db_exists <name> <user> <password> <host> <port>
```

salt.modules.influx.**db_list**(*user=None*, *password=None*, *host=None*, *port=None*)

List all InfluxDB databases

**user** The user to connect as

**password** The password of the user

**host** The host to connect to

**port** The port to connect to

CLI Example:

```
salt '*' influxdb.db_list
salt '*' influxdb.db_list <user> <password> <host> <port>
```

salt.modules.influx.**db_remove**(*name*, *user=None*, *password=None*, *host=None*, *port=None*)

Remove a database

**name** Database name to remove
**user** The user to connect as
**password** The password of the user
**host** The host to connect to
**port** The port to connect to
CLI Example:

```
salt '*' influxdb.db_remove <name>
salt '*' influxdb.db_remove <name> <user> <password> <host> <port>
```

salt.modules.influx.**login_test**(*name*, *password*, *database=None*, *host=None*, *port=None*)

Checks if a credential pair can log in at all.

If a database is specified: it will check for database user existence. If a database is not specified: it will check for cluster admin existence.
**name** The user to connect as
**password** The password of the user
**database** The database to try to log in to
**host** The host to connect to
**port** The port to connect to
CLI Example:

```
salt '*' influxdb.login_test <name>
salt '*' influxdb.login_test <name> <database>
salt '*' influxdb.login_test <name> <database> <user> <password> <host> <port>
```

salt.modules.influx.**query**(*database*, *query*, *time_precision='s'*, *chunked=False*, *user=None*, *password=None*, *host=None*, *port=None*)

Querying data
**database** The database to query
**query** Query to be executed
**time_precision** Time precision to use (`s', `m', or `u')
**chunked** Whether is chunked or not
**user** The user to connect as
**password** The password of the user
**host** The host to connect to
**port** The port to connect to
CLI Example:

```
salt '*' influxdb.query <database> <query>
salt '*' influxdb.query <database> <query> <time_precision> <chunked> <user>
 ↪<password> <host> <port>
```

salt.modules.influx.**retention_policy_add**(*database*, *name*, *duration*, *replication*, *default=False*, *user=None*, *password=None*, *host=None*, *port=None*)

Add a retention policy.
**database** The database to operate on.
**name** Name of the policy to modify.
**duration** How long InfluxDB keeps the data.
**replication** How many copies of the data are stored in the cluster.
**default** Whether this policy should be the default or not. Default is False.
CLI Example:

```
salt '*' influxdb.retention_policy_add metrics default 1d 1
```

salt.modules.influx.**retention_policy_alter**(*database*, *name*, *duration*, *replication*, *default=False*, *user=None*, *password=None*, *host=None*, *port=None*)

Modify an existing retention policy.
**database** The database to operate on.
**name** Name of the policy to modify.
**duration** How long InfluxDB keeps the data.
**replication** How many copies of the data are stored in the cluster.
**default** Whether this policy should be the default or not. Default is False.
CLI Example:

```
salt '*' influxdb.retention_policy_modify metrics default 1d 1
```

salt.modules.influx.**retention_policy_exists**(*database*, *name*, *user=None*, *password=None*, *host=None*, *port=None*)

Check if a retention policy exists.
**database** The database to operate on.
**name** Name of the policy to modify.
CLI Example:

```
salt '*' influxdb.retention_policy_exists metrics default
```

salt.modules.influx.**retention_policy_get**(*database*, *name*, *user=None*, *password=None*, *host=None*, *port=None*)

Get an existing retention policy.
**database** The database to operate on.
**name** Name of the policy to modify.
CLI Example:

```
salt '*' influxdb.retention_policy_get metrics default
```

salt.modules.influx.**user_chpass**(*name*, *passwd*, *database=None*, *user=None*, *password=None*, *host=None*, *port=None*)

Change password for a cluster admin or a database user.

If a database is specified: it will update database user password. If a database is not specified: it will update cluster admin password.
**name** User name for whom to change the password
**passwd** New password
**database** The database on which to operate
**user** The user to connect as
**password** The password of the user
**host** The host to connect to
**port** The port to connect to
CLI Example:

```
salt '*' influxdb.user_chpass <name> <passwd>
salt '*' influxdb.user_chpass <name> <passwd> <database>
salt '*' influxdb.user_chpass <name> <passwd> <database> <user> <password> <host>
 ↪<port>
```

salt.modules.influx.**user_create**(*name*, *passwd*, *database=None*, *user=None*, *password=None*, *host=None*, *port=None*)

Create a cluster admin or a database user.

If a database is specified: it will create database user. If a database is not specified: it will create a cluster admin.
**name** User name for the new user to create
**passwd** Password for the new user to create
**database** The database to create the user in
**user** The user to connect as
**password** The password of the user
**host** The host to connect to
**port** The port to connect to
CLI Example:

```
salt '*' influxdb.user_create <name> <passwd>
salt '*' influxdb.user_create <name> <passwd> <database>
salt '*' influxdb.user_create <name> <passwd> <database> <user> <password> <host>
 ↪<port>
```

salt.modules.influx.**user_exists**(*name*, *database=None*, *user=None*, *password=None*, *host=None*, *port=None*)

Checks if a cluster admin or database user exists.

If a database is specified: it will check for database user existence. If a database is not specified: it will check for cluster admin existence.
**name** User name
**database** The database to check for the user to exist
**user** The user to connect as
**password** The password of the user
**host** The host to connect to
**port** The port to connect to
CLI Example:

```
salt '*' influxdb.user_exists <name>
salt '*' influxdb.user_exists <name> <database>
salt '*' influxdb.user_exists <name> <database> <user> <password> <host> <port>
```

salt.modules.influx.**user_list**(*database=None*, *user=None*, *password=None*, *host=None*, *port=None*)

List cluster admins or database users.

If a database is specified: it will return database users list. If a database is not specified: it will return cluster admins list.
**database** The database to list the users from
**user** The user to connect as
**password** The password of the user
**host** The host to connect to
**port** The port to connect to
CLI Example:

```
salt '*' influxdb.user_list
salt '*' influxdb.user_list <database>
salt '*' influxdb.user_list <database> <user> <password> <host> <port>
```

salt.modules.influx.**user_remove**(*name*, *database=None*, *user=None*, *password=None*, *host=None*, *port=None*)

Remove a cluster admin or a database user.

If a database is specified: it will remove the database user. If a database is not specified: it will remove the cluster admin.

**name** User name to remove
**database** The database to remove the user from
**user** User name for the new user to delete
**user** The user to connect as
**password** The password of the user
**host** The host to connect to
**port** The port to connect to
CLI Example:

```
salt '*' influxdb.user_remove <name>
salt '*' influxdb.user_remove <name> <database>
salt '*' influxdb.user_remove <name> <database> <user> <password> <host> <port>
```

### 13.6.125 salt.modules.infoblox

Module for managing Infoblox

Will look for pillar data infoblox:server, infoblox:user, infoblox:password if not passed to functions

New in version 2016.3.0.

**depends**

- requests

salt.modules.infoblox.**add_record**(*name*, *value*, *record_type*, *dns_view*, *infoblox_server=None*, *infoblox_user=None*, *infoblox_password=None*, *infoblox_api_version='v1.4.2'*, *sslVerify=True*)

add a record to an infoblox dns view
**name** the record name
**value**

**the value for the entry** can make use of infoblox functions for next available IP, like `func:nextavailableip:10.1.0.0/24'

**record_type** the record type (cname, a, host, etc)
**dns_view** the DNS view to add the record to
**infoblox_server** the infoblox server hostname (can also use the infoblox:server pillar)
**infoblox_user** the infoblox user to connect with (can also use the infoblox:user pillar)
**infoblox_password** the infoblox user's password (can also use the infolblox:password pillar)
**infoblox_api_version** the infoblox api version to use
**sslVerify** should ssl verification be done on the connection to the Infoblox REST API
CLI Example:

```
salt 'myminion' infoblox.add_record alias.network.name canonical.network.name
 ↪MyView
```

salt.modules.infoblox.**delete_record**(*name*, *dns_view*, *record_type*, *infoblox_server=None*, *infoblox_user=None*, *infoblox_password=None*, *infoblox_api_version='v1.4.2'*, *sslVerify=True*)

delete a record
**name** name of the record
**dns_view** the DNS view to remove the record from
**record_type** the record type (a, cname, host, etc)
**infoblox_server** the infoblox server hostname (can also use the infoblox:server pillar)
**infoblox_user** the infoblox user to connect with (can also use the infoblox:user pillar)
**infoblox_password** the infoblox user's password (can also use the infolblox:password pillar)
**infoblox_api_version** the infoblox api version to use

**sslVerify** should ssl verification be done on the connection to the Infoblox REST API
CLI Example:

```
salt my-minion infoblox.delete_record some.dns.record MyInfobloxView A
 ↪sslVerify=False
```

salt.modules.infoblox.**get_network**(*network_name*, *network_view=None*, *infoblox_server=None*, *infoblox_user=None*, *infoblox_password=None*, *infoblox_api_version='v1.4.2'*, *sslVerify=True*)

get a network from infoblox
**network_name** The name of the network in IPAM
**network_view** The name of the network view the network belongs to
**infoblox_server** the infoblox server hostname (can also use the infoblox:server pillar)
**infoblox_user** the infoblox user to connect with (can also use the infoblox:user pillar)
**infoblox_password** the infoblox user's password (can also use the infolblox:password pillar)
**infoblox_api_version** the infoblox api version to use
**sslVerify** should ssl verification be done on the connection to the Infoblox REST API
CLI Example:

```
salt myminion infoblox.get_network '10.0.0.0/8'
```

salt.modules.infoblox.**get_record**(*record_name*, *record_type='host'*, *infoblox_server=None*, *infoblox_user=None*, *infoblox_password=None*, *dns_view=None*, *infoblox_api_version='v1.4.2'*, *sslVerify=True*)

get a record from infoblox
**record_name** name of the record to search for
**record_type** type of reacord to search for (host, cname, a, etc...defaults to host)
**infoblox_server** the infoblox server hostname (can also use the infoblox:server pillar)
**infoblox_user** the infoblox user to connect with (can also use the infoblox:user pillar)
**infoblox_password** the infoblox user's password (can also use the infolblox:password pillar)
**dns_view** the infoblox DNS view to search, if not specified all views are searched
**infoblox_api_version** the infoblox api version to use
**sslVerify** should ssl verification be done on the connection to the Infoblox REST API
CLI Example:

```
salt myminion infoblox.get_record some.host.com A sslVerify=False
```

salt.modules.infoblox.**update_record**(*name*, *value*, *dns_view*, *record_type*, *infoblox_server=None*, *infoblox_user=None*, *infoblox_password=None*, *infoblox_api_version='v1.4.2'*, *sslVerify=True*)

update an entry to an infoblox dns view
**name** the dns name
**value** the value for the record
**record_type** the record type (a, cname, etc)
**dns_view** the DNS view to add the record to
**infoblox_server** the infoblox server hostname (can also use the infoblox:server pillar)
**infoblox_user** the infoblox user to connect with (can also use the infoblox:user pillar)
**infoblox_password** the infoblox user's password (can also use the infolblox:password pillar)
**infoblox_api_version** the infoblox api version to use
**sslVerify** should ssl verification be done on the connection to the Infoblox REST API
CLI Example:

```
salt '*' infoblox.update_record alias.network.name canonical.network.name
 ↪MyInfobloxView cname sslVerify=False
```

### 13.6.126 salt.modules.ini_manage

Edit ini files

**maintainer** <akilesh1597@gmail.com>

**maturity** new

**depends** re

**platform** all

(for example /etc/sysctl.conf)

salt.modules.ini_manage.**get_option**(*file_name*, *section*, *option*)

Get value of a key from a section in an ini file. Returns None if no matching key was found.

API Example:

```
import salt
sc = salt.client.get_local_client()
sc.cmd('target', 'ini.get_option',
       [path_to_ini_file, section_name, option])
```

CLI Example:

```
salt '*' ini.get_option /path/to/ini section_name option_name
```

salt.modules.ini_manage.**get_section**(*file_name*, *section*)

Retrieve a section from an ini file. Returns the section as dictionary. If the section is not found, an empty dictionary is returned.

API Example:

```
import salt
sc = salt.client.get_local_client()
sc.cmd('target', 'ini.get_section',
       [path_to_ini_file, section_name])
```

CLI Example:

```
salt '*' ini.get_section /path/to/ini section_name
```

salt.modules.ini_manage.**remove_option**(*file_name*, *section*, *option*)

Remove a key/value pair from a section in an ini file. Returns the value of the removed key, or None if nothing was removed.

API Example:

```
import salt
sc = salt.client.get_local_client()
sc.cmd('target', 'ini.remove_option',
       [path_to_ini_file, section_name, option])
```

CLI Example:

```
salt '*' ini.remove_option /path/to/ini section_name option_name
```

salt.modules.ini_manage.**remove_section**(*file_name*, *section*)

Remove a section in an ini file. Returns the removed section as dictionary, or None if nothing was removed.

API Example:

```
import salt
sc = salt.client.get_local_client()
sc.cmd('target', 'ini.remove_section',
       [path_to_ini_file, section_name])
```

CLI Example:

```
salt '*' ini.remove_section /path/to/ini section_name
```

salt.modules.ini_manage.**set_option**(*file_name*, *sections=None*)

Edit an ini file, replacing one or more sections. Returns a dictionary containing the changes made.

**file_name** path of ini_file

**sections** [None] A dictionary representing the sections to be edited ini file The keys are the section names and the values are the dictionary containing the options If the ini file does not contain sections the keys and values represent the options

API Example:

```
import salt
sc = salt.client.get_local_client()
sc.cmd('target', 'ini.set_option',
       ['path_to_ini_file', '{"section_to_change": {"key": "value"}}'])
```

CLI Example:

```
salt '*' ini.set_option /path/to/ini '{section_foo: {key: value}}'
```

### 13.6.127 salt.modules.inspectlib package

#### Submodules

#### salt.modules.inspectlib.collector module

class salt.modules.inspectlib.collector.**Inspector**(*cachedir=None*, *piddir=None*, *pidfilename=None*)

**DEFAULT_MINION_CONFIG_PATH** = `/etc/salt/minion'

**IGNORE_FS_TYPES** = ['autofs', `cifs', `nfs', `nfs4']

**IGNORE_MOUNTS** = ['proc', `sysfs', `devtmpfs', `tmpfs', `fuse.gvfs-fuse-daemon']

**IGNORE_PATHS** = ['/tmp', `/var/tmp', `/lost+found', `/var/run', `/var/lib/rpm', `/.snapshots', `/.zfs', `/etc/ssh', `/root', `/hom

**MODE** = ['configuration', `payload', `all']

**build**(*format='qcow2'*, *path='/tmp'*)

Build an image using Kiwi.

Parameters

- **format** --
- **path** --

Returns

**export**(*description*, *local=False*, *path='/tmp'*, *format='qcow2'*)
Export description for Kiwi.

**Parameters**

- **local** --
- **path** --

**Returns**

**request_snapshot**(*mode*, *priority=19*, ***kwargs*)
Take a snapshot of the system.

**snapshot**(*mode*)
Take a snapshot of the system.

salt.modules.inspectlib.collector.**is_alive**(*pidfile*)
Check if PID is still alive.

salt.modules.inspectlib.collector.**main**(*dbfile*, *pidfile*, *mode*)
Main analyzer routine.

### salt.modules.inspectlib.dbhandle module

class salt.modules.inspectlib.dbhandle.**DBHandle**(*path*)

class salt.modules.inspectlib.dbhandle.**DBHandleBase**(*path*)
Handle for the *volatile* database, which serves the purpose of caching the inspected data. This database can be destroyed or corrupted, so it should be simply re-created from scratch.

**close**()
Close the database connection.

**flush**(*table*)
Flush the table.

**open**(*new=False*)
Init the database, if required.

**purge**()
Purge whole database.

### salt.modules.inspectlib.exceptions module

exception salt.modules.inspectlib.exceptions.**InspectorKiwiProcessorException**
Kiwi builder/exporter exception.

exception salt.modules.inspectlib.exceptions.**InspectorQueryException**
Exception that is only for the inspector query.

exception salt.modules.inspectlib.exceptions.**InspectorSnapshotException**
Snapshot exception.

exception salt.modules.inspectlib.exceptions.**SIException**
System information exception.

#### salt.modules.inspectlib.query module

class salt.modules.inspectlib.query.**Query**(*scope*, *cachedir=None*)
Query the system. This class is actually puts all Salt features together, so there would be no need to pick it from various places.

**SCOPES** = ['changes', `configuration', `identity', `system', `software', `services', `payload', `all']

class salt.modules.inspectlib.query.**SysInfo**(*systype*)
System information.

#### Module contents

class salt.modules.inspectlib.**EnvLoader**(*cachedir=None*, *piddir=None*, *pidfilename=None*)
Load environment.

**DB_FILE** = `_minion_collector.db'

**DEFAULT_CACHE_PATH** = `/var/cache/salt'

**DEFAULT_PID_PATH** = `/var/run'

**PID_FILE** = `_minion_collector.pid'

### 13.6.128 salt.modules.introspect

Functions to perform introspection on a minion, and return data in a format usable by Salt States

salt.modules.introspect.**enabled_service_owners**()
Return which packages own each of the services that are currently enabled.

CLI Example:
salt myminion introspect.enabled_service_owners

salt.modules.introspect.**running_service_owners**(*exclude=(`/dev', `/home', `/media', `/proc', `/run', `/sys/', `/tmp', `/var')*)
Determine which packages own the currently running services. By default, excludes files whose full path starts with `/dev`, `/home`, `/media`, `/proc`, `/run`, `/sys`, `/tmp` and `/var`. This can be overridden by passing in a new list to `exclude`.

CLI Example:
salt myminion introspect.running_service_owners

salt.modules.introspect.**service_highstate**(*requires=True*)
Return running and enabled services in a highstate structure. By default also returns package dependencies for those services, which means that package definitions must be created outside this function. To drop the package dependencies, set `requires` to False.

CLI Example:
salt myminion introspect.service_highstate salt myminion introspect.service_highstate requires=False

### 13.6.129 salt.modules.ipmi

Support IPMI commands over LAN. This module does not talk to the local systems hardware through IPMI drivers. It uses a python module *pyghmi*.

**depends** Python module pyghmi. You can install pyghmi using pip:

```
pip install pyghmi
```

**configuration** The following configuration defaults can be define (pillar or config files):

```
ipmi.config:
    api_host: 127.0.0.1
    api_user: admin
    api_pass: apassword
    api_port: 623
    api_kg: None
```

Usage can override the config defaults:

```
salt-call ipmi.get_user api_host=myipmienabled.system
                        api_user=admin api_pass=pass
                        uid=1
```

salt.modules.ipmi.**create_user**(*uid*, *name*, *password*, *channel=14*, *callback=False*, *link_auth=True*, *ipmi_msg=True*, *privilege_level='administrator'*, ***kwargs*)

create/ensure a user is created with provided settings.

**Parameters**

- **privilege_level** -- User Privilege Limit. (Determines the maximum privilege level that the user is allowed to switch to on the specified channel.) * callback * user * operator * administrator * proprietary * no_access
- **kwargs** --
  - api_host=127.0.0.1
  - api_user=admin
  - api_pass=example
  - api_port=623
  - api_kg=None

CLI Examples:

```
salt-call ipmi.create_user uid=2 name=steverweber api_host=172.168.0.7 api_
↪pass=nevertell
```

salt.modules.ipmi.**fast_connect_test**(***kwargs*)

Returns True if connection success. This uses an aggressive timeout value!

**Parameters** **kwargs** --

- api_host=127.0.0.1
- api_user=admin
- api_pass=example
- api_port=623
- api_kg=None

CLI Examples:

```
salt-call ipmi.fast_connect_test api_host=172.168.0.9
```

salt.modules.ipmi.**get_bootdev**(***kwargs*)

Get current boot device override information.

Provides the current requested boot device. Be aware that not all IPMI devices support this. Even in BMCs that claim to, occasionally the BIOS or UEFI fail to honor it. This is usually only applicable to the next reboot.

**Parameters** **kwargs** --

- api_host=127.0.0.1
- api_user=admin
- api_pass=example
- api_port=623
- api_kg=None

CLI Example:

```
salt-call ipmi.get_bootdev api_host=127.0.0.1 api_user=admin api_pass=pass
```

salt.modules.ipmi.**get_channel_access**(*channel=14*, *read_mode='non_volatile'*, ***kwargs*)

:param kwargs:api_host=`127.0.0.1' api_user='admin' api_pass='example' api_port=623

**Parameters**

- **channel** -- number [1:7]
- **read_mode** --
  - non_volatile = get non-volatile Channel Access
  - volatile = get present volatile (active) setting of Channel Access
- **kwargs** --
  - api_host=127.0.0.1
  - api_user=admin
  - api_pass=example
  - api_port=623
  - api_kg=None

**return** A Python dict with the following keys/values:

```
{
    alerting:
    per_msg_auth:
    user_level_auth:
    access_mode:{ (ONE OF)
        0: 'disabled',
        1: 'pre_boot',
        2: 'always',
        3: 'shared'
    }
    privilege_level: { (ONE OF)
        1: 'callback',
        2: 'user',
        3: 'operator',
        4: 'administrator',
        5: 'proprietary',
    }
}
```

CLI Examples:

```
salt-call ipmi.get_channel_access channel=1
```

salt.modules.ipmi.**get_channel_info**(*channel=14*, ***kwargs*)

Get channel info

**Parameters**

- **channel** -- number [1:7]
- **kwargs** --
  - api_host=127.0.0.1
  - api_user=admin
  - api_pass=example
  - api_port=623
  - api_kg=None

**return** channel session supports:

```
- no_session: channel is session-less
- single: channel is single-session
- multi: channel is multi-session
- auto: channel is session-based (channel could alternate between
    single- and multi-session operation, as can occur with a
    serial/modem channel that supports connection mode auto-detect)
```

CLI Examples:

```
salt-call ipmi.get_channel_info
```

salt.modules.ipmi.**get_channel_max_user_count**(*channel=14*, ***kwargs*)

Get max users in channel

**Parameters**

- **channel** -- number [1:7]
- **kwargs** --
  - api_host=127.0.0.1
  - api_user=admin
  - api_pass=example
  - api_port=623
  - api_kg=None

**Returns** int -- often 16

CLI Examples:

```
salt-call ipmi.get_channel_max_user_count
```

salt.modules.ipmi.**get_health**(***kwargs*)

Get Summarize health

This provides a summary of the health of the managed system. It additionally provides an iterable list of reasons for warning, critical, or failed assessments.

good health: {`badreadings': [], `health': 0}

**Parameters** **kwargs** --

- api_host=127.0.0.1
- api_user=admin
- api_pass=example
- api_port=623
- api_kg=None

CLI Example:

```
salt-call ipmi.get_health api_host=127.0.0.1 api_user=admin api_pass=pass
```

salt.modules.ipmi.**get_power**(***kwargs*)

Get current power state

The response, if successful, should contain `powerstate' key and either `on' or `off' to indicate current state.

**Parameters** **kwargs** --

- api_host=127.0.0.1
- api_user=admin
- api_pass=example
- api_port=623
- api_kg=None

CLI Example:

```
salt-call ipmi.get_power api_host=127.0.0.1 api_user=admin api_pass=pass
```

salt.modules.ipmi.**get_sensor_data**(***kwargs*)

Get sensor readings

Iterates sensor reading objects

**Parameters** **kwargs** --

- api_host=127.0.0.1
- api_user=admin
- api_pass=example
- api_port=623
- api_kg=None

CLI Example:

```
salt-call ipmi.get_sensor_data api_host=127.0.0.1 api_user=admin api_pass=pass
```

salt.modules.ipmi.**get_user**(*uid*, *channel=14*, ***kwargs*)

Get user from uid and access on channel

**Parameters**

- **uid** -- user number [1:16]
- **channel** -- number [1:7]
- **kwargs** --
  - api_host=127.0.0.1
  - api_user=admin

- api_pass=example
- api_port=623
- api_kg=None

return

```
name: (str)
uid: (int)
channel: (int)
access:
    - callback (bool)
    - link_auth (bool)
    - ipmi_msg (bool)
    - privilege_level: (str)[callback, user, operatorm administrator,
                             proprietary, no_access]
```

CLI Examples:

```
salt-call ipmi.get_user uid=2
```

salt.modules.ipmi.**get_user_access**(*uid*, *channel=14*, ***kwargs*)

Get user access

**Parameters**

- **uid** -- user number [1:16]
- **channel** -- number [1:7]
- **kwargs** --
  - api_host=127.0.0.1
  - api_user=admin
  - api_pass=example
  - api_port=623
  - api_kg=None

return

```
channel_info:
    - max_user_count = maximum number of user IDs on this channel
    - enabled_users = count of User ID slots presently in use
    - users_with_fixed_names = count of user IDs with fixed names
access:
    - callback
    - link_auth
    - ipmi_msg
    - privilege_level: [reserved, callback, user, operator
                        administrator, proprietary, no_access]
```

CLI Examples:

```
salt-call ipmi.get_user_access uid=2
```

salt.modules.ipmi.**get_user_name**(*uid*, *return_none_on_error=True*, ***kwargs*)

Get user name

**Parameters**

- **uid** -- user number [1:16]
- **return_none_on_error** -- return None on error

- **kwargs** --
  - api_host=127.0.0.1
  - api_user=admin
  - api_pass=example
  - api_port=623
  - api_kg=None

CLI Examples:

```
salt-call ipmi.get_user_name uid=2
```

salt.modules.ipmi.**get_users**(*channel=14*, ***kwargs*)

get list of users and access information

**Parameters**

- **channel** -- number [1:7]
- **kwargs** --
  - api_host=127.0.0.1
  - api_user=admin
  - api_pass=example
  - api_port=623
  - api_kg=None

**Returns**

- name: (str)
- uid: (int)
- channel: (int)
- **access**:
  - callback (bool)
  - link_auth (bool)
  - ipmi_msg (bool)
  - privilege_level: (str)[callback, user, operatorm administrator, proprietary, no_access]

CLI Examples:

```
salt-call ipmi.get_users api_host=172.168.0.7
```

salt.modules.ipmi.**raw_command**(*netfn*, *command*, *bridge_request=None*, *data=()*, *retry=True*, *delay_xmit=None*, ***kwargs*)

Send raw ipmi command

This allows arbitrary IPMI bytes to be issued. This is commonly used for certain vendor specific commands.

**Parameters**

- **netfn** -- Net function number
- **command** -- Command value

- **bridge_request** -- The target slave address and channel number for the bridge request.
- **data** -- Command data as a tuple or list
- **kwargs** --
  - api_host=127.0.0.1
  - api_user=admin
  - api_pass=example
  - api_port=623
  - api_kg=None

**Returns** dict -- The response from IPMI device

CLI Examples:

```
salt-call ipmi.raw_command netfn=0x06 command=0x46 data=[0x02]
# this will return the name of the user with id 2 in bytes
```

salt.modules.ipmi.**set_bootdev**(*bootdev='default'*, *persist=False*, *uefiboot=False*, ***kwargs*)

Set boot device to use on next reboot

**Parameters**

- **bootdev** --
  - network: Request network boot
  - hd: Boot from hard drive
  - safe: Boot from hard drive, requesting `safe mode'
  - optical: boot from CD/DVD/BD drive
  - setup: Boot into setup utility
  - default: remove any IPMI directed boot device request
- **persist** -- If true, ask that system firmware use this device beyond next boot. Be aware many systems do not honor this
- **uefiboot** -- If true, request UEFI boot explicitly. Strictly speaking, the spec suggests that if not set, the system should BIOS boot and offers no ``don't care'' option. In practice, this flag not being set does not preclude UEFI boot on any system I've encountered.
- **kwargs** --
  - api_host=127.0.0.1
  - api_user=admin
  - api_pass=example
  - api_port=623
  - api_kg=None

**Returns** dict or True -- If callback is not provided, the response

CLI Examples:

```
salt-call ipmi.set_bootdev bootdev=network persist=True
```

salt.modules.ipmi.**set_channel_access**(*channel=14*, *access_update_mode='non_volatile'*, *alerting=False*, *per_msg_auth=False*, *user_level_auth=False*, *access_mode='always'*, *privilege_update_mode='non_volatile'*, *privilege_level='administrator'*, ***kwargs*)

Set channel access

**Parameters**

- **channel** -- number [1:7]
- **access_update_mode** --
  - `dont_change' = don't set or change Channel Access
  - `non_volatile' = set non-volatile Channel Access
  - `volatile' = set volatile (active) setting of Channel Access
- **alerting** --

  **PEF Alerting Enable/Disable**
  - True = enable PEF Alerting
  - False = disable PEF Alerting on this channel

  (Alert Immediate command can still be used to generate alerts)
- **per_msg_auth** --

  **Per-message Authentication**
  - True = enable
  - False = disable Per-message Authentication. [Authentication required to activate any session on this channel, but authentication not used on subsequent packets for the session.]
- **user_level_auth** --

  **User Level Authentication Enable/Disable**.
  - True = enable User Level Authentication. All User Level commands are to be authenticated per the Authentication Type that was negotiated when the session was activated.
  - False = disable User Level Authentication. Allow User Level commands to be executed without being authenticated. If the option to disable User Level Command authentication is accepted, the BMC will accept packets with Authentication Type set to None if they contain user level commands. For outgoing packets, the BMC returns responses with the same Authentication Type that was used for the request.
- **access_mode** -- Access Mode for IPMI messaging (PEF Alerting is enabled/disabled separately from IPMI messaging)
  - disabled = disabled for IPMI messaging
  - pre_boot = pre-boot only channel only available when system is in a powered down state or in BIOS prior to start of boot.
  - always = channel always available regardless of system mode. BIOS typically dedicates the serial connection to the BMC.
  - shared = same as always available, but BIOS typically leaves the serial port available for software use.

- **privilege_update_mode** -- Channel Privilege Level Limit. This value sets the maximum privilege level that can be accepted on the specified channel.
  - dont_change = don't set or change channel Privilege Level Limit
  - non_volatile = non-volatile Privilege Level Limit according
  - volatile = volatile setting of Privilege Level Limit
- **privilege_level** --

  **Channel Privilege Level Limit**
  - reserved = unused
  - callback
  - user
  - operator
  - administrator
  - proprietary = used by OEM
- **kwargs** --
  - api_host=127.0.0.1
  - api_user=admin
  - api_pass=example
  - api_port=623
  - api_kg=None

CLI Examples:

```
salt-call ipmi.set_channel_access privilege_level='administrator'
```

salt.modules.ipmi.**set_identify**(*on=True*, *duration=600*, ***kwargs*)

Request identify light

Request the identify light to turn off, on for a duration, or on indefinitely. Other than error exceptions,

**Parameters**

- **on** -- Set to True to force on or False to force off
- **duration** -- Set if wanting to request turn on for a duration in seconds, None = indefinitely.
- **kwargs** --
  - api_host=127.0.0.1
  - api_user=admin
  - api_pass=example
  - api_port=623
  - api_kg=None

CLI Examples:

```
salt-call ipmi.set_identify
```

salt.modules.ipmi.**set_power**(*state='power_on'*, *wait=True*, ***kwargs*)

Request power state change

**Parameters**

- **name** --
  - power_on -- system turn on
  - power_off -- system turn off (without waiting for OS)
  - shutdown -- request OS proper shutdown
  - reset -- reset (without waiting for OS)
  - boot -- If system is off, then `on', else `reset'
- **ensure** -- If (bool True), do not return until system actually completes requested state change for 300 seconds. If a non-zero (int), adjust the wait time to the requested number of seconds
- **kwargs** --
  - api_host=127.0.0.1
  - api_user=admin
  - api_pass=example
  - api_port=623
  - api_kg=None

**Returns** dict -- A dict describing the response retrieved

CLI Examples:

```
salt-call ipmi.set_power state=shutdown wait=True
```

salt.modules.ipmi.**set_user_access**(*uid*, *channel=14*, *callback=True*, *link_auth=True*, *ipmi_msg=True*, *privilege_level='administrator'*, ***kwargs*)

Set user access

**Parameters**

- **uid** -- user number [1:16]
- **channel** -- number [1:7]
- **callback** --

  **User Restricted to Callback**

  - False = User Privilege Limit is determined by the User Privilege Limit parameter, below, for both callback and non-callback connections.
  - True = User Privilege Limit is determined by the User Privilege Limit parameter for callback connections, but is restricted to Callback level for non-callback connections. Thus, a user can only initiate a Callback when they `call in' to the BMC, but once the callback connection has been made, the user could potentially establish a session as an Operator.
- **link_auth** -- User Link authentication enable/disable (used to enable whether this user's name and password information will be used for link authentication, e.g. PPP CHAP) for the given channel. Link authentication itself is a global setting for the channel and is enabled/disabled via the serial/modem configuration parameters.

- **ipmi_msg** -- User IPMI Messaging: (used to enable/disable whether this user's name and password information will be used for IPMI Messaging. In this case, `IPMI Messaging' refers to the ability to execute generic IPMI commands that are not associated with a particular payload type. For example, if IPMI Messaging is disabled for a user, but that user is enabled for activating the SOL payload type, then IPMI commands associated with SOL and session management, such as Get SOL Configuration Parameters and Close Session are available, but generic IPMI commands such as Get SEL Time are unavailable.)
- **privilege_level** -- User Privilege Limit. (Determines the maximum privilege level that the user is allowed to switch to on the specified channel.)
  - callback
  - user
  - operator
  - administrator
  - proprietary
  - no_access
- **kwargs** --
  - api_host=127.0.0.1
  - api_user=admin
  - api_pass=example
  - api_port=623
  - api_kg=None

CLI Examples:

```
salt-call ipmi.set_user_access uid=2 privilege_level='operator'
```

salt.modules.ipmi.**set_user_name**(*uid*, *name*, ***kwargs*)

Set user name

**Parameters**

- **uid** -- user number [1:16]
- **name** -- username (limit of 16bytes)
- **kwargs** --
  - api_host=127.0.0.1
  - api_user=admin
  - api_pass=example
  - api_port=623
  - api_kg=None

CLI Examples:

```
salt-call ipmi.set_user_name uid=2 name='steverweber'
```

salt.modules.ipmi.**set_user_password**(*uid*, *mode='set_password'*, *password=None*, ***kwargs*)

Set user password and (modes)

**Parameters**

- **uid** -- id number of user. see: get_names_uid()['name']
- **mode** --
  - disable = disable user connections
  - enable = enable user connections
  - set_password = set or ensure password
  - test_password = test password is correct
- **password** -- max 16 char string (optional when mode is [disable or enable])
- **kwargs** --
  - api_host=127.0.0.1
  - api_user=admin
  - api_pass=example
  - api_port=623
  - api_kg=None

**Returns** True on success when mode = test_password, return False on bad password

CLI Example:

```
salt-call ipmi.set_user_password api_host=127.0.0.1 api_user=admin api_pass=pass
                                 uid=1 password=newPass
salt-call ipmi.set_user_password uid=1 mode=enable
```

`salt.modules.ipmi.`**`user_delete`**(*uid*, *channel=14*, ***kwargs*)

Delete user (helper)

**Parameters**

- **uid** -- user number [1:16]
- **channel** -- number [1:7]
- **kwargs** --
  - api_host=127.0.0.1
  - api_user=admin
  - api_pass=example
  - api_port=623
  - api_kg=None

CLI Examples:

```
salt-call ipmi.user_delete uid=2
```

### 13.6.130 salt.modules.ipset

Support for ipset

`salt.modules.ipset.`**`add`**(*set=None*, *entry=None*, *family='ipv4'*, ***kwargs*)

Append an entry to the specified set.

CLI Example:

```
salt '*' ipset.add setname 192.168.1.26

salt '*' ipset.add setname 192.168.0.3,AA:BB:CC:DD:EE:FF
```

salt.modules.ipset.**check**(*set=None*, *entry=None*, *family='ipv4'*)

Check that an entry exists in the specified set.

**set** The ipset name

**entry** An entry in the ipset. This parameter can be a single IP address, a range of IP addresses, or a subnet block. Example:

```
192.168.0.1
192.168.0.2-192.168.0.19
192.168.0.0/25
```

**family** IP protocol version: ipv4 or ipv6

CLI Example:

```
salt '*' ipset.check setname '192.168.0.1 comment "Hello"'
```

salt.modules.ipset.**check_set**(*set=None*, *family='ipv4'*)

Check that given ipset set exists.

New in version 2014.7.0.

CLI Example:

```
salt '*' ipset.check_set setname
```

salt.modules.ipset.**delete**(*set=None*, *entry=None*, *family='ipv4'*, ***kwargs*)

Delete an entry from the specified set.

CLI Example:

```
salt '*' ipset.delete setname 192.168.0.3,AA:BB:CC:DD:EE:FF
```

salt.modules.ipset.**delete_set**(*set=None*, *family='ipv4'*)

New in version 2014.7.0.

Delete ipset set.

CLI Example:

```
salt '*' ipset.delete_set custom_set

IPv6:
salt '*' ipset.delete_set custom_set family=ipv6
```

salt.modules.ipset.**flush**(*set=None*, *family='ipv4'*)

Flush entries in the specified set, Flush all sets if set is not specified.

CLI Example:

```
salt '*' ipset.flush

salt '*' ipset.flush set

IPv6:
salt '*' ipset.flush

salt '*' ipset.flush set
```

salt.modules.ipset.**list_sets**(*family='ipv4'*)
New in version 2014.7.0.

List all ipset sets.

CLI Example:

```
salt '*' ipset.list_sets
```

salt.modules.ipset.**long_range**(*start*, *end*)

salt.modules.ipset.**new_set**(*set=None*, *set_type=None*, *family='ipv4'*, *comment=False*, ***kwargs*)
New in version 2014.7.0.

Create new custom set

CLI Example:

```
salt '*' ipset.new_set custom_set list:set

salt '*' ipset.new_set custom_set list:set comment=True

IPv6:
salt '*' ipset.new_set custom_set list:set family=ipv6
```

salt.modules.ipset.**rename_set**(*set=None*, *new_set=None*, *family='ipv4'*)
New in version 2014.7.0.

Delete ipset set.

CLI Example:

```
salt '*' ipset.rename_set custom_set new_set=new_set_name

IPv6:
salt '*' ipset.rename_set custom_set new_set=new_set_name family=ipv6
```

salt.modules.ipset.**test**(*set=None*, *entry=None*, *family='ipv4'*, ***kwargs*)
Test if an entry is in the specified set.

CLI Example:

```
salt '*' ipset.test setname 192.168.0.2

IPv6:
salt '*' ipset.test setname fd81:fc56:9ac7::/48
```

salt.modules.ipset.**version**()
Return version from ipset --version

CLI Example:

```
salt '*' ipset.version
```

### 13.6.131 salt.modules.iptables

Support for iptables

salt.modules.iptables.**append**(*table='filter'*, *chain=None*, *rule=None*, *family='ipv4'*)
Append a rule to the specified table/chain.

**This function accepts a rule in a standard iptables command format**, starting with the chain. Trying to force users to adapt to a new method of creating rules would be irritating at best, and we already have a parser that can handle it.

CLI Example:

```
salt '*' iptables.append filter INPUT \
    rule='-m state --state RELATED,ESTABLISHED -j ACCEPT'

IPv6:
salt '*' iptables.append filter INPUT \
    rule='-m state --state RELATED,ESTABLISHED -j ACCEPT' \
    family=ipv6
```

salt.modules.iptables.**build_rule**(*table='filter'*, *chain=None*, *command=None*, *position=''*, *full=None*, *family='ipv4'*, ***kwargs*)

Build a well-formatted iptables rule based on kwargs. A *table* and *chain* are not required, unless *full* is True.

If *full* is *True*, then *table*, *chain* and *command* are required. *command* may be specified as either a short option (`I') or a long option (*--insert*). This will return the iptables command, exactly as it would be used from the command line.

If a position is required (as with *-I* or *-D*), it may be specified as *position*. This will only be useful if *full* is True.

If *connstate* is passed in, it will automatically be changed to *state*.

To pass in jump options that doesn't take arguments, pass in an empty string.

CLI Examples:

```
salt '*' iptables.build_rule match=state \
    connstate=RELATED,ESTABLISHED jump=ACCEPT

salt '*' iptables.build_rule filter INPUT command=I position=3 \
    full=True match=state state=RELATED,ESTABLISHED jump=ACCEPT

salt '*' iptables.build_rule filter INPUT command=A \
    full=True match=state state=RELATED,ESTABLISHED \
    source='127.0.0.1' jump=ACCEPT

.. Invert Rules
salt '*' iptables.build_rule filter INPUT command=A \
    full=True match=state state=RELATED,ESTABLISHED \
    source='! 127.0.0.1' jump=ACCEPT

salt '*' iptables.build_rule filter INPUT command=A \
    full=True match=state state=RELATED,ESTABLISHED \
    destination='not 127.0.0.1' jump=ACCEPT

IPv6:
salt '*' iptables.build_rule match=state \
    connstate=RELATED,ESTABLISHED jump=ACCEPT \
    family=ipv6
salt '*' iptables.build_rule filter INPUT command=I position=3 \
    full=True match=state state=RELATED,ESTABLISHED jump=ACCEPT \
    family=ipv6
```

salt.modules.iptables.**check**(*table='filter'*, *chain=None*, *rule=None*, *family='ipv4'*)

Check for the existence of a rule in the table and chain

**This function accepts a rule in a standard iptables command format**, starting with the chain. Trying to force users to adapt to a new method of creating rules would be irritating at best, and we already have

a parser that can handle it.

CLI Example:

```
salt '*' iptables.check filter INPUT \
    rule='-m state --state RELATED,ESTABLISHED -j ACCEPT'

IPv6:
salt '*' iptables.check filter INPUT \
    rule='-m state --state RELATED,ESTABLISHED -j ACCEPT' \
    family=ipv6
```

salt.modules.iptables.**check_chain**(*table='filter'*, *chain=None*, *family='ipv4'*)

New in version 2014.1.0.

Check for the existence of a chain in the table

CLI Example:

```
salt '*' iptables.check_chain filter INPUT

IPv6:
salt '*' iptables.check_chain filter INPUT family=ipv6
```

salt.modules.iptables.**delete**(*table*, *chain=None*, *position=None*, *rule=None*, *family='ipv4'*)

**Delete a rule from the specified table/chain, specifying either the rule** in its entirety, or the rule's position in the chain.

**This function accepts a rule in a standard iptables command format**, starting with the chain. Trying to force users to adapt to a new method of creating rules would be irritating at best, and we already have a parser that can handle it.

CLI Examples:

```
salt '*' iptables.delete filter INPUT position=3
salt '*' iptables.delete filter INPUT \
    rule='-m state --state RELATED,ESTABLISHED -j ACCEPT'

IPv6:
salt '*' iptables.delete filter INPUT position=3 family=ipv6
salt '*' iptables.delete filter INPUT \
    rule='-m state --state RELATED,ESTABLISHED -j ACCEPT' \
    family=ipv6
```

salt.modules.iptables.**delete_chain**(*table='filter'*, *chain=None*, *family='ipv4'*)

New in version 2014.1.0.

Delete custom chain to the specified table.

CLI Example:

```
salt '*' iptables.delete_chain filter CUSTOM_CHAIN

IPv6:
salt '*' iptables.delete_chain filter CUSTOM_CHAIN family=ipv6
```

salt.modules.iptables.**flush**(*table='filter'*, *chain=''*, *family='ipv4'*)

Flush the chain in the specified table, flush all chains in the specified table if not specified chain.

CLI Example:

```
salt '*' iptables.flush filter INPUT

IPv6:
salt '*' iptables.flush filter INPUT family=ipv6
```

salt.modules.iptables.**get_policy**(*table='filter'*, *chain=None*, *family='ipv4'*)

Return the current policy for the specified table/chain

CLI Example:

```
salt '*' iptables.get_policy filter INPUT

IPv6:
salt '*' iptables.get_policy filter INPUT family=ipv6
```

salt.modules.iptables.**get_rules**(*family='ipv4'*)

Return a data structure of the current, in-memory rules

CLI Example:

```
salt '*' iptables.get_rules

IPv6:
salt '*' iptables.get_rules family=ipv6
```

salt.modules.iptables.**get_saved_policy**(*table='filter'*, *chain=None*, *conf_file=None*, *family='ipv4'*)

Return the current policy for the specified table/chain

CLI Examples:

```
salt '*' iptables.get_saved_policy filter INPUT
salt '*' iptables.get_saved_policy filter INPUT \
    conf_file=/etc/iptables.saved

IPv6:
salt '*' iptables.get_saved_policy filter INPUT family=ipv6
salt '*' iptables.get_saved_policy filter INPUT \
    conf_file=/etc/iptables.saved family=ipv6
```

salt.modules.iptables.**get_saved_rules**(*conf_file=None*, *family='ipv4'*)

Return a data structure of the rules in the conf file

CLI Example:

```
salt '*' iptables.get_saved_rules

IPv6:
salt '*' iptables.get_saved_rules family=ipv6
```

salt.modules.iptables.**insert**(*table='filter'*, *chain=None*, *position=None*, *rule=None*, *family='ipv4'*)

Insert a rule into the specified table/chain, at the specified position.

**This function accepts a rule in a standard iptables command format**, starting with the chain. Trying to force users to adapt to a new method of creating rules would be irritating at best, and we already have a parser that can handle it.

**If the position specified is a negative number, then the insert will be** performed counting from the end of the list. For instance, a position of -1 will insert the rule as the second to last rule. To insert a rule in the last position, use the append function instead.

CLI Examples:

```
salt '*' iptables.insert filter INPUT position=3 \
    rule='-m state --state RELATED,ESTABLISHED -j ACCEPT'

IPv6:
salt '*' iptables.insert filter INPUT position=3 \
    rule='-m state --state RELATED,ESTABLISHED -j ACCEPT' \
    family=ipv6
```

salt.modules.iptables.**new_chain**(*table='filter'*, *chain=None*, *family='ipv4'*)

New in version 2014.1.0.

Create new custom chain to the specified table.

CLI Example:

```
salt '*' iptables.new_chain filter CUSTOM_CHAIN

IPv6:
salt '*' iptables.new_chain filter CUSTOM_CHAIN family=ipv6
```

salt.modules.iptables.**save**(*filename=None*, *family='ipv4'*)

Save the current in-memory rules to disk

CLI Example:

```
salt '*' iptables.save /etc/sysconfig/iptables

IPv6:
salt '*' iptables.save /etc/sysconfig/iptables family=ipv6
```

salt.modules.iptables.**set_policy**(*table='filter'*, *chain=None*, *policy=None*, *family='ipv4'*)

Set the current policy for the specified table/chain

CLI Example:

```
salt '*' iptables.set_policy filter INPUT ACCEPT

IPv6:
salt '*' iptables.set_policy filter INPUT ACCEPT family=ipv6
```

salt.modules.iptables.**version**(*family='ipv4'*)

Return version from iptables --version

CLI Example:

```
salt '*' iptables.version

IPv6:
salt '*' iptables.version family=ipv6
```

### 13.6.132 salt.modules.iwtools module

Support for Wireless Tools for Linux

salt.modules.iwtools.**list_interfaces**(*style=None*)

List all of the wireless interfaces

CLI Example:

salt minion iwtools.list_interfaces

salt.modules.iwtools.**scan**(*iface*, *style=None*)

List networks on a wireless interface

CLI Examples:

salt minion iwtools.scan wlp3s0 salt minion iwtools.scan wlp3s0 list

salt.modules.iwtools.**set_mode**(*iface*, *mode*)

List networks on a wireless interface

CLI Example:

salt minion iwtools.set_mode wlp3s0 Managed

### 13.6.133 salt.modules.jboss7

Module for managing JBoss AS 7 through the CLI interface.

New in version 2015.5.0.

**In order to run each function, jboss_config dictionary with the following properties must be passed:**

- cli_path: the path to jboss-cli script, for example: `/opt/jboss/jboss-7.0/bin/jboss-cli.sh'
- controller: the IP address and port of controller, for example: 10.11.12.13:9999
- cli_user: username to connect to jboss administration console if necessary
- cli_password: password to connect to jboss administration console if necessary

Example:

```
jboss_config:
   cli_path: '/opt/jboss/jboss-7.0/bin/jboss-cli.sh'
   controller: 10.11.12.13:9999
   cli_user: 'jbossadm'
   cli_password: 'jbossadm'
```

salt.modules.jboss7.**create_datasource**(*jboss_config*, *name*, *datasource_properties*, *profile=None*)

Create datasource in running jboss instance

**jboss_config** Configuration dictionary with properties specified above.

**name** Datasource name

**datasource_properties**

**A dictionary of datasource properties to be created:**

- driver-name: mysql
- connection-url: `jdbc:mysql://localhost:3306/sampleDatabase`
- jndi-name: `java:jboss/datasources/sampleDS'
- user-name: sampleuser
- password: secret
- min-pool-size: 3
- use-java-context: True

**profile** The profile name (JBoss domain mode only)

CLI Example:

```
salt '*' jboss7.create_datasource '{"cli_path": "integration.modules.sysmod.
↪SysModuleTest.test_valid_docs", "controller": "10.11.12.13:9999", "cli_user":
↪"jbossadm", "cli_password": "jbossadm"}' 'my_datasource' '{"driver-name": "mysql
↪", "connection-url": "jdbc:mysql://localhost:3306/sampleDatabase", "jndi-name":
↪"java:jboss/datasources/sampleDS", "user-name": "sampleuser", "password":
↪"secret", "min-pool-size": 3, "use-java-context": True}'
```

salt.modules.jboss7.**create_simple_binding**(*jboss_config*, *binding_name*, *value*, *profile=None*)

Create a simple jndi binding in the running jboss instance

**jboss_config** Configuration dictionary with properties specified above.

**binding_name** Binding name to be created

**value** Binding value

**profile** The profile name (JBoss domain mode only)

CLI Example:

```
salt '*' jboss7.create_simple_binding \
       '{"cli_path": "integration.modules.sysmod.SysModuleTest.test_valid_docs", \
        "controller": "10.11.12.13:9999", "cli_user": "jbossadm", "cli_password":
↪"jbossadm"}' \
       my_binding_name my_binding_value
```

salt.modules.jboss7.**deploy**(*jboss_config*, *source_file*)

Deploy the application on the jboss instance from the local file system where minion is running.

**jboss_config** Configuration dictionary with properties specified above.

**source_file** Source file to deploy from

CLI Example:

```
salt '*' jboss7.deploy '{"cli_path": "integration.modules.sysmod.SysModuleTest.
↪test_valid_docs", "controller": "10.11.12.13:9999", "cli_user": "jbossadm",
↪"cli_password": "jbossadm"}' /opt/deploy_files/my_deploy
```

salt.modules.jboss7.**list_deployments**(*jboss_config*)

List all deployments on the jboss instance

**jboss_config**

Configuration dictionary with properties specified above.

CLI Example:

```
salt '*' jboss7.list_deployments '{"cli_path": "integration.modules.sysmod.
↪SysModuleTest.test_valid_docs", "controller": "10.11.12.13:9999", "cli_user
↪": "jbossadm", "cli_password": "jbossadm"}'
```

salt.modules.jboss7.**read_datasource**(*jboss_config*, *name*, *profile=None*)

Read datasource properties in the running jboss instance.

**jboss_config** Configuration dictionary with properties specified above.

**name** Datasource name

**profile** Profile name (JBoss domain mode only)

CLI Example:

```
salt '*' jboss7.read_datasource '{"cli_path": "integration.modules.sysmod.
↪SysModuleTest.test_valid_docs", "controller": "10.11.12.13:9999", "cli_user":
↪"jbossadm", "cli_password": "jbossadm"}'
```

salt.modules.jboss7.**read_simple_binding**(*jboss_config*, *binding_name*, *profile=None*)

Read jndi binding in the running jboss instance

**jboss_config** Configuration dictionary with properties specified above.
**binding_name** Binding name to be created
**profile** The profile name (JBoss domain mode only)
CLI Example:

```
salt '*' jboss7.read_simple_binding '{"cli_path": "integration.modules.sysmod.SysModuleTest.test_valid_docs", "controller": "10.11.12.13:9999", "cli_user": "jbossadm", "cli_password": "jbossadm"}' my_binding_name
```

`salt.modules.jboss7.`**`reload`**(*jboss_config*, *host=None*)
Reload running jboss instance
**jboss_config** Configuration dictionary with properties specified above.
**host** The name of the host. JBoss domain mode only - and required if running in domain mode. The host name is the "name" attribute of the "host" element in host.xml
CLI Example:

```
salt '*' jboss7.reload '{"cli_path": "integration.modules.sysmod.SysModuleTest.test_valid_docs", "controller": "10.11.12.13:9999", "cli_user": "jbossadm", "cli_password": "jbossadm"}'
```

`salt.modules.jboss7.`**`remove_datasource`**(*jboss_config*, *name*, *profile=None*)
Remove an existing datasource from the running jboss instance.
**jboss_config** Configuration dictionary with properties specified above.
**name** Datasource name
**profile** The profile (JBoss domain mode only)
CLI Example:

```
salt '*' jboss7.remove_datasource '{"cli_path": "integration.modules.sysmod.SysModuleTest.test_valid_docs", "controller": "10.11.12.13:9999", "cli_user": "jbossadm", "cli_password": "jbossadm"}' my_datasource_name
```

`salt.modules.jboss7.`**`status`**(*jboss_config*, *host=None*, *server_config=None*)
Get status of running jboss instance.
**jboss_config** Configuration dictionary with properties specified above.
**host** The name of the host. JBoss domain mode only - and required if running in domain mode. The host name is the "name" attribute of the "host" element in host.xml
**server_config** The name of the Server Configuration. JBoss Domain mode only - and required if running in domain mode.
CLI Example:

```
salt '*' jboss7.status '{"cli_path": "integration.modules.sysmod.SysModuleTest.test_valid_docs", "controller": "10.11.12.13:9999", "cli_user": "jbossadm", "cli_password": "jbossadm"}'
```

`salt.modules.jboss7.`**`stop_server`**(*jboss_config*, *host=None*)
Stop running jboss instance
**jboss_config** Configuration dictionary with properties specified above.
**host** The name of the host. JBoss domain mode only - and required if running in domain mode. The host name is the "name" attribute of the "host" element in host.xml
CLI Example:

```
salt '*' jboss7.stop_server '{"cli_path": "integration.modules.sysmod.SysModuleTest.test_valid_docs", "controller": "10.11.12.13:9999", "cli_user": "jbossadm", "cli_password": "jbossadm"}'
```

salt.modules.jboss7.**undeploy**(*jboss_config*, *deployment*)

Undeploy the application from jboss instance

**jboss_config** Configuration dictionary with properties specified above.

**deployment** Deployment name to undeploy

CLI Example:

```
salt '*' jboss7.undeploy '{"cli_path": "integration.modules.sysmod.SysModuleTest.
↪test_valid_docs", "controller": "10.11.12.13:9999", "cli_user": "jbossadm",
↪"cli_password": "jbossadm"}' my_deployment
```

salt.modules.jboss7.**update_datasource**(*jboss_config*, *name*, *new_properties*, *profile=None*)

Update an existing datasource in running jboss instance. If the property doesn't exist if will be created, if it does, it will be updated with the new value

**jboss_config** Configuration dictionary with properties specified above.

**name** Datasource name

**new_properties**

**A dictionary of datasource properties to be updated. For example:**

- driver-name: mysql
- connection-url: `jdbc:mysql://localhost:3306/sampleDatabase`
- jndi-name: `java:jboss/datasources/sampleDS'
- user-name: sampleuser
- password: secret
- min-pool-size: 3
- use-java-context: True

**profile** The profile name (JBoss domain mode only)

CLI Example:

```
salt '*' jboss7.update_datasource '{"cli_path": "integration.modules.sysmod.
↪SysModuleTest.test_valid_docs", "controller": "10.11.12.13:9999", "cli_user":
↪"jbossadm", "cli_password": "jbossadm"}' 'my_datasource' '{"driver-name": "mysql
↪", "connection-url": "jdbc:mysql://localhost:3306/sampleDatabase", "jndi-name":
↪"java:jboss/datasources/sampleDS", "user-name": "sampleuser", "password":
↪"secret", "min-pool-size": 3, "use-java-context": True}'
```

salt.modules.jboss7.**update_simple_binding**(*jboss_config*, *binding_name*, *value*, *profile=None*)

Update the simple jndi binding in the running jboss instance

**jboss_config** Configuration dictionary with properties specified above.

**binding_name** Binding name to be updated

**value** New binding value

**profile** The profile name (JBoss domain mode only)

CLI Example:

```
salt '*' jboss7.update_simple_binding '{"cli_path": "integration.modules.sysmod.
↪SysModuleTest.test_valid_docs", "controller": "10.11.12.13:9999", "cli_user":
↪"jbossadm", "cli_password": "jbossadm"}' my_binding_name my_binding_value
```

### 13.6.134 salt.modules.jboss7_cli

Module for low-level interaction with JbossAS7 through CLI.

This module exposes two ways of interaction with the CLI, either through commands or operations.

---

**Note**: Following JBoss documentation (https://developer.jboss.org/wiki/CommandLineInterface): ``Operations are considered a low level but comprehensive way to manage the AS controller, i.e. if it can't be done with operations it can't be done in any other way. Commands, on the other hand, are more user-friendly in syntax, although most of them still translate into operation requests and some of them even into a few composite operation requests, i.e. commands also simplify some management operations from the user's point of view.''

---

The difference between calling a command or operation is in handling the result. Commands return a zero return code if operation is successful or return non-zero return code and print an error to standard output in plain text, in case of an error.

Operations return a json-like structure, that contain more information about the result. In case of a failure, they also return a specific return code. This module parses the output from the operations and returns it as a dictionary so that an execution of an operation can then be verified against specific errors.

**In order to run each function, jboss_config dictionary with the following properties must be passed**:

- cli_path: the path to jboss-cli script, for example: `/opt/jboss/jboss-7.0/bin/jboss-cli.sh'
- controller: the IP address and port of controller, for example: 10.11.12.13:9999
- cli_user: username to connect to jboss administration console if necessary
- cli_password: password to connect to jboss administration console if necessary

Example:

```
jboss_config:
   cli_path: '/opt/jboss/jboss-7.0/bin/jboss-cli.sh'
   controller: 10.11.12.13:9999
   cli_user: 'jbossadm'
   cli_password: 'jbossadm'
```

`salt.modules.jboss7_cli.`**`run_command`**(*jboss_config*, *command*, *fail_on_error=True*)

Execute a command against jboss instance through the CLI interface.

**jboss_config** Configuration dictionary with properties specified above.

**command** Command to execute against jboss instance

**fail_on_error (default=True)** Is true, raise CommandExecutionException exception if execution fails. If false, `success' property of the returned dictionary is set to False

CLI Example:

```
salt '*' jboss7_cli.run_command '{"cli_path": "integration.modules.sysmod.
 ↪SysModuleTest.test_valid_docs", "controller": "10.11.12.13:9999", "cli_user":
 ↪"jbossadm", "cli_password": "jbossadm"}' my_command
```

`salt.modules.jboss7_cli.`**`run_operation`**(*jboss_config*, *operation*, *fail_on_error=True*, *retries=1*)

Execute an operation against jboss instance through the CLI interface.

**jboss_config** Configuration dictionary with properties specified above.

**operation** An operation to execute against jboss instance

**fail_on_error (default=True)** Is true, raise CommandExecutionException exception if execution fails. If false, `success' property of the returned dictionary is set to False

**retries**: Number of retries in case of ``JBAS012144: Could not connect to remote'' error.

CLI Example:

```
salt '*' jboss7_cli.run_operation '{"cli_path": "integration.modules.sysmod.
 ↪SysModuleTest.test_valid_docs", "controller": "10.11.12.13:9999", "cli_user":
 ↪"jbossadm", "cli_password": "jbossadm"}' my_operation
```

### 13.6.135 salt.modules.jenkins module

Module for controlling Jenkins

New in version 2016.3.0.

**depends** python-jenkins Python module (not to be confused with jenkins)

**configuration** This module can be used by either passing an api key and version directly or by specifying both in a configuration profile in the salt master/minion config.

For example:

```
jenkins:
  api_key: peWcBiMOS9HrZG15peWcBiMOS9HrZG15
```

salt.modules.jenkins.**build_job**(*name=None*, *parameters=None*)

Initiate a build for the provided job.

**Parameters**

- **name** -- The name of the job is check if it exists.
- **parameters** -- Parameters to send to the job.

**Returns** True is successful, otherwise raise an exception.

CLI Example:

```
salt '*' jenkins.build_job jobname
```

salt.modules.jenkins.**create_job**(*name=None*, *config_xml=None*, *saltenv='base'*)

Return the configuration file.

**Parameters**

- **name** -- The name of the job is check if it exists.
- **config_xml** -- The configuration file to use to create the job.
- **saltenv** -- The environment to look for the file in.

**Returns** The configuration file used for the job.

CLI Example:

```
salt '*' jenkins.create_job jobname

salt '*' jenkins.create_job jobname config_xml='salt://jenkins/config.xml'
```

salt.modules.jenkins.**delete_job**(*name=None*)

Return true is job is deleted successfully.

**Parameters** **name** -- The name of the job to delete.

**Returns** Return true if job is deleted successfully.

CLI Example:

```
salt '*' jenkins.delete_job jobname
```

salt.modules.jenkins.**disable_job**(*name=None*)

Return true is job is disabled successfully.

**Parameters** **name** -- The name of the job to disable.

**Returns** Return true if job is disabled successfully.

CLI Example:

```
salt '*' jenkins.disable_job jobname
```

salt.modules.jenkins.**enable_job**(*name=None*)

Return true is job is enabled successfully.

**Parameters** **name** -- The name of the job to enable.

**Returns** Return true if job is enabled successfully.

CLI Example:

```
salt '*' jenkins.enable_job jobname
```

salt.modules.jenkins.**get_job_config**(*name=None*)

Return the current job configuration for the provided job.

**Parameters** **name** -- The name of the job to return the configuration for.

**Returns** The configuration for the job specified.

CLI Example:

```
salt '*' jenkins.get_job_config jobname
```

salt.modules.jenkins.**get_job_info**(*name=None*)

Return information about the Jenkins job.

**Parameters** **name** -- The name of the job is check if it exists.

**Returns** Information about the Jenkins job.

CLI Example:

```
salt '*' jenkins.get_job_info jobname
```

salt.modules.jenkins.**get_jobs**()

Return the currently configured jobs.

**Returns** The currently configured jobs.

CLI Example:

```
salt '*' jenkins.get_jobs
```

salt.modules.jenkins.**get_version**()

Return version of Jenkins

**Returns** The version of Jenkins

CLI Example:

```
salt '*' jenkins.get_version
```

salt.modules.jenkins.**job_exists**(*name=None*)

Check whether the job exists in configured Jenkins jobs.

**Parameters** **name** -- The name of the job is check if it exists.

**Returns** True if job exists, False if job does not exist.

CLI Example:

```
salt '*' jenkins.job_exists jobname
```

salt.modules.jenkins.**job_status**(*name=None*)

Return the current status, enabled or disabled, of the job.

**Parameters** **name** -- The name of the job to return status for

**Returns** Return true if enabled or false if disabled.

CLI Example:

```
salt '*' jenkins.job_status jobname
```

salt.modules.jenkins.**update_job**(*name=None*, *config_xml=None*, *saltenv='base'*)

Return the updated configuration file.

**Parameters**

- **name** -- The name of the job is check if it exists.
- **config_xml** -- The configuration file to use to create the job.
- **saltenv** -- The environment to look for the file in.

**Returns** The configuration file used for the job.

CLI Example:

```
salt '*' jenkins.update_job jobname

salt '*' jenkins.update_job jobname config_xml='salt://jenkins/config.xml'
```

### 13.6.136 salt.modules.junos

Module for interfacing to Junos devices

ALPHA QUALITY code.

salt.modules.junos.**call_rpc**()

salt.modules.junos.**cli**(*command*)

salt.modules.junos.**commit**()

salt.modules.junos.**diff**()

salt.modules.junos.**facts_refresh**()

Reload the facts dictionary from the device. Usually only needed if the device configuration is changed by some other actor.

salt.modules.junos.**ping**()

salt.modules.junos.**rollback**()

salt.modules.junos.**set_hostname**(*hostname=None*, *commit_change=True*)

### 13.6.137 salt.modules.kerberos

Manage Kerberos KDC

**configuration** In order to manage your KDC you will need to generate a keytab that can authenticate without requiring a password.

```
# ktadd -k /root/secure.keytab kadmin/admin kadmin/changepw
```

On the KDC minion you will need to add the following to the minion configuration file so Salt knows what keytab to use and what principal to authenticate as.

```
auth_keytab: /root/auth.keytab
auth_principal: kadmin/admin
```

salt.modules.kerberos.**create_keytab**(*name*, *keytab*, *enctypes=None*)
Create keytab

CLI Example:

```
salt 'kdc.example.com' host/host1.example.com host1.example.com.keytab
```

salt.modules.kerberos.**create_principal**(*name*, *enctypes=None*)
Create Principal

CLI Example:

```
salt 'kdc.example.com' kerberos.create_principal host/example.com
```

salt.modules.kerberos.**delete_principal**(*name*)
Delete Principal

CLI Example:

```
salt 'kdc.example.com' kerberos.delete_principal host/example.com@EXAMPLE.COM
```

salt.modules.kerberos.**get_policy**(*name*)
Get policy details

CLI Example:

```
salt 'kdc.example.com' kerberos.get_policy my_policy
```

salt.modules.kerberos.**get_principal**(*name*)
Get princial details

CLI Example:

```
salt 'kdc.example.com' kerberos.get_principal root/admin
```

salt.modules.kerberos.**get_privs**()
Current privileges

CLI Example:

```
salt 'kdc.example.com' kerberos.get_privs
```

salt.modules.kerberos.**list_policies**()
List policies

CLI Example:

```
salt 'kdc.example.com' kerberos.list_policies
```

salt.modules.kerberos.**list_principals**()
Get all principals

CLI Example:

```
salt 'kde.example.com' kerberos.list_principals
```

### 13.6.138 salt.modules.key

Functions to view the minion's public key information

salt.modules.key.**finger**()
Return the minion's public key fingerprint

CLI Example:

```
salt '*' key.finger
```

salt.modules.key.**finger_master**()
Return the fingerprint of the master's public key on the minion.

CLI Example:

```
salt '*' key.finger_master
```

### 13.6.139 salt.modules.keyboard

Module for managing keyboards on supported POSIX-like systems using systemd, or such as Redhat, Debian and Gentoo.

salt.modules.keyboard.**get_sys**()
Get current system keyboard setting

CLI Example:

```
salt '*' keyboard.get_sys
```

salt.modules.keyboard.**get_x**()
Get current X keyboard setting

CLI Example:

```
salt '*' keyboard.get_x
```

salt.modules.keyboard.**set_sys**(*layout*)
Set current system keyboard setting

CLI Example:

```
salt '*' keyboard.set_sys dvorak
```

salt.modules.keyboard.**set_x**(*layout*)
Set current X keyboard setting

CLI Example:

```
salt '*' keyboard.set_x dvorak
```

### 13.6.140 salt.modules.keystone

Module for handling openstack keystone calls.

**optdepends**

- keystoneclient Python adapter

**configuration** This module is not usable until the following are specified either in a pillar or in the minion's config file:

```
keystone.user: admin
keystone.password: verybadpass
keystone.tenant: admin
keystone.tenant_id: f80919baedab48ec8931f200c65a50df
keystone.auth_url: 'http://127.0.0.1:5000/v2.0/'
```

OR (for token based authentication)

```
keystone.token: 'ADMIN'
keystone.endpoint: 'http://127.0.0.1:35357/v2.0'
```

If configuration for multiple openstack accounts is required, they can be set up as different configuration profiles. For example:

```
openstack1:
  keystone.user: admin
  keystone.password: verybadpass
  keystone.tenant: admin
  keystone.tenant_id: f80919baedab48ec8931f200c65a50df
  keystone.auth_url: 'http://127.0.0.1:5000/v2.0/'

openstack2:
  keystone.user: admin
  keystone.password: verybadpass
  keystone.tenant: admin
  keystone.tenant_id: f80919baedab48ec8931f200c65a50df
  keystone.auth_url: 'http://127.0.0.2:5000/v2.0/'
```

With this configuration in place, any of the keystone functions can make use of a configuration profile by declaring it explicitly. For example:

```
salt '*' keystone.tenant_list profile=openstack1
```

salt.modules.keystone.**auth**(*profile=None*, ***connection_args*)

Set up keystone credentials. Only intended to be used within Keystone-enabled modules.

CLI Example:

```
salt '*' keystone.auth
```

salt.modules.keystone.**ec2_credentials_create**(*user_id=None*, *name=None*, *tenant_id=None*, *tenant=None*, *profile=None*, ***connection_args*)

Create EC2-compatible credentials for user per tenant

CLI Examples:

```
salt '*' keystone.ec2_credentials_create name=admin tenant=admin
salt '*' keystone.ec2_credentials_create user_id=c965f79c4f864eaaa9c3b41904e67082
↪tenant_id=722787eb540849158668370dc627ec5f
```

salt.modules.keystone.**ec2_credentials_delete**(*user_id=None*, *name=None*, *access_key=None*, *profile=None*, ***connection_args*)

Delete EC2-compatible credentials

CLI Examples:

```
salt '*' keystone.ec2_credentials_delete 860f8c2c38ca4fab989f9bc56a061a64 access_
 ↪key=5f66d2f24f604b8bb9cd28886106f442
salt '*' keystone.ec2_credentials_delete name=admin access_
 ↪key=5f66d2f24f604b8bb9cd28886106f442
```

salt.modules.keystone.**ec2_credentials_get**(*user_id=None*, *name=None*, *access=None*, *profile=None*, ***connection_args*)

Return ec2_credentials for a user (keystone ec2-credentials-get)

CLI Examples:

```
salt '*' keystone.ec2_credentials_get c965f79c4f864eaaa9c3b41904e67082
 ↪access=722787eb540849158668370dc627ec5f
salt '*' keystone.ec2_credentials_get user_id=c965f79c4f864eaaa9c3b41904e67082
 ↪access=722787eb540849158668370dc627ec5f
salt '*' keystone.ec2_credentials_get name=nova
 ↪access=722787eb540849158668370dc627ec5f
```

salt.modules.keystone.**ec2_credentials_list**(*user_id=None*, *name=None*, *profile=None*, ***connection_args*)

Return a list of ec2_credentials for a specific user (keystone ec2-credentials-list)

CLI Examples:

```
salt '*' keystone.ec2_credentials_list 298ce377245c4ec9b70e1c639c89e654
salt '*' keystone.ec2_credentials_list user_id=298ce377245c4ec9b70e1c639c89e654
salt '*' keystone.ec2_credentials_list name=jack
```

salt.modules.keystone.**endpoint_create**(*service*, *publicurl=None*, *internalurl=None*, *adminurl=None*, *region=None*, *profile=None*, ***connection_args*)

Create an endpoint for an Openstack service

CLI Examples:

```
salt '*' keystone.endpoint_create nova 'http://public/url'
    'http://internal/url' 'http://adminurl/url' region
```

salt.modules.keystone.**endpoint_delete**(*service*, *profile=None*, ***connection_args*)

Delete endpoints of an Openstack service

CLI Examples:

```
salt '*' keystone.endpoint_delete nova
```

salt.modules.keystone.**endpoint_get**(*service*, *profile=None*, ***connection_args*)

Return a specific endpoint (keystone endpoint-get)

CLI Example:

```
salt '*' keystone.endpoint_get nova
```

salt.modules.keystone.**endpoint_list**(*profile=None*, ***connection_args*)

Return a list of available endpoints (keystone endpoints-list)

CLI Example:

```
salt '*' keystone.endpoint_list
```

salt.modules.keystone.**role_create**(*name*, *profile=None*, ***connection_args*)

Create a named role.

CLI Example:

```
salt '*' keystone.role_create admin
```

salt.modules.keystone.**role_delete**(*role_id=None*, *name=None*, *profile=None*, ***connection_args*)

Delete a role (keystone role-delete)

CLI Examples:

```
salt '*' keystone.role_delete c965f79c4f864eaaa9c3b41904e67082
salt '*' keystone.role_delete role_id=c965f79c4f864eaaa9c3b41904e67082
salt '*' keystone.role_delete name=admin
```

salt.modules.keystone.**role_get**(*role_id=None*, *name=None*, *profile=None*, ***connection_args*)

Return a specific roles (keystone role-get)

CLI Examples:

```
salt '*' keystone.role_get c965f79c4f864eaaa9c3b41904e67082
salt '*' keystone.role_get role_id=c965f79c4f864eaaa9c3b41904e67082
salt '*' keystone.role_get name=nova
```

salt.modules.keystone.**role_list**(*profile=None*, ***connection_args*)

Return a list of available roles (keystone role-list)

CLI Example:

```
salt '*' keystone.role_list
```

salt.modules.keystone.**service_create**(*name*, *service_type*, *description=None*, *profile=None*, ***connection_args*)

Add service to Keystone service catalog

CLI Examples:

```
salt '*' keystone.service_create nova compute 'OpenStack Compute Service'
```

salt.modules.keystone.**service_delete**(*service_id=None*, *name=None*, *profile=None*, ***connection_args*)

Delete a service from Keystone service catalog

CLI Examples:

```
salt '*' keystone.service_delete c965f79c4f864eaaa9c3b41904e67082
salt '*' keystone.service_delete name=nova
```

salt.modules.keystone.**service_get**(*service_id=None*, *name=None*, *profile=None*, ***connection_args*)

Return a specific services (keystone service-get)

CLI Examples:

```
salt '*' keystone.service_get c965f79c4f864eaaa9c3b41904e67082
salt '*' keystone.service_get service_id=c965f79c4f864eaaa9c3b41904e67082
salt '*' keystone.service_get name=nova
```

salt.modules.keystone.**service_list**(*profile=None*, ***connection_args*)
Return a list of available services (keystone services-list)

CLI Example:

```
salt '*' keystone.service_list
```

salt.modules.keystone.**tenant_create**(*name*, *description=None*, *enabled=True*, *profile=None*, ***connection_args*)
Create a keystone tenant

CLI Examples:

```
salt '*' keystone.tenant_create nova description='nova tenant'
salt '*' keystone.tenant_create test enabled=False
```

salt.modules.keystone.**tenant_delete**(*tenant_id=None*, *name=None*, *profile=None*, ***connection_args*)
Delete a tenant (keystone tenant-delete)

CLI Examples:

```
salt '*' keystone.tenant_delete c965f79c4f864eaaa9c3b41904e67082
salt '*' keystone.tenant_delete tenant_id=c965f79c4f864eaaa9c3b41904e67082
salt '*' keystone.tenant_delete name=demo
```

salt.modules.keystone.**tenant_get**(*tenant_id=None*, *name=None*, *profile=None*, ***connection_args*)
Return a specific tenants (keystone tenant-get)

CLI Examples:

```
salt '*' keystone.tenant_get c965f79c4f864eaaa9c3b41904e67082
salt '*' keystone.tenant_get tenant_id=c965f79c4f864eaaa9c3b41904e67082
salt '*' keystone.tenant_get name=nova
```

salt.modules.keystone.**tenant_list**(*profile=None*, ***connection_args*)
Return a list of available tenants (keystone tenants-list)

CLI Example:

```
salt '*' keystone.tenant_list
```

salt.modules.keystone.**tenant_update**(*tenant_id=None*, *name=None*, *description=None*, *enabled=None*, *profile=None*, ***connection_args*)
Update a tenant's information (keystone tenant-update) The following fields may be updated: name, email, enabled. Can only update name if targeting by ID

CLI Examples:

```
salt '*' keystone.tenant_update name=admin enabled=True
salt '*' keystone.tenant_update c965f79c4f864eaaa9c3b41904e67082 name=admin
↪email=admin@domain.com
```

salt.modules.keystone.**token_get**(*profile=None*, ***connection_args*)
Return the configured tokens (keystone token-get)

CLI Example:

```
salt '*' keystone.token_get c965f79c4f864eaaa9c3b41904e67082
```

salt.modules.keystone.**user_create**(*name*, *password*, *email*, *tenant_id=None*, *enabled=True*, *profile=None*, ***connection_args*)

Create a user (keystone user-create)

CLI Examples:

```
salt '*' keystone.user_create name=jack password=zero email=jack@halloweentown.
 ↪org tenant_id=a28a7b5a999a455f84b1f5210264375e enabled=True
```

salt.modules.keystone.**user_delete**(*user_id=None*, *name=None*, *profile=None*, ***connection_args*)

Delete a user (keystone user-delete)

CLI Examples:

```
salt '*' keystone.user_delete c965f79c4f864eaaa9c3b41904e67082
salt '*' keystone.user_delete user_id=c965f79c4f864eaaa9c3b41904e67082
salt '*' keystone.user_delete name=nova
```

salt.modules.keystone.**user_get**(*user_id=None*, *name=None*, *profile=None*, ***connection_args*)

Return a specific users (keystone user-get)

CLI Examples:

```
salt '*' keystone.user_get c965f79c4f864eaaa9c3b41904e67082
salt '*' keystone.user_get user_id=c965f79c4f864eaaa9c3b41904e67082
salt '*' keystone.user_get name=nova
```

salt.modules.keystone.**user_list**(*profile=None*, ***connection_args*)

Return a list of available users (keystone user-list)

CLI Example:

```
salt '*' keystone.user_list
```

salt.modules.keystone.**user_password_update**(*user_id=None*, *name=None*, *password=None*, *profile=None*, ***connection_args*)

Update a user's password (keystone user-password-update)

CLI Examples:

```
salt '*' keystone.user_password_update c965f79c4f864eaaa9c3b41904e67082
 ↪password=12345
salt '*' keystone.user_password_update user_id=c965f79c4f864eaaa9c3b41904e67082
 ↪password=12345
salt '*' keystone.user_password_update name=nova password=12345
```

salt.modules.keystone.**user_role_add**(*user_id=None*, *user=None*, *tenant_id=None*, *tenant=None*, *role_id=None*, *role=None*, *profile=None*, ***connection_args*)

Add role for user in tenant (keystone user-role-add)

CLI Examples:

```
salt '*' keystone.user_role_add user_id=298ce377245c4ec9b70e1c639c89e654 tenant_
 ↪id=7167a092ece84bae8cead4bf9d15bb3b role_id=ce377245c4ec9b70e1c639c89e8cead4
salt '*' keystone.user_role_add user=admin tenant=admin role=admin
```

salt.modules.keystone.**user_role_list**(*user_id=None*, *tenant_id=None*, *user_name=None*, *tenant_name=None*, *profile=None*, ***connection_args*)

Return a list of available user_roles (keystone user-roles-list)

CLI Examples:

```
salt '*' keystone.user_role_list user_id=298ce377245c4ec9b70e1c639c89e654 tenant_
↪id=7167a092ece84bae8cead4bf9d15bb3b
salt '*' keystone.user_role_list user_name=admin tenant_name=admin
```

salt.modules.keystone.**user_role_remove**(*user_id=None*, *user=None*, *tenant_id=None*, *tenant=None*, *role_id=None*, *role=None*, *profile=None*, ***connection_args*)

Remove role for user in tenant (keystone user-role-remove)

CLI Examples:

```
salt '*' keystone.user_role_remove user_id=298ce377245c4ec9b70e1c639c89e654
↪tenant_id=7167a092ece84bae8cead4bf9d15bb3b role_
↪id=ce377245c4ec9b70e1c639c89e8cead4
salt '*' keystone.user_role_remove user=admin tenant=admin role=admin
```

salt.modules.keystone.**user_update**(*user_id=None*, *name=None*, *email=None*, *enabled=None*, *tenant=None*, *profile=None*, ***connection_args*)

Update a user's information (keystone user-update) The following fields may be updated: name, email, enabled, tenant. Because the name is one of the fields, a valid user id is required.

CLI Examples:

```
salt '*' keystone.user_update user_id=c965f79c4f864eaaa9c3b41904e67082
↪name=newname
salt '*' keystone.user_update c965f79c4f864eaaa9c3b41904e67082 name=newname
↪email=newemail@domain.com
```

salt.modules.keystone.**user_verify_password**(*user_id=None*, *name=None*, *password=None*, *profile=None*, ***connection_args*)

Verify a user's password

CLI Examples:

```
salt '*' keystone.user_verify_password name=test password=foobar
salt '*' keystone.user_verify_password user_id=c965f79c4f864eaaa9c3b41904e67082
↪password=foobar
```

### 13.6.141 salt.modules.kmod

Module to manage Linux kernel modules

salt.modules.kmod.**available**()

Return a list of all available kernel modules

CLI Example:

```
salt '*' kmod.available
```

salt.modules.kmod.**check_available**(*mod*)

Check to see if the specified kernel module is available

CLI Example:

```
salt '*' kmod.check_available kvm
```

salt.modules.kmod.**is_loaded**(*mod*)
Check to see if the specified kernel module is loaded

CLI Example:

```
salt '*' kmod.is_loaded kvm
```

salt.modules.kmod.**load**(*mod*, *persist=False*)
Load the specified kernel module
**mod** Name of module to add
**persist** Write module to /etc/modules to make it load on system reboot
CLI Example:

```
salt '*' kmod.load kvm
```

salt.modules.kmod.**lsmod**()
Return a dict containing information about currently loaded modules

CLI Example:

```
salt '*' kmod.lsmod
```

salt.modules.kmod.**mod_list**(*only_persist=False*)
Return a list of the loaded module names
**only_persist** Only return the list of loaded persistent modules
CLI Example:

```
salt '*' kmod.mod_list
```

salt.modules.kmod.**remove**(*mod*, *persist=False*, *comment=True*)
Remove the specified kernel module
**mod** Name of module to remove
**persist** Also remove module from /etc/modules
**comment** If persist is set don't remove line from /etc/modules but only comment it
CLI Example:

```
salt '*' kmod.remove kvm
```

### 13.6.142 salt.modules.launchctl

Module for the management of MacOS systems that use launchd/launchctl

---

**Important**: If you feel that Salt should be using this module to manage services on a minion, and it is using a different module (or gives an error similar to *`service.start' is not available*), see *here*.

---

**depends**

- plistlib Python module

salt.modules.launchctl.**available**(*job_label*)
Check that the given service is available.

CLI Example:

```
salt '*' service.available com.openssh.sshd
```

salt.modules.launchctl.**disabled**(*job_label*, *runas=None*)
Return True if the named service is disabled, false otherwise

CLI Example:

```
salt '*' service.disabled <service label>
```

salt.modules.launchctl.**enabled**(*job_label*, *runas=None*)
Return True if the named service is enabled, false otherwise

CLI Example:

```
salt '*' service.enabled <service label>
```

salt.modules.launchctl.**get_all**()
Return all installed services

CLI Example:

```
salt '*' service.get_all
```

salt.modules.launchctl.**missing**(*job_label*)
The inverse of service.available Check that the given service is not available.

CLI Example:

```
salt '*' service.missing com.openssh.sshd
```

salt.modules.launchctl.**restart**(*job_label*, *runas=None*)
Restart the named service

CLI Example:

```
salt '*' service.restart <service label>
```

salt.modules.launchctl.**start**(*job_label*, *runas=None*)
Start the specified service

CLI Example:

```
salt '*' service.start <service label>
salt '*' service.start org.ntp.ntpd
salt '*' service.start /System/Library/LaunchDaemons/org.ntp.ntpd.plist
```

salt.modules.launchctl.**status**(*job_label*, *runas=None*)
Return the status for a service, returns a bool whether the service is running.

CLI Example:

```
salt '*' service.status <service label>
```

salt.modules.launchctl.**stop**(*job_label*, *runas=None*)
Stop the specified service

CLI Example:

```
salt '*' service.stop <service label>
salt '*' service.stop org.ntp.ntpd
salt '*' service.stop /System/Library/LaunchDaemons/org.ntp.ntpd.plist
```

### 13.6.143 salt.modules.layman

Support for Layman

salt.modules.layman.**add**(*overlay*)

Add the given overlay from the cached remote list to your locally installed overlays. Specify `ALL' to add all overlays from the remote list.

Return a list of the new overlay(s) added:

CLI Example:

```
salt '*' layman.add <overlay name>
```

salt.modules.layman.**delete**(*overlay*)

Remove the given overlay from the your locally installed overlays. Specify `ALL' to remove all overlays.

Return a list of the overlays(s) that were removed:

CLI Example:

```
salt '*' layman.delete <overlay name>
```

salt.modules.layman.**list_all**()

List all overlays, including remote ones.

Return a list of available overlays:

CLI Example:

```
salt '*' layman.list_all
```

salt.modules.layman.**list_local**()

List the locally installed overlays.

Return a list of installed overlays:

CLI Example:

```
salt '*' layman.list_local
```

salt.modules.layman.**sync**(*overlay='ALL'*)

Update the specified overlay. Use `ALL' to synchronize all overlays. This is the default if no overlay is specified.
**overlay** Name of the overlay to sync. (Defaults to `ALL')
CLI Example:

```
salt '*' layman.sync
```

### 13.6.144 salt.modules.ldap3

#### Query and modify an LDAP database (alternative interface)

New in version 2016.3.0.

This is an alternative to the ldap interface provided by the *ldapmod* execution module.

**depends**

- ldap Python module

**exception** salt.modules.ldap3.**LDAPError**(*message*, *cause=None*)
Base class of all LDAP exceptions raised by backends.

This is only used for errors encountered while interacting with the LDAP server; usage errors (e.g., invalid backend name) will have a different type.

**Variables** **cause** -- backend exception object, if applicable

salt.modules.ldap3.**add**(*connect_spec*, *dn*, *attributes*)
Add an entry to an LDAP database.

**Parameters**

- **connect_spec** -- See the documentation for the connect_spec parameter for *connect()*.
- **dn** -- Distinguished name of the entry.
- **attributes** -- Non-empty dict mapping each of the new entry's attributes to a non-empty iterable of values.

**Returns** True if successful, raises an exception otherwise.

CLI example:

```
salt '*' ldap3.add "{
    'url': 'ldaps://ldap.example.com/',
    'bind': {
        'method': 'simple',
        'password': 'secret',
    },
}" "dn='dc=example,dc=com'" "attributes={'example': 'values'}"
```

salt.modules.ldap3.**change**(*connect_spec*, *dn*, *before*, *after*)
Modify an entry in an LDAP database.

This does the same thing as *modify()*, but with a simpler interface. Instead of taking a list of directives, it takes a before and after view of an entry, determines the differences between the two, computes the directives, and executes them.

Any attribute value present in before but missing in after is deleted. Any attribute value present in after but missing in before is added. Any attribute value in the database that is not mentioned in either before or after is not altered. Any attribute value that is present in both before and after is ignored, regardless of whether that attribute value exists in the database.

**Parameters**

- **connect_spec** -- See the documentation for the connect_spec parameter for *connect()*.
- **dn** -- Distinguished name of the entry.
- **before** -- The expected state of the entry before modification. This is a dict mapping each attribute name to an iterable of values.
- **after** -- The desired state of the entry after modification. This is a dict mapping each attribute name to an iterable of values.

**Returns** True if successful, raises an exception otherwise.

CLI example:

```
salt '*' ldap3.change "{
    'url': 'ldaps://ldap.example.com/',
    'bind': {
        'method': 'simple',
        'password': 'secret'}
}" dn='cn=admin,dc=example,dc=com'
before="{'example_value': 'before_val'}"
after="{'example_value': 'after_val'}"
```

salt.modules.ldap3.**connect**(*connect_spec=None*)

Connect and optionally bind to an LDAP server.

**Parameters** **connect_spec** -- This can be an LDAP connection object returned by a previous call to *connect()* (in which case the argument is simply returned), None (in which case an empty dict is used), or a dict with the following keys:

- **'backend'** Optional; default depends on which Python LDAP modules are installed. Name of the Python LDAP module to use. Only 'ldap' is supported at the moment.
- **'url'** Optional; defaults to 'ldapi:///'. URL to the LDAP server.
- **'bind'** Optional; defaults to None. Describes how to bind an identity to the LDAP connection. If None, an anonymous connection is made. Valid keys:
  - **'method'** Optional; defaults to None. The authentication method to use. Valid values include but are not necessarily limited to 'simple', 'sasl', and None. If None, an anonymous connection is made. Available methods depend on the chosen backend.
  - **'mechanism'** Optional; defaults to 'EXTERNAL'. The SASL mechanism to use. Ignored unless the method is 'sasl'. Available methods depend on the chosen backend and the server's capabilities.
  - **'credentials'** Optional; defaults to None. An object specific to the chosen SASL mechanism and backend that represents the authentication credentials. Ignored unless the method is 'sasl'.

    For the 'ldap' backend, this is a dictionary. If None, an empty dict is used. Keys:

    * **'args'** Optional; defaults to an empty list. A list of arguments to pass to the SASL mechanism constructor. See the SASL mechanism constructor documentation in the ldap.sasl Python module.
    * **'kwargs'** Optional; defaults to an empty dict. A dict of keyword arguments to pass to the SASL mechanism constructor. See the SASL mechanism constructor documentation in the ldap.sasl Python module.
  - **'dn'** Optional; defaults to an empty string. The distinguished name to bind.
  - **'password'** Optional; defaults to an empty string. Password for binding. Ignored if the method is 'sasl'.
- **'tls'** Optional; defaults to None. A backend-specific object containing settings to override default TLS behavior.

  For the 'ldap' backend, this is a dictionary. Not all settings in this dictionary are supported by all versions of python-ldap or the underlying TLS library. If None, an empty dict is used. Possible keys:

- **'starttls'** If present, initiate a TLS connection using StartTLS. (The value associated with this key is ignored.)
- **'cacertdir'** Set the path of the directory containing CA certificates.
- **'cacertfile'** Set the pathname of the CA certificate file.
- **'certfile'** Set the pathname of the certificate file.
- **'cipher_suite'** Set the allowed cipher suite.
- **'crlcheck'** Set the CRL evaluation strategy. Valid values are `'none'`, `'peer'`, and `'all'`.
- **'crlfile'** Set the pathname of the CRL file.
- **'dhfile'** Set the pathname of the file containing the parameters for Diffie-Hellman ephemeral key exchange.
- **'keyfile'** Set the pathname of the certificate key file.
- **'newctx'** If present, instruct the underlying TLS library to create a new TLS context. (The value associated with this key is ignored.)
- **'protocol_min'** Set the minimum protocol version.
- **'random_file'** Set the pathname of the random file when `/dev/random` and `/dev/urandom` are not available.
- **'require_cert'** Set the certificate validation policy. Valid values are `'never'`, `'hard'`, `'demand'`, `'allow'`, and `'try'`.

- **'opts'** Optional; defaults to `None`. A backend-specific object containing options for the backend.

  For the `'ldap'` backend, this is a dictionary of OpenLDAP options to set. If `None`, an empty dict is used. Each key is a the name of an OpenLDAP option constant without the `'LDAP_OPT_'` prefix, then converted to lower case.

**Returns**

an object representing an LDAP connection that can be used as the `connect_spec` argument to any of the functions in this module (to avoid the overhead of making and terminating multiple connections).

This object should be used as a context manager. It is safe to nest `with` statements.

CLI example:

```
salt '*' ldap3.connect "{
    'url': 'ldaps://ldap.example.com/',
    'bind': {
        'method': 'simple',
        'dn': 'cn=admin,dc=example,dc=com',
        'password': 'secret'}
}"
```

`salt.modules.ldap3.`**`delete`**(*connect_spec*, *dn*)

Delete an entry from an LDAP database.

**Parameters**

- **connect_spec** -- See the documentation for the `connect_spec` parameter for *connect()*.
- **dn** -- Distinguished name of the entry.

**Returns** `True` if successful, raises an exception otherwise.

CLI example:

```
salt '*' ldap3.delete "{
    'url': 'ldaps://ldap.example.com/',
    'bind': {
        'method': 'simple',
        'password': 'secret'}
}" dn='cn=admin,dc=example,dc=com'
```

`salt.modules.ldap3.`**`modify`**(*connect_spec*, *dn*, *directives*)

Modify an entry in an LDAP database.

**Parameters**

- **`connect_spec`** -- See the documentation for the `connect_spec` parameter for *`connect()`*.
- **`dn`** -- Distinguished name of the entry.
- **`directives`** -- Iterable of directives that indicate how to modify the entry. Each directive is a tuple of the form `(op,attr,vals)`, where:
  - `op` identifies the modification operation to perform. One of:
    - `'add'` to add one or more values to the attribute
    - `'delete'` to delete some or all of the values from the attribute. If no values are specified with this operation, all of the attribute's values are deleted. Otherwise, only the named values are deleted.
    - `'replace'` to replace all of the attribute's values with zero or more new values
  - `attr` names the attribute to modify
  - `vals` is an iterable of values to add or delete

**Returns** `True` if successful, raises an exception otherwise.

CLI example:

```
salt '*' ldap3.modify "{
    'url': 'ldaps://ldap.example.com/',
    'bind': {
        'method': 'simple',
        'password': 'secret'}
}" dn='cn=admin,dc=example,dc=com'
directives="('add', 'example', ['example_val'])"
```

`salt.modules.ldap3.`**`search`**(*connect_spec*, *base*, *scope='subtree'*, *filterstr='(objectClass=*)'*, *attrlist=None*, *attrsonly=0*)

Search an LDAP database.

**Parameters**

- **`connect_spec`** -- See the documentation for the `connect_spec` parameter for *`connect()`*.
- **`base`** -- Distinguished name of the entry at which to start the search.
- **`scope`** -- One of the following:
  - **`'subtree'`** Search the base and all of its descendants.
  - **`'base'`** Search only the base itself.

- **'onelevel'** Search only the base's immediate children.

- **filterstr** -- String representation of the filter to apply in the search.
- **attrlist** -- Limit the returned attributes to those in the specified list. If None, all attributes of each entry are returned.
- **attrsonly** -- If non-zero, don't return any attribute values.

**Returns** a dict of results. The dict is empty if there are no results. The dict maps each returned entry's distinguished name to a dict that maps each of the matching attribute names to a list of its values.

CLI example:

```
salt '*' ldap3.search "{
    'url': 'ldaps://ldap.example.com/',
    'bind': {
        'method': 'simple',
        'dn': 'cn=admin,dc=example,dc=com',
        'password': 'secret',
    },
}" "base='dc=example,dc=com'"
```

### 13.6.145 salt.modules.ldapmod

Salt interface to LDAP commands

**depends**

- ldap Python module

**configuration** In order to connect to LDAP, certain configuration is required in the minion config on the LDAP server. The minimum configuration items that must be set are:

```
ldap.basedn: dc=acme,dc=com (example values, adjust to suit)
```

If your LDAP server requires authentication then you must also set:

```
ldap.anonymous: False
ldap.binddn: admin
ldap.bindpw: password
```

In addition, the following optional values may be set:

```
ldap.server: localhost (default=localhost, see warning below)
ldap.port: 389 (default=389, standard port)
ldap.tls: False (default=False, no TLS)
ldap.no_verify: False (default=False, verify TLS)
ldap.anonymous: True (default=True, bind anonymous)
ldap.scope: 2 (default=2, ldap.SCOPE_SUBTREE)
ldap.attrs: [saltAttr] (default=None, return all attributes)
```

**Warning**: At the moment this module only recommends connection to LDAP services listening on localhost. This is deliberate to avoid the potentially dangerous situation of multiple minions sending identical update commands to the same LDAP server. It's easy enough to override this behavior, but badness may ensue - you have been warned.

salt.modules.ldapmod.**search**(*filter*, *dn=None*, *scope=None*, *attrs=None*, ***kwargs*)
Run an arbitrary LDAP query and return the results.

CLI Example:

```
salt 'ldaphost' ldap.search "filter=cn=myhost"
```

Return data:

```
{'myhost': {'count': 1,
            'results': [['cn=myhost,ou=hosts,o=acme,c=gb',
                         {'saltKeyValue': ['ntpserver=ntp.acme.local',
                                           'foo=myfoo'],
                          'saltState': ['foo', 'bar']}]],
            'time': {'human': '1.2ms', 'raw': '0.00123'}}}
```

Search and connection options can be overridden by specifying the relevant option as key=value pairs, for example:

```
salt 'ldaphost' ldap.search filter=cn=myhost dn=ou=hosts,o=acme,c=gb
scope=1 attrs='' server='localhost' port='7393' tls=True bindpw='ssh'
```

### 13.6.146 salt.modules.linux_acl

Support for Linux File Access Control Lists

salt.modules.linux_acl.**delfacl**(*acl_type*, *acl_name=''*, **args*, ***kwargs*)
Remove specific FACL from the specified file(s)

CLI Examples:

```
salt '*' acl.delfacl user myuser /tmp/house/kitchen
salt '*' acl.delfacl default:group mygroup /tmp/house/kitchen
salt '*' acl.delfacl d:u myuser /tmp/house/kitchen
salt '*' acl.delfacl g myuser /tmp/house/kitchen /tmp/house/livingroom
salt '*' acl.delfacl user myuser /tmp/house/kitchen recursive=True
```

salt.modules.linux_acl.**getfacl**(**args*, ***kwargs*)
Return (extremely verbose) map of FACLs on specified file(s)

CLI Examples:

```
salt '*' acl.getfacl /tmp/house/kitchen
salt '*' acl.getfacl /tmp/house/kitchen /tmp/house/livingroom
salt '*' acl.getfacl /tmp/house/kitchen /tmp/house/livingroom recursive=True
```

salt.modules.linux_acl.**modfacl**(*acl_type*, *acl_name=''*, *perms=''*, **args*, ***kwargs*)
Add or modify a FACL for the specified file(s)

CLI Examples:

```
salt '*' acl.modfacl user myuser rwx /tmp/house/kitchen
salt '*' acl.modfacl default:group mygroup rx /tmp/house/kitchen
salt '*' acl.modfacl d:u myuser 7 /tmp/house/kitchen
salt '*' acl.modfacl g mygroup 0 /tmp/house/kitchen /tmp/house/livingroom
salt '*' acl.modfacl user myuser rwx /tmp/house/kitchen recursive=True
```

salt.modules.linux_acl.**version**()
Return facl version from getfacl --version

CLI Example:

```
salt '*' acl.version
```

salt.modules.linux_acl.**wipefacls**(**args*, ***kwargs*)
Remove all FACLs from the specified file(s)

CLI Examples:

```
salt '*' acl.wipefacls /tmp/house/kitchen
salt '*' acl.wipefacls /tmp/house/kitchen /tmp/house/livingroom
salt '*' acl.wipefacls /tmp/house/kitchen /tmp/house/livingroom recursive=True
```

### 13.6.147 salt.modules.linux_ip module

The networking module for Non-RH/Deb Linux distros

salt.modules.linux_ip.**down**(*iface*, *iface_type=None*)
Shutdown a network interface

CLI Example:

```
salt '*' ip.down eth0
```

salt.modules.linux_ip.**get_interface**(*iface*)
Return the contents of an interface script

CLI Example:

```
salt '*' ip.get_interface eth0
```

salt.modules.linux_ip.**get_routes**(*iface=None*)
Return the current routing table

CLI Examples:

```
salt '*' ip.get_routes
salt '*' ip.get_routes eth0
```

salt.modules.linux_ip.**up**(*iface*, *iface_type=None*)
Start up a network interface

CLI Example:

```
salt '*' ip.up eth0
```

### 13.6.148 salt.modules.linux_lvm

Support for Linux LVM2

salt.modules.linux_lvm.**fullversion**()
Return all version info from lvm version

CLI Example:

```
salt '*' lvm.fullversion
```

salt.modules.linux_lvm.**lvcreate**(*lvname*, *vgname*, *size=None*, *extents=None*, *snapshot=None*, *pv=None*, ***kwargs*)

Create a new logical volume, with option for which physical volume to be used

CLI Examples:

```
salt '*' lvm.lvcreate new_volume_name vg_name size=10G
salt '*' lvm.lvcreate new_volume_name vg_name extents=100 pv=/dev/sdb
salt '*' lvm.lvcreate new_snapshot    vg_name snapshot=volume_name size=3G
```

salt.modules.linux_lvm.**lvdisplay**(*lvname=''*)

Return information about the logical volume(s)

CLI Examples:

```
salt '*' lvm.lvdisplay
salt '*' lvm.lvdisplay /dev/vg_myserver/root
```

salt.modules.linux_lvm.**lvremove**(*lvname*, *vgname*)

Remove a given existing logical volume from a named existing volume group

CLI Example:

```
salt '*' lvm.lvremove lvname vgname force=True
```

salt.modules.linux_lvm.**lvresize**(*size*, *lvpath*)

Return information about the logical volume(s)

CLI Examples:

```
salt '*' lvm.lvresize +12M /dev/mapper/vg1-test
```

salt.modules.linux_lvm.**pvcreate**(*devices*, *override=True*, ***kwargs*)

Set a physical device to be used as an LVM physical volume

**override** Skip devices, if they are already an LVM physical volumes

CLI Examples:

```
salt mymachine lvm.pvcreate /dev/sdb1,/dev/sdb2
salt mymachine lvm.pvcreate /dev/sdb1 dataalignmentoffset=7s
```

salt.modules.linux_lvm.**pvdisplay**(*pvname=''*, *real=False*)

Return information about the physical volume(s)

**pvname** physical device name

**real** dereference any symlinks and report the real device

New in version 2015.8.7.

CLI Examples:

```
salt '*' lvm.pvdisplay
salt '*' lvm.pvdisplay /dev/md0
```

salt.modules.linux_lvm.**pvremove**(*devices*, *override=True*)

Remove a physical device being used as an LVM physical volume

**override** Skip devices, if they are already not used as an LVM physical volumes

CLI Examples:

```
salt mymachine lvm.pvremove /dev/sdb1,/dev/sdb2
```

salt.modules.linux_lvm.**version**()
Return LVM version from lvm version

CLI Example:

```
salt '*' lvm.version
```

salt.modules.linux_lvm.**vgcreate**(*vgname*, *devices*, ***kwargs*)
Create an LVM volume group

CLI Examples:

```
salt mymachine lvm.vgcreate my_vg /dev/sdb1,/dev/sdb2
salt mymachine lvm.vgcreate my_vg /dev/sdb1 clustered=y
```

salt.modules.linux_lvm.**vgdisplay**(*vgname=''*)
Return information about the volume group(s)

CLI Examples:

```
salt '*' lvm.vgdisplay
salt '*' lvm.vgdisplay nova-volumes
```

salt.modules.linux_lvm.**vgextend**(*vgname*, *devices*)
Add physical volumes to an LVM volume group

CLI Examples:

```
salt mymachine lvm.vgextend my_vg /dev/sdb1,/dev/sdb2
salt mymachine lvm.vgextend my_vg /dev/sdb1
```

salt.modules.linux_lvm.**vgremove**(*vgname*)
Remove an LVM volume group

CLI Examples:

```
salt mymachine lvm.vgremove vgname
salt mymachine lvm.vgremove vgname force=True
```

### 13.6.149 salt.modules.linux_sysctl

Module for viewing and modifying sysctl parameters

salt.modules.linux_sysctl.**assign**(*name*, *value*)
Assign a single sysctl parameter for this minion

CLI Example:

```
salt '*' sysctl.assign net.ipv4.ip_forward 1
```

salt.modules.linux_sysctl.**default_config**()
Linux hosts using systemd 207 or later ignore `/etc/sysctl.conf` and only load from `/etc/sysctl.d/*.conf`. This function will do the proper checks and return a default config file which will be valid for the Minion. Hosts running systemd >= 207 will use `/etc/sysctl.d/99-salt.conf`.

CLI Example:

```
salt -G 'kernel:Linux' sysctl.default_config
```

salt.modules.linux_sysctl.**get**(*name*)
Return a single sysctl parameter for this minion

CLI Example:

```
salt '*' sysctl.get net.ipv4.ip_forward
```

salt.modules.linux_sysctl.**persist**(*name*, *value*, *config=None*)
Assign and persist a simple sysctl parameter for this minion. If `config` is not specified, a sensible default will be chosen using *sysctl.default_config*.

CLI Example:

```
salt '*' sysctl.persist net.ipv4.ip_forward 1
```

salt.modules.linux_sysctl.**show**(*config_file=False*)
Return a list of sysctl parameters for this minion
**config**: **Pull the data from the system configuration file** instead of the live data.
CLI Example:

```
salt '*' sysctl.show
```

### 13.6.150 salt.modules.localemod

Module for managing locales on POSIX-like systems.

salt.modules.localemod.**avail**(*locale*)
Check if a locale is available.

New in version 2014.7.0.

CLI Example:

```
salt '*' locale.avail 'en_US.UTF-8'
```

salt.modules.localemod.**gen_locale**(*locale*, ***kwargs*)
Generate a locale. Options:

New in version 2014.7.0.

**Parameters** **locale** -- Any locale listed in /usr/share/i18n/locales or /usr/share/i18n/SUPPORTED for Debian and Gentoo based distributions, which require the charmap to be specified as part of the locale when generating it.

**verbose** Show extra warnings about errors that are normally ignored.

CLI Example:

```
salt '*' locale.gen_locale en_US.UTF-8
salt '*' locale.gen_locale 'en_IE.UTF-8 UTF-8'    # Debian/Gentoo only
```

salt.modules.localemod.**get_locale**()
Get the current system locale

CLI Example:

```
salt '*' locale.get_locale
```

salt.modules.localemod.**list_avail**()
Lists available (compiled) locales

CLI Example:

```
salt '*' locale.list_avail
```

salt.modules.localemod.**set_locale**(*locale*)
Sets the current system locale

CLI Example:

```
salt '*' locale.set_locale 'en_US.UTF-8'
```

### 13.6.151 salt.modules.locate

Module for using the locate utilities

salt.modules.locate.**locate**(*pattern*, *database=''*, *limit=0*, ***kwargs*)
Performs a file lookup. Valid options (and their defaults) are:

```
basename=False
count=False
existing=False
follow=True
ignore=False
nofollow=False
wholename=True
regex=False
database=<locate's default database>
limit=<integer, not set by default>
```

See the manpage for `locate(1)` for further explanation of these options.

CLI Example:

```
salt '*' locate.locate
```

salt.modules.locate.**stats**()
Returns statistics about the locate database

CLI Example:

```
salt '*' locate.stats
```

salt.modules.locate.**updatedb**()
Updates the locate database

CLI Example:

```
salt '*' locate.updatedb
```

salt.modules.locate.**version**()
Returns the version of locate

CLI Example:

```
salt '*' locate.version
```

### 13.6.152 salt.modules.logadm

Module for managing Solaris logadm based log rotations.

salt.modules.logadm.**remove**(*name*, *conf_file='/etc/logadm.conf'*)
Remove log pattern from logadm

CLI Example:

```
salt '*' logadm.remove myapplog
```

salt.modules.logadm.**rotate**(*name*, *pattern=False*, *count=False*, *age=False*, *size=False*, *copy=True*, *conf_file='/etc/logadm.conf'*)
Set up pattern for logging.

CLI Example:

```
salt '*' logadm.rotate myapplog pattern='/var/log/myapp/*.log' count=7
```

salt.modules.logadm.**show_conf**(*conf_file='/etc/logadm.conf'*)
Show parsed configuration

CLI Example:

```
salt '*' logadm.show_conf
```

### 13.6.153 salt.modules.logrotate

Module for managing logrotate.

salt.modules.logrotate.**set**(*key*, *value*, *setting=None*, *conf_file='/etc/logrotate.conf'*)
Set a new value for a specific configuration line

CLI Example:

```
salt '*' logrotate.set rotate 2
```

Can also be used to set a single value inside a multiline configuration block. For instance, to change rotate in the following block:

```
/var/log/wtmp {
    monthly
    create 0664 root root
    rotate 1
}
```

Use the following command:

```
salt '*' logrotate.set /var/log/wtmp rotate 2
```

This module also has the ability to scan files inside an include directory, and make changes in the appropriate file.

salt.modules.logrotate.**show_conf**(*conf_file='/etc/logrotate.conf'*)
Show parsed configuration

CLI Example:

```
salt '*' logrotate.show_conf
```

### 13.6.154 salt.modules.lvs

Support for LVS (Linux Virtual Server)

salt.modules.lvs.**add_server**(*protocol=None*, *service_address=None*, *server_address=None*, *packet_forward_method='dr'*, *weight=1*, ***kwargs*)
Add a real server to a virtual service.
**protocol** The service protocol(only support `tcp`, `udp` and `fwmark` service).
**service_address** The LVS service address.
**server_address** The real server address.
**packet_forward_method** The LVS packet forwarding method(`dr` for direct routing, `tunnel` for tunneling, `nat` for network access translation).
**weight** The capacity of a server relative to the others in the pool.
CLI Example:

```
salt '*' lvs.add_server tcp 1.1.1.1:80 192.168.0.11:8080 nat 1
```

salt.modules.lvs.**add_service**(*protocol=None*, *service_address=None*, *scheduler='wlc'*)
Add a virtual service.
**protocol** The service protocol(only support tcp, udp and fwmark service).
**service_address** The LVS service address.
**scheduler** Algorithm for allocating TCP connections and UDP datagrams to real servers.
CLI Example:

```
salt '*' lvs.add_service tcp 1.1.1.1:80 rr
```

salt.modules.lvs.**check_server**(*protocol=None*, *service_address=None*, *server_address=None*, ***kwargs*)
Check the real server exists in the specified service.

CLI Example:

```
salt '*' lvs.check_server tcp 1.1.1.1:80 192.168.0.11:8080
```

salt.modules.lvs.**check_service**(*protocol=None*, *service_address=None*, ***kwargs*)
Check the virtual service exists.

CLI Example:

```
salt '*' lvs.check_service tcp 1.1.1.1:80
```

salt.modules.lvs.**clear**()
Clear the virtual server table

CLI Example:

```
salt '*' lvs.clear
```

salt.modules.lvs.**delete_server**(*protocol=None*, *service_address=None*, *server_address=None*)
Delete the realserver from the virtual service.

**protocol** The service protocol(only support `tcp`, `udp` and `fwmark` service).
**service_address** The LVS service address.
**server_address** The real server address.
CLI Example:

```
salt '*' lvs.delete_server tcp 1.1.1.1:80 192.168.0.11:8080
```

`salt.modules.lvs.`**`delete_service`**(*protocol=None*, *service_address=None*)
Delete the virtual service.
**protocol** The service protocol(only support tcp, udp and fwmark service).
**service_address** The LVS service address.
CLI Example:

```
salt '*' lvs.delete_service tcp 1.1.1.1:80
```

`salt.modules.lvs.`**`edit_server`**(*protocol=None*, *service_address=None*, *server_address=None*, *packet_forward_method=None*, *weight=None*, ***kwargs*)
Edit a real server to a virtual service.
**protocol** The service protocol(only support `tcp`, `udp` and `fwmark` service).
**service_address** The LVS service address.
**server_address** The real server address.
**packet_forward_method** The LVS packet forwarding method(`dr` for direct routing, `tunnel` for tunneling, `nat` for network access translation).
**weight** The capacity of a server relative to the others in the pool.
CLI Example:

```
salt '*' lvs.edit_server tcp 1.1.1.1:80 192.168.0.11:8080 nat 1
```

`salt.modules.lvs.`**`edit_service`**(*protocol=None*, *service_address=None*, *scheduler=None*)
Edit the virtual service.
**protocol** The service protocol(only support tcp, udp and fwmark service).
**service_address** The LVS service address.
**scheduler** Algorithm for allocating TCP connections and UDP datagrams to real servers.
CLI Example:

```
salt '*' lvs.edit_service tcp 1.1.1.1:80 rr
```

`salt.modules.lvs.`**`get_rules`**()
Get the virtual server rules

CLI Example:

```
salt '*' lvs.get_rules
```

`salt.modules.lvs.`**`list`**(*protocol=None*, *service_address=None*)
List the virtual server table if service_address is not specified. If a service_address is selected, list this service only.

CLI Example:

```
salt '*' lvs.list
```

`salt.modules.lvs.`**`zero`**(*protocol=None*, *service_address=None*)
Zero the packet, byte and rate counters in a service or all services.

CLI Example:

```
salt '*' lvs.zero
```

### 13.6.155 salt.modules.lxc

Control Linux Containers via Salt

**depends** lxc package for distribution

lxc >= 1.0 (even beta alpha) is required

`salt.modules.lxc.`**`apply_network_profile`**(*name*, *network_profile*, *nic_opts=None*, *path=None*)

New in version 2015.5.0.

Apply a network profile to a container

**network_profile** profile name or default values (dict)

**nic_opts** values to override in defaults (dict) indexed by nic card names

**path** path to the container parent

New in version 2015.8.0.

CLI Examples:

```
salt 'minion' lxc.apply_network_profile web1 centos
salt 'minion' lxc.apply_network_profile web1 centos \
        nic_opts="{'eth0': {'mac': 'xx:xx:xx:xx:xx:xx'}}"
salt 'minion' lxc.apply_network_profile web1 \
        "{'eth0': {'mac': 'xx:xx:xx:xx:xx:yy'}}"
        nic_opts="{'eth0': {'mac': 'xx:xx:xx:xx:xx:xx'}}"
```

The special case to disable use of ethernet nics:

```
salt 'minion' lxc.apply_network_profile web1 centos \
        "{eth0: {disable: true}}"
```

`salt.modules.lxc.`**`attachable`**(*name*, *path=None*)

Return True if the named container can be attached to via the lxc-attach command

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

CLI Example:

```
salt 'minion' lxc.attachable ubuntu
```

`salt.modules.lxc.`**`bootstrap`**(*name*, *config=None*, *approve_key=True*, *install=True*, *pub_key=None*, *priv_key=None*, *bootstrap_url=None*, *force_install=False*, *unconditional_install=False*, *path=None*, *bootstrap_delay=None*, *bootstrap_args=None*, *bootstrap_shell=None*)

Install and configure salt in a container.

**config** Minion configuration options. By default, the `master` option is set to the target host's master.

**approve_key** Request a pre-approval of the generated minion key. Requires that the salt-master be configured to either auto-accept all keys or expect a signing request from the target host. Default: `True`

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

**pub_key** Explicit public key to pressed the minion with (optional). This can be either a filepath or a string representing the key

**priv_key** Explicit private key to pressed the minion with (optional). This can be either a filepath or a string representing the key

**bootstrap_delay** Delay in seconds between end of container creation and bootstrapping. Useful when waiting for container to obtain a DHCP lease.

New in version 2015.5.0.

**bootstrap_url** url, content or filepath to the salt bootstrap script
**bootstrap_args** salt bootstrap script arguments
**bootstrap_shell** shell to execute the script into
**install** Whether to attempt a full installation of salt-minion if needed.
**force_install** Force installation even if salt-minion is detected, this is the way to run vendor bootstrap scripts even if a salt minion is already present in the container
**unconditional_install** Run the script even if the container seems seeded
CLI Examples:

```
salt 'minion' lxc.bootstrap container_name [config=config_data] \
        [approve_key=(True|False)] [install=(True|False)]
```

salt.modules.lxc.**clone**(*name*, *orig*, *profile=None*, *network_profile=None*, *nic_opts=None*, ***kwargs*)
Create a new container as a clone of another container
**name** Name of the container
**orig** Name of the original container to be cloned
**profile** Profile to use in container cloning (see *lxc.get_container_profile*). Values in a profile will be overridden by the **Container Cloning Arguments** listed below.
**path** path to the container parent directory default: /var/lib/lxc (system)

New in version 2015.8.0.

**Container Cloning Arguments**
**snapshot** Use Copy On Write snapshots (LVM)
**size** [1G] Size of the volume to create. Only applicable if `backing=lvm`.
**backing** The type of storage to use. Set to `lvm` to use an LVM group. Defaults to filesystem within /var/lib/lxc.
**network_profile** Network profile to use for container

New in version 2015.8.0.

**nic_opts** give extra opts overriding network profile values

New in version 2015.8.0.
CLI Examples:

```
salt '*' lxc.clone myclone orig=orig_container
salt '*' lxc.clone myclone orig=orig_container snapshot=True
```

salt.modules.lxc.**cloud_init**(*name*, *vm_=None*, ***kwargs*)
Thin wrapper to lxc.init to be used from the saltcloud lxc driver
**name** Name of the container may be None and then guessed from saltcloud mapping
***vm_*** saltcloud mapping defaults for the vm
CLI Example:

```
salt '*' lxc.cloud_init foo
```

salt.modules.lxc.**cloud_init_interface**(*name*, *vm_=None*, ***kwargs*)
Interface between salt.cloud.lxc driver and lxc.init `vm_` is a mapping of vm opts in the salt.cloud format as documented for the lxc driver.

This can be used either:
- from the salt cloud driver
- because you find the argument to give easier here than using directly lxc.init

**Warning:** BE REALLY CAREFUL CHANGING DEFAULTS !!! IT'S A RETRO COMPATIBLE INTERFACE WITH THE SALT CLOUD DRIVER (ask kiorky).

**name** name of the lxc container to create
**pub_key** public key to preseed the minion with. Can be the keycontent or a filepath
**priv_key** private key to preseed the minion with. Can be the keycontent or a filepath
**path** path to the container parent directory (default: /var/lib/lxc)

New in version 2015.8.0.

**profile** profile selection
**network_profile** network profile selection
**nic_opts** per interface settings compatibles with network profile (ipv4/ipv6/link/gateway/mac/netmask)

eg:

```
- {'eth0': {'mac': '00:16:3e:01:29:40',
            'gateway': None, (default)
            'link': 'br0', (default)
            'gateway': None, (default)
            'netmask': '', (default)
            'ip': '22.1.4.25'}}
```

**unconditional_install** given to lxc.bootstrap (see relative doc)
**force_install** given to lxc.bootstrap (see relative doc)
**config** any extra argument for the salt minion config
**dnsservers** dns servers to set inside the container
**autostart** autostart the container at boot time
**password** administrative password for the container
**bootstrap_delay** delay before launching bootstrap script at Container init

**Warning:** Legacy but still supported options:

**from_container** which container we use as a template when running lxc.clone

**image** which template do we use when we are using lxc.create. This is the default mode unless you specify something in from_container

**backing** which backing store to use. Values can be: overlayfs, dir(default), lvm, zfs, brtfs

**fstype** When using a blockdevice level backing store, which filesystem to use on

**size** When using a blockdevice level backing store, which size for the filesystem to use on

**snapshot** Use snapshot when cloning the container source

**vgname** if using LVM: vgname

**lvname** if using LVM: lvname

**ip** ip for the primary nic

**mac** mac address for the primary nic

**netmask** netmask for the primary nic (24) = `vm_.get('netmask','24')`

**bridge** bridge for the primary nic (lxcbr0)

**gateway** network gateway for the container

**additional_ips** additional ips which will be wired on the main bridge (br0) which is connected to internet. Be aware that you may use manual virtual mac addresses providen by you provider (online, ovh,

etc). This is a list of mappings {ip: `', mac: `', netmask:'`} Set gateway to None and an interface with a gateway to escape from another interface that eth0. eg:

```
- {'mac': '00:16:3e:01:29:40',
   'gateway': None, (default)
   'link': 'br0', (default)
   'netmask': '', (default)
   'ip': '22.1.4.25'}
```

**users** administrative users for the container default: [root] and [root, ubuntu] on ubuntu

**default_nic** name of the first interface, you should really not override this

CLI Example:

```
salt '*' lxc.cloud_init_interface foo
```

salt.modules.lxc.**copy_to**(*name*, *source*, *dest*, *overwrite=False*, *makedirs=False*, *path=None*)

Changed in version 2015.8.0: Function renamed from `lxc.cp` to `lxc.copy_to` for consistency with other container types. `lxc.cp` will continue to work, however. For versions 2015.2.x and earlier, use `lxc.cp`.

Copy a file or directory from the host into a container

**name** Container name

**source** File to be copied to the container

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

**dest** Destination on the container. Must be an absolute path.

Changed in version 2015.5.0: If the destination is a directory, the file will be copied into that directory.

**overwrite** [False] Unless this option is set to `True`, then if a file exists at the location specified by the `dest` argument, an error will be raised.

New in version 2015.8.0.

makedirs : False

Create the parent directory on the container if it does not already exist.

New in version 2015.5.0.

CLI Example:

```
salt 'minion' lxc.copy_to /tmp/foo /root/foo
salt 'minion' lxc.cp /tmp/foo /root/foo
```

salt.modules.lxc.**create**(*name*, *config=None*, *profile=None*, *network_profile=None*, *nic_opts=None*, ***kwargs*)

Create a new container.

**name** Name of the container

**config** The config file to use for the container. Defaults to system-wide config (usually in /etc/lxc/lxc.conf).

**profile** Profile to use in container creation (see *`lxc.get_container_profile`*). Values in a profile will be overridden by the **Container Creation Arguments** listed below.

**network_profile** Network profile to use for container

New in version 2015.5.0.

**Container Creation Arguments**

**template** The template to use. For example, `ubuntu` or `fedora`. Conflicts with the `image` argument.

---

**Note:** The `download` template requires the following three parameters to be defined in `options`:

- **dist** - The name of the distribution

- **release** - Release name/version
- **arch** - Architecture of the container

The available images can be listed using the `lxc.images` function.

---

**options** Template-specific options to pass to the lxc-create command. These correspond to the long options (ones beginning with two dashes) that the template script accepts. For example:

```
options='{"dist": "centos", "release": "6", "arch": "amd64"}'
```

**image** A tar archive to use as the rootfs for the container. Conflicts with the `template` argument.
**backing** The type of storage to use. Set to `lvm` to use an LVM group. Defaults to filesystem within /var/lib/lxc.
**fstype** Filesystem type to use on LVM logical volume
**size** [1G] Size of the volume to create. Only applicable if `backing=lvm`.
**vgname** [lxc] Name of the LVM volume group in which to create the volume for this container. Only applicable if `backing=lvm`.
**lvname** Name of the LVM logical volume in which to create the volume for this container. Only applicable if `backing=lvm`.
**nic_opts** give extra opts overriding network profile values
**path** parent path for the container creation (default: /var/lib/lxc)

New in version 2015.8.0.

`salt.modules.lxc.`**`destroy`**(*name*, *stop=False*, *path=None*)

Destroy the named container.

> **Warning**: Destroys all data associated with the container.

**path** path to the container parent directory (default: /var/lib/lxc)

New in version 2015.8.0.

**stop** [False] If `True`, the container will be destroyed even if it is running/frozen.

Changed in version 2015.5.0: Default value changed to `False`. This more closely matches the behavior of `lxc-destroy(1)`, and also makes it less likely that an accidental command will destroy a running container that was being used for important things.

CLI Examples:

```
salt '*' lxc.destroy foo
salt '*' lxc.destroy foo stop=True
```

`salt.modules.lxc.`**`edit_conf`**(*conf_file*, *out_format='simple'*, *read_only=False*, *lxc_config=None*, ***kwargs*)

Edit an LXC configuration file. If a setting is already present inside the file, its value will be replaced. If it does not exist, it will be appended to the end of the file. Comments and blank lines will be kept in-tact if they already exist in the file.

**out_format**: Set to simple if you need backward compatibility (multiple items for a simple key is not supported)
**read_only**: return only the edited configuration without applying it to the underlying lxc configuration file
**lxc_config**: List of dict containning lxc configuration items For network configuration, you also need to add the device it belongs to, otherwise it will default to eth0. Also, any change to a network parameter will result in the whole network reconfiguration to avoid mismatchs, be aware of that !

After the file is edited, its contents will be returned. By default, it will be returned in `simple` format, meaning an unordered dict (which may not represent the actual file order). Passing in an `out_format` of `commented` will return a data structure which accurately represents the order and content of the file.

CLI Example:

```
salt 'minion' lxc.edit_conf /etc/lxc/mycontainer.conf \
    out_format=commented lxc.network.type=veth
salt 'minion' lxc.edit_conf /etc/lxc/mycontainer.conf \
    out_format=commented \
    lxc_config="[{'lxc.network.name': 'eth0', \
                  'lxc.network.ipv4': '1.2.3.4'},
                 {'lxc.network.name': 'eth2', \
                  'lxc.network.ipv4': '1.2.3.5',\
                  'lxc.network.gateway': '1.2.3.1'}]"
```

salt.modules.lxc.**exists**(*name*, *path=None*)

Returns whether the named container exists.

**path** path to the container parent directory (default: /var/lib/lxc)

New in version 2015.8.0.

CLI Example:

```
salt '*' lxc.exists name
```

salt.modules.lxc.**freeze**(*name*, ***kwargs*)

Freeze the named container

**path** path to the container parent directory default: /var/lib/lxc (system)

New in version 2015.8.0.

**start** [False] If `True` and the container is stopped, the container will be started before attempting to freeze.

New in version 2015.5.0.

**use_vt** run the command through VT

New in version 2015.8.0.

CLI Example:

```
salt '*' lxc.freeze name
```

salt.modules.lxc.**get_container_profile**(*name=None*, ***kwargs*)

New in version 2015.5.0.

Gather a pre-configured set of container configuration parameters. If no arguments are passed, an empty profile is returned.

Profiles can be defined in the minion or master config files, or in pillar or grains, and are loaded using *config.get*. The key under which LXC profiles must be configured is `lxc.container_profile.profile_name`. An example container profile would be as follows:

```
lxc.container_profile:
  ubuntu:
    template: ubuntu
    backing: lvm
    vgname: lxc
    size: 1G
```

Parameters set in a profile can be overridden by passing additional container creation arguments (such as the ones passed to *lxc.create*) to this function.

A profile can be defined either as the name of the profile, or a dictionary of variable names and values. See the LXC Tutorial for more information on how to use LXC profiles.

CLI Example:

```
salt-call lxc.get_container_profile centos
salt-call lxc.get_container_profile ubuntu template=ubuntu backing=overlayfs
```

salt.modules.lxc.**get_network_profile**(*name=None*, ***kwargs*)

New in version 2015.5.0.

Gather a pre-configured set of network configuration parameters. If no arguments are passed, the following default profile is returned:

```
{'eth0': {'link': 'br0', 'type': 'veth', 'flags': 'up'}}
```

Profiles can be defined in the minion or master config files, or in pillar or grains, and are loaded using *config.get*. The key under which LXC profiles must be configured is `lxc.network_profile`. An example network profile would be as follows:

```
lxc.network_profile.centos:
  eth0:
    link: br0
    type: veth
    flags: up
```

To disable networking entirely:

```
lxc.network_profile.centos:
  eth0:
    disable: true
```

Parameters set in a profile can be overridden by passing additional arguments to this function.

A profile can be passed either as the name of the profile, or a dictionary of variable names and values. See the LXC Tutorial for more information on how to use network profiles.

**Warning**: The `ipv4`, `ipv6`, `gateway`, and `link` (bridge) settings in network profiles will only work if the container doesn't redefine the network configuration (for example in `/etc/sysconfig/network-scripts/ifcfg-<interface_name>` on RHEL/CentOS, or `/etc/network/interfaces` on Debian/Ubuntu/etc.)

CLI Example:

```
salt-call lxc.get_network_profile default
```

salt.modules.lxc.**get_parameter**(*name*, *parameter*, *path=None*)

Returns the value of a cgroup parameter for a container

**path** path to the container parent directory default: /var/lib/lxc (system)

New in version 2015.8.0.

CLI Example:

```
salt '*' lxc.get_parameter container_name memory.limit_in_bytes
```

salt.modules.lxc.**get_root_path**(*path*)

Get the configured lxc root for containers

New in version 2015.8.0.

CLI Example:

```
salt '*' lxc.get_root_path
```

salt.modules.lxc.**images**(*dist=None*)

New in version 2015.5.0.

List the available images for LXC's `download` template.
**dist** [None] Filter results to a single Linux distribution
CLI Examples:

```
salt myminion lxc.images
salt myminion lxc.images dist=centos
```

salt.modules.lxc.**info**(*name*, *path=None*)

Returns information about a container
**path** path to the container parent directory default: /var/lib/lxc (system)

New in version 2015.8.0.

CLI Example:

```
salt '*' lxc.info name
```

salt.modules.lxc.**init**(*name*, *config=None*, *cpuset=None*, *cpushare=None*, *memory=None*, *profile=None*, *network_profile=None*, *nic=<object object>*, *nic_opts=None*, *cpu=None*, *autostart=True*, *password=None*, *password_encrypted=None*, *users=None*, *dnsservers=None*, *searchdomains=None*, *bridge=None*, *gateway=None*, *pub_key=None*, *priv_key=None*, *force_install=False*, *unconditional_install=False*, *bootstrap_delay=None*, *bootstrap_args=None*, *bootstrap_shell=None*, *bootstrap_url=None*, ***kwargs*)

Initialize a new container.

This is a partial idempotent function as if it is already provisioned, we will reset a bit the lxc configuration file but much of the hard work will be escaped as markers will prevent re-execution of harmful tasks.
**name** Name of the container
**image** A tar archive to use as the rootfs for the container. Conflicts with the `template` argument.
**cpus** Select a random number of cpu cores and assign it to the cpuset, if the cpuset option is set then this option will be ignored
**cpuset** Explicitly define the cpus this container will be bound to
**cpushare** cgroups cpu shares
**autostart** autostart container on reboot
**memory** cgroups memory limit, in MB

Changed in version 2015.5.0: If no value is passed, no limit is set. In earlier Salt versions, not passing this value causes a 1024MB memory limit to be set, and it was necessary to pass `memory=0` to set no limit.

**gateway** the ipv4 gateway to use the default does nothing more than lxcutils does
**bridge** the bridge to use the default does nothing more than lxcutils does
**network_profile** Network profile to use for the container

New in version 2015.5.0.

**nic** Deprecated since version 2015.5.0: Use `network_profile` instead
**nic_opts** Extra options for network interfaces, will override

```
{"eth0": {"hwaddr": "aa:bb:cc:dd:ee:ff","ipv4": "10.1.1.1","ipv6":
"2001:db8::ff00:42:8329"}}
```

or

`{"eth0": {"hwaddr": "aa:bb:cc:dd:ee:ff","ipv4": "10.1.1.1/24","ipv6": "2001:db8::ff00:42:8329"}}`

**users** Users for which the password defined in the `password` param should be set. Can be passed as a comma separated list or a python list. Defaults to just the `root` user.

**password** Set the initial password for the users defined in the `users` parameter

**password_encrypted** [False] Set to `True` to denote a password hash instead of a plaintext password

New in version 2015.5.0.

**profile** A LXC profile (defined in config or pillar). This can be either a real profile mapping or a string to retrieve it in configuration

**start** Start the newly-created container

**dnsservers** list of dns servers to set in the container, default [] (no setting)

**seed** Seed the container with the minion config. Default: `True`

**install** If salt-minion is not already installed, install it. Default: `True`

**config** Optional config parameters. By default, the id is set to the name of the container.

**master** salt master (default to minion's master)

**master_port** salt master port (default to minion's master port)

**pub_key** Explicit public key to preseed the minion with (optional). This can be either a filepath or a string representing the key

**priv_key** Explicit private key to preseed the minion with (optional). This can be either a filepath or a string representing the key

**approve_key** If explicit preseeding is not used; Attempt to request key approval from the master. Default: `True`

**path** path to the container parent directory default: /var/lib/lxc (system)

New in version 2015.8.0.

**clone** Deprecated since version 2015.5.0: Use `clone_from` instead

**clone_from** Original from which to use a clone operation to create the container. Default: `None`

**bootstrap_delay** Delay in seconds between end of container creation and bootstrapping. Useful when waiting for container to obtain a DHCP lease.

New in version 2015.5.0.

**bootstrap_url** See lxc.bootstrap

**bootstrap_shell** See lxc.bootstrap

**bootstrap_args** See lxc.bootstrap

**force_install** Force installation even if salt-minion is detected, this is the way to run vendor bootstrap scripts even if a salt minion is already present in the container

**unconditional_install** Run the script even if the container seems seeded

CLI Example:

```
salt 'minion' lxc.init name [cpuset=cgroups_cpuset] \
        [cpushare=cgroups_cpushare] [memory=cgroups_memory] \
        [nic=nic_profile] [profile=lxc_profile] \
        [nic_opts=nic_opts] [start=(True|False)] \
        [seed=(True|False)] [install=(True|False)] \
        [config=minion_config] [approve_key=(True|False) \
        [clone_from=original] [autostart=True] \
        [priv_key=/path_or_content] [pub_key=/path_or_content] \
        [bridge=lxcbr0] [gateway=10.0.3.1] \
        [dnsservers[dns1,dns2]] \
        [users=[foo]] [password='secret'] \
        [password_encrypted=(True|False)]
```

`salt.modules.lxc.`**`list`**(*extra=False*, *limit=None*, *path=None*)

List containers classified by state

**extra** Also get per-container specific info. This will change the return data. Instead of returning a list of containers, a dictionary of containers and each container's output from *`lxc.info`*.

**path** path to the container parent directory default: /var/lib/lxc (system)

New in version 2015.8.0.

**limit** Return output matching a specific state (**frozen**, **running**, or **stopped**).

New in version 2015.5.0.

CLI Examples:

```
salt '*' lxc.list
salt '*' lxc.list extra=True
salt '*' lxc.list limit=running
```

salt.modules.lxc.**ls**(*active=None*, *cache=True*, *path=None*)

Return a list of the containers available on the minion

**path** path to the container parent directory default: /var/lib/lxc (system)

New in version 2015.8.0.

**active** If `True`, return only active (i.e. running) containers

New in version 2015.5.0.

CLI Example:

```
salt '*' lxc.ls
salt '*' lxc.ls active=True
```

salt.modules.lxc.**read_conf**(*conf_file*, *out_format='simple'*)

Read in an LXC configuration file. By default returns a simple, unsorted dict, but can also return a more detailed structure including blank lines and comments.

**out_format**: set to `simple' if you need the old and unsupported behavior. This won't support the multiple lxc values (eg: multiple network nics)

CLI Examples:

```
salt 'minion' lxc.read_conf /etc/lxc/mycontainer.conf
salt 'minion' lxc.read_conf /etc/lxc/mycontainer.conf out_format=commented
```

salt.modules.lxc.**reboot**(*name*, *path=None*)

Reboot a container.

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

CLI Examples:

```
salt 'minion' lxc.reboot myvm
```

salt.modules.lxc.**reconfigure**(*name*, *cpu=None*, *cpuset=None*, *cpushare=None*, *memory=None*, *profile=None*, *network_profile=None*, *nic_opts=None*, *bridge=None*, *gateway=None*, *autostart=None*, *utsname=None*, *rootfs=None*, *path=None*, ***kwargs*)

Reconfigure a container.

This only applies to a few property

**name** Name of the container.

**utsname** utsname of the container.

New in version 2016.3.0.

**rootfs** rootfs of the container.

New in version 2016.3.0.

**cpu** Select a random number of cpu cores and assign it to the cpuset, if the cpuset option is set then this option will be ignored

**cpuset** Explicitly define the cpus this container will be bound to
**cpushare** cgroups cpu shares.
**autostart** autostart container on reboot
**memory** cgroups memory limit, in MB. (0 for nolimit, None for old default 1024MB)
**gateway** the ipv4 gateway to use the default does nothing more than lxcutils does
**bridge** the bridge to use the default does nothing more than lxcutils does
**nic** Network interfaces profile (defined in config or pillar).
**nic_opts** Extra options for network interfaces, will override

```
{"eth0":   {"mac":   "aa:bb:cc:dd:ee:ff","ipv4":   "10.1.1.1","ipv6":
"2001:db8::ff00:42:8329"}}
```

or

```
{"eth0":  {"mac":  "aa:bb:cc:dd:ee:ff","ipv4":  "10.1.1.1/24","ipv6":
"2001:db8::ff00:42:8329"}}
```

**path** path to the container parent

New in version 2015.8.0.

CLI Example:

```
salt-call -lall mc_lxc_fork.reconfigure foobar nic_opts="{'eth1': {'mac': '00:16:
↪3e:dd:ee:44'}}" memory=4
```

`salt.modules.lxc.`**`restart`**(*name*, *path=None*, *lxc_config=None*, *force=False*)

New in version 2015.5.0.

Restart the named container. If the container was not running, the container will merely be started.
**name** The name of the container
**path** path to the container parent directory default: /var/lib/lxc (system)

New in version 2015.8.0.

**lxc_config** path to a lxc config file config file will be guessed from container name otherwise

New in version 2015.8.0.

**force** [False] If `True`, the container will be force-stopped instead of gracefully shut down
CLI Example:

```
salt myminion lxc.restart name
```

`salt.modules.lxc.`**`retcode`**(*name*, *cmd*, *no_start=False*, *preserve_state=True*, *stdin=None*, *python_shell=True*, *output_loglevel='debug'*, *use_vt=False*, *path=None*, *ignore_retcode=False*, *chroot_fallback=False*, *keep_env='http_proxy, https_proxy, no_proxy'*)

New in version 2015.5.0.

Run *`cmd.retcode`* within a container

> **Warning**: Many shell builtins do not work, failing with stderr similar to the following:
>
> ```
> lxc_container: No such file or directory - failed to exec 'command'
> ```
>
> The same error will be displayed in stderr if the command being run does not exist. If the retcode is nonzero and not what was expected, try using *`lxc.run_stderr`* or *`lxc.run_all`*.

**name** Name of the container in which to run the command
**cmd** Command to run
**no_start** [False] If the container is not running, don't start it
**preserve_state** [True] After running the command, return the container to its previous state

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

**stdin** [None] Standard input to be used for the command

**output_loglevel** [debug] Level at which to log the output from the command. Set to `quiet` to suppress logging.

**use_vt** [False] Use SaltStack's utils.vt to stream output to console `output=all`.

**keep_env** [http_proxy,https_proxy,no_proxy] A list of env vars to preserve. May be passed as commma-delimited list.

**chroot_fallback** if the container is not running, try to run the command using chroot default: false

CLI Example:

```
salt myminion lxc.retcode mycontainer 'ip addr show'
```

`salt.modules.lxc.`**`run`**(*name*, *cmd*, *no_start=False*, *preserve_state=True*, *stdin=None*, *python_shell=True*, *output_loglevel='debug'*, *use_vt=False*, *path=None*, *ignore_retcode=False*, *chroot_fallback=False*, *keep_env='http_proxy, https_proxy, no_proxy'*)

New in version 2015.8.0.

Run *`cmd.run`* within a container

**Warning**: Many shell builtins do not work, failing with stderr similar to the following:

```
lxc_container: No such file or directory - failed to exec 'command'
```

The same error will be displayed in stderr if the command being run does not exist. If no output is returned using this function, try using *`lxc.run_stderr`* or *`lxc.run_all`*.

**name** Name of the container in which to run the command

**cmd** Command to run

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

**no_start** [False] If the container is not running, don't start it

**preserve_state** [True] After running the command, return the container to its previous state

**stdin** [None] Standard input to be used for the command

**output_loglevel** [debug] Level at which to log the output from the command. Set to `quiet` to suppress logging.

**use_vt** [False] Use SaltStack's utils.vt to stream output to console. Assumes `output=all`.

**chroot_fallback** if the container is not running, try to run the command using chroot default: false

**keep_env** [http_proxy,https_proxy,no_proxy] A list of env vars to preserve. May be passed as commma-delimited list.

CLI Example:

```
salt myminion lxc.run mycontainer 'ifconfig -a'
```

`salt.modules.lxc.`**`run_all`**(*name*, *cmd*, *no_start=False*, *preserve_state=True*, *stdin=None*, *python_shell=True*, *output_loglevel='debug'*, *use_vt=False*, *path=None*, *ignore_retcode=False*, *chroot_fallback=False*, *keep_env='http_proxy, https_proxy, no_proxy'*)

New in version 2015.5.0.

Run *`cmd.run_all`* within a container

---

**Note**: While the command is run within the container, it is initiated from the host. Therefore, the PID in the

return dict is from the host, not from the container.

---

**Warning**: Many shell builtins do not work, failing with stderr similar to the following:

```
lxc_container: No such file or directory - failed to exec 'command'
```

The same error will be displayed in stderr if the command being run does not exist.

**name** Name of the container in which to run the command
**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

**cmd** Command to run
**no_start** [False] If the container is not running, don't start it
**preserve_state** [True] After running the command, return the container to its previous state
**stdin** [None] Standard input to be used for the command
**output_loglevel** [debug] Level at which to log the output from the command. Set to `quiet` to suppress logging.
**use_vt** [False] Use SaltStack's utils.vt to stream output to console `output=all`.
**keep_env** [http_proxy,https_proxy,no_proxy] A list of env vars to preserve. May be passed as commma-delimited list.
**chroot_fallback** if the container is not running, try to run the command using chroot default: false

CLI Example:

```
salt myminion lxc.run_all mycontainer 'ip addr show'
```

`salt.modules.lxc.`**`run_cmd`**(*name*, *cmd*, *no_start=False*, *preserve_state=True*, *stdin=None*, *stdout=True*, *stderr=False*, *python_shell=True*, *path=None*, *output_loglevel='debug'*, *use_vt=False*, *ignore_retcode=False*, *chroot_fallback=False*, *keep_env='http_proxy, https_proxy, no_proxy'*)

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

Deprecated since version 2015.5.0: Use *`lxc.run`* instead

`salt.modules.lxc.`**`run_stderr`**(*name*, *cmd*, *no_start=False*, *preserve_state=True*, *stdin=None*, *python_shell=True*, *output_loglevel='debug'*, *use_vt=False*, *path=None*, *ignore_retcode=False*, *chroot_fallback=False*, *keep_env='http_proxy, https_proxy, no_proxy'*)

New in version 2015.5.0.

Run *`cmd.run_stderr`* within a container

---

**Warning**: Many shell builtins do not work, failing with stderr similar to the following:

```
lxc_container: No such file or directory - failed to exec 'command'
```

The same error will be displayed if the command being run does not exist.

**name** Name of the container in which to run the command
**cmd** Command to run
**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

**no_start** [False] If the container is not running, don't start it

**preserve_state** [True] After running the command, return the container to its previous state
**stdin** [None] Standard input to be used for the command
**output_loglevel** [debug] Level at which to log the output from the command. Set to `quiet` to suppress logging.
**use_vt** [False] Use SaltStack's utils.vt to stream output to console `output=all`.
**keep_env** [http_proxy,https_proxy,no_proxy] A list of env vars to preserve. May be passed as commma-delimited list.
**chroot_fallback** if the container is not running, try to run the command using chroot default: false

CLI Example:

```
salt myminion lxc.run_stderr mycontainer 'ip addr show'
```

`salt.modules.lxc.`**`run_stdout`**(*name*, *cmd*, *no_start=False*, *preserve_state=True*, *stdin=None*, *python_shell=True*, *output_loglevel='debug'*, *use_vt=False*, *path=None*, *ignore_retcode=False*, *chroot_fallback=False*, *keep_env='http_proxy, https_proxy, no_proxy'*)

New in version 2015.5.0.

Run *`cmd.run_stdout`* within a container

> **Warning**: Many shell builtins do not work, failing with stderr similar to the following:
>
> ```
> lxc_container: No such file or directory - failed to exec 'command'
> ```
>
> The same error will be displayed in stderr if the command being run does not exist. If no output is returned using this function, try using *`lxc.run_stderr`* or *`lxc.run_all`*.

**name** Name of the container in which to run the command
**cmd** Command to run
**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

**no_start** [False] If the container is not running, don't start it
**preserve_state** [True] After running the command, return the container to its previous state
**stdin** [None] Standard input to be used for the command
**output_loglevel** [debug] Level at which to log the output from the command. Set to `quiet` to suppress logging.
**use_vt** [False] Use SaltStack's utils.vt to stream output to console `output=all`.
**keep_env** [http_proxy,https_proxy,no_proxy] A list of env vars to preserve. May be passed as commma-delimited list.
**chroot_fallback** if the container is not running, try to run the command using chroot default: false

CLI Example:

```
salt myminion lxc.run_stdout mycontainer 'ifconfig -a'
```

`salt.modules.lxc.`**`running_systemd`**(*name*, *cache=True*, *path=None*)

Determine if systemD is running
**path** path to the container parent

New in version 2015.8.0.

CLI Example:

```
salt '*' lxc.running_systemd ubuntu
```

salt.modules.lxc.**search_lxc_bridge**()
Search the first bridge which is potentially available as LXC bridge

CLI Example:

```
salt '*' lxc.search_lxc_bridge
```

salt.modules.lxc.**search_lxc_bridges**()
Search which bridges are potentially available as LXC bridges

CLI Example:

```
salt '*' lxc.search_lxc_bridges
```

salt.modules.lxc.**set_dns**(*name*, *dnsservers=None*, *searchdomains=None*, *path=None*)
Changed in version 2015.5.0: The `dnsservers` and `searchdomains` parameters can now be passed as a comma-separated list.

Update /etc/resolv.confo

path
path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

CLI Example:

```
salt myminion lxc.set_dns ubuntu "['8.8.8.8', '4.4.4.4']"
```

salt.modules.lxc.**set_parameter**(*name*, *parameter*, *value*, *path=None*)
Set the value of a cgroup parameter for a container.
**path** path to the container parent directory default: /var/lib/lxc (system)

New in version 2015.8.0.

CLI Example:

```
salt '*' lxc.set_parameter name parameter value
```

salt.modules.lxc.**set_password**(*name*, *users*, *password*, *encrypted=True*, *path=None*)
Changed in version 2015.5.0: Function renamed from `set_pass` to `set_password`. Additionally, this function now supports (and defaults to using) a password hash instead of a plaintext password.

Set the password of one or more system users inside containers
**users** Comma-separated list (or python list) of users to change password
**password** Password to set for the specified user(s)
**encrypted** [True] If true, `password` must be a password hash. Set to `False` to set a plaintext password (not recommended).

New in version 2015.5.0.

**path** path to the container parent directory default: /var/lib/lxc (system)

New in version 2015.8.0.

CLI Example:

```
salt '*' lxc.set_pass container-name root '$6$uJ2uAyLU$KoI67t8As/
↪0fXtJOPcHKGXmUpcoYUcVR2K6x93walnShTCQvjRwq25yIkiCBOqgbfdKQSFnAo28/ek6716vEV1'
salt '*' lxc.set_pass container-name root foo encrypted=False
```

salt.modules.lxc.**start**(*name*, ***kwargs*)
Start the named container

**restart** [False] Deprecated since version 2015.5.0: Use *lxc.restart*

Restart the container if it is already running

**path** path to the container parent directory default: /var/lib/lxc (system)

New in version 2015.8.0.

**lxc_config** path to a lxc config file config file will be guessed from container name otherwise

New in version 2015.8.0.

**use_vt** run the command through VT

New in version 2015.8.0.

CLI Example:

```
salt myminion lxc.start name
```

salt.modules.lxc.**state**(*name*, *path=None*)

Returns the state of a container.

**path** path to the container parent directory (default: /var/lib/lxc)

New in version 2015.8.0.

CLI Example:

```
salt '*' lxc.state name
```

salt.modules.lxc.**stop**(*name*, *kill=False*, *path=None*, *use_vt=None*)

Stop the named container

**path** path to the container parent directory default: /var/lib/lxc (system)

New in version 2015.8.0.

**kill**: **False** Do not wait for the container to stop, kill all tasks in the container. Older LXC versions will stop containers like this irrespective of this argument.

Changed in version 2015.5.0: Default value changed to `False`

**use_vt** run the command through VT

New in version 2015.8.0.

CLI Example:

```
salt myminion lxc.stop name
```

salt.modules.lxc.**systemd_running_state**(*name*, *path=None*)

Get the operational state of a systemd based container

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

CLI Example:

```
salt myminion lxc.systemd_running_state ubuntu
```

salt.modules.lxc.**templates**()

New in version 2015.5.0.

List the available LXC template scripts installed on the minion

CLI Examples:

```
salt myminion lxc.templates
```

salt.modules.lxc.**test_bare_started_state**(*name*, *path=None*)

Test if a non systemd container is fully started For now, it consists only to test if the container is attachable

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

CLI Example:

```
salt myminion lxc.test_bare_started_state ubuntu
```

salt.modules.lxc.**test_sd_started_state**(*name*, *path=None*)

Test if a systemd container is fully started

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

CLI Example:

```
salt myminion lxc.test_sd_started_state ubuntu
```

salt.modules.lxc.**unfreeze**(*name*, *path=None*, *use_vt=None*)

Unfreeze the named container.

**path** path to the container parent directory default: /var/lib/lxc (system)

New in version 2015.8.0.

**use_vt** run the command through VT

New in version 2015.8.0.

CLI Example:

```
salt '*' lxc.unfreeze name
```

salt.modules.lxc.**update_lxc_conf**(*name*, *lxc_conf*, *lxc_conf_unset*, *path=None*)

Edit LXC configuration options

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

CLI Example:

```
salt myminion lxc.update_lxc_conf ubuntu \
        lxc_conf="[{'network.ipv4.ip':'10.0.3.5'}]" \
        lxc_conf_unset="['lxc.utsname']"
```

salt.modules.lxc.**version**()

Return the actual lxc client version

New in version 2015.8.0.

CLI Example:

```
salt '*' lxc.version
```

salt.modules.lxc.**wait_started**(*name*, *path=None*, *timeout=300*)

Check that the system has fully inited

This is actually very important for systemD based containers

see https://github.com/saltstack/salt/issues/23847

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

CLI Example:

```
salt myminion lxc.wait_started ubuntu
```

salt.modules.lxc.**write_conf**(*conf_file*, *conf*)

Write out an LXC configuration file

This is normally only used internally. The format of the data structure must match that which is returned from `lxc.read_conf()`, with `out_format` set to `commented`.

An example might look like:

```
[
    {'lxc.utsname': '$CONTAINER_NAME'},
    '# This is a commented line\n',
    '\n',
    {'lxc.mount': '$CONTAINER_FSTAB'},
    {'lxc.rootfs': {'comment': 'This is another test',
                    'value': 'This is another test'}},
    '\n',
    {'lxc.network.type': 'veth'},
    {'lxc.network.flags': 'up'},
    {'lxc.network.link': 'br0'},
    {'lxc.network.mac': '$CONTAINER_MACADDR'},
    {'lxc.network.ipv4': '$CONTAINER_IPADDR'},
    {'lxc.network.name': '$CONTAINER_DEVICENAME'},
]
```

CLI Example:

```
salt 'minion' lxc.write_conf /etc/lxc/mycontainer.conf \
    out_format=commented
```

### 13.6.156 salt.modules.mac_assistive module

This module allows you to manage assistive access on OS X minions with 10.9+

New in version 2016.3.0.

```
salt '*' assistive.install /usr/bin/osascript
```

salt.modules.mac_assistive.**enable**(*app_id*, *enabled=True*)

Enable or disable an existing assistive access application.

**app_id** The bundle ID or command to set assistive access status.

**enabled** Sets enabled or disabled status. Default is `True`.

CLI Example:

```
salt '*' assistive.enable /usr/bin/osascript
salt '*' assistive.enable com.smileonmymac.textexpander enabled=False
```

salt.modules.mac_assistive.**enabled**(*app_id*)

Check if a bundle ID or command is listed in assistive access and enabled.

**app_id** The bundle ID or command to retrieve assistive access status.

CLI Example:

```
salt '*' assistive.enabled /usr/bin/osascript
salt '*' assistive.enabled com.smileonmymac.textexpander
```

salt.modules.mac_assistive.**install**(*app_id*, *enable=True*)

Install a bundle ID or command as being allowed to use assistive access.

**app_id** The bundle ID or command to install for assistive access.

**enabled** Sets enabled or disabled status. Default is `True`.
CLI Example:

```
salt '*' assistive.install /usr/bin/osascript
salt '*' assistive.install com.smileonmymac.textexpander
```

`salt.modules.mac_assistive.`**`installed`**(*app_id*)
Check if a bundle ID or command is listed in assistive access. This will not check to see if it's enabled.
**app_id** The bundle ID or command to check installed status.
CLI Example:

```
salt '*' assistive.installed /usr/bin/osascript
salt '*' assistive.installed com.smileonmymac.textexpander
```

`salt.modules.mac_assistive.`**`remove`**(*app_id*)
Remove a bundle ID or command as being allowed to use assistive access.
**app_id** The bundle ID or command to remove from assistive access list.
CLI Example:

```
salt '*' assistive.remove /usr/bin/osascript
salt '*' assistive.remove com.smileonmymac.textexpander
```

### 13.6.157 salt.modules.mac_brew module

Homebrew for Mac OS X

---

**Important**: If you feel that Salt should be using this module to manage packages on a minion, and it is using a different module (or gives an error similar to *`pkg.install' is not available*), see *here*.

---

`salt.modules.mac_brew.`**`available_version`**(**names*, ***kwargs*)
This function is an alias of `latest_version`.
Return the latest version of the named package available for upgrade or installation

CLI Example:

```
salt '*' pkg.latest_version <package name>
salt '*' pkg.latest_version <package1> <package2> <package3>
```

`salt.modules.mac_brew.`**`info_installed`**(**names*)
Return the information of the named package(s) installed on the system.

New in version 2016.3.1.
**names** The names of the packages for which to return information.
CLI example:

```
salt '*' pkg.info_installed <package1>
salt '*' pkg.info_installed <package1> <package2> <package3> ...
```

`salt.modules.mac_brew.`**`install`**(*name=None*, *pkgs=None*, *taps=None*, *options=None*, ***kwargs*)
Install the passed package(s) with `brew install`
**name** The name of the formula to be installed. Note that this parameter is ignored if ``pkgs'' is passed.

CLI Example:

```
salt '*' pkg.install <package name>
```

**taps** Unofficial GitHub repos to use when updating and installing formulas.

CLI Example:

```
salt '*' pkg.install <package name> tap='<tap>'
salt '*' pkg.install zlib taps='homebrew/dupes'
salt '*' pkg.install php54 taps='["josegonzalez/php", "homebrew/dupes"]'
```

**options** Options to pass to brew. Only applies to initial install. Due to how brew works, modifying chosen options requires a full uninstall followed by a fresh install. Note that if ``pkgs'' is used, all options will be passed to all packages. Unrecognized options for a package will be silently ignored by brew.

CLI Example:

```
salt '*' pkg.install <package name> tap='<tap>'
salt '*' pkg.install php54 taps='["josegonzalez/php", "homebrew/dupes"]'
 ↪options='["--with-fpm"]'
```

Multiple Package Installation Options:

**pkgs** A list of formulas to install. Must be passed as a python list.

CLI Example:

```
salt '*' pkg.install pkgs='["foo","bar"]'
```

Returns a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

CLI Example:

```
salt '*' pkg.install 'package package package'
```

`salt.modules.mac_brew.`**`latest_version`**(**names*, ***kwargs*)

Return the latest version of the named package available for upgrade or installation

CLI Example:

```
salt '*' pkg.latest_version <package name>
salt '*' pkg.latest_version <package1> <package2> <package3>
```

`salt.modules.mac_brew.`**`list_pkgs`**(*versions_as_list=False*, ***kwargs*)

List the packages currently installed in a dict:

```
{'<package_name>': '<version>'}
```

CLI Example:

```
salt '*' pkg.list_pkgs
```

`salt.modules.mac_brew.`**`list_upgrades`**(*refresh=True*, ***kwargs*)

Check whether or not an upgrade is available for all packages

CLI Example:

```
salt '*' pkg.list_upgrades
```

salt.modules.mac_brew.**refresh_db**()
Update the homebrew package repository.

CLI Example:

```
salt '*' pkg.refresh_db
```

salt.modules.mac_brew.**remove**(*name=None*, *pkgs=None*, ***kwargs*)
Removes packages with `brew uninstall`.
**name** The name of the package to be deleted.
Multiple Package Options:
**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.
New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.remove <package name>
salt '*' pkg.remove <package1>,<package2>,<package3>
salt '*' pkg.remove pkgs='["foo", "bar"]'
```

salt.modules.mac_brew.**upgrade**(*refresh=True*)
Upgrade outdated, unpinned brews.
**refresh** Fetch the newest version of Homebrew and all formulae from GitHub before installing.
Return a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

CLI Example:

```
salt '*' pkg.upgrade
```

salt.modules.mac_brew.**upgrade_available**(*pkg*)
Check whether or not an upgrade is available for a given package

CLI Example:

```
salt '*' pkg.upgrade_available <package name>
```

salt.modules.mac_brew.**version**(**names*, ***kwargs*)
Returns a string representing the package version or an empty string if not installed. If more than one package name is specified, a dict of name/version pairs is returned.

CLI Example:

```
salt '*' pkg.version <package name>
salt '*' pkg.version <package1> <package2> <package3>
```

### 13.6.158 salt.modules.mac_defaults module

Set defaults on Mac OS

salt.modules.mac_defaults.**read**(*domain*, *key*, *user=None*)
Write a default to the system

CLI Example:

```
salt '*' macdefaults.read com.apple.CrashReporter DialogType

salt '*' macdefaults.read NSGlobalDomain ApplePersistence
```

**domain** The name of the domain to read from
**key** The key of the given domain to read from
**user** The user to write the defaults to

salt.modules.mac_defaults.**write**(*domain*, *key*, *value*, *type='string'*, *user=None*)
Write a default to the system

CLI Example:

```
salt '*' macdefaults.write com.apple.CrashReporter DialogType Server

salt '*' macdefaults.write NSGlobalDomain ApplePersistence True type=bool
```

**domain** The name of the domain to write to
**key** The key of the given domain to write to
**value** The value to write to the given key
**type** The type of value to be written, vaid types are string, data, int[eger], float, bool[ean], date, array, array-add, dict, dict-add
**user** The user to write the defaults to

### 13.6.159 salt.modules.mac_desktop module

Mac OS X implementations of various commands in the ``desktop'' interface

salt.modules.mac_desktop.**get_output_volume**()
Get the output volume (range 0 to 100)

CLI Example:

```
salt '*' desktop.get_output_volume
```

salt.modules.mac_desktop.**lock**()
Lock the desktop session

CLI Example:

```
salt '*' desktop.lock
```

salt.modules.mac_desktop.**say**(**words*)
Say some words.
**words** The words to execute the say command with.
CLI Example:

```
salt '*' desktop.say <word0> <word1> ... <wordN>
```

salt.modules.mac_desktop.**screensaver**()
Launch the screensaver.

CLI Example:

```
salt '*' desktop.screensaver
```

salt.modules.mac_desktop.**set_output_volume**(*volume*)
Set the volume of sound.
**volume** The level of volume. Can range from 0 to 100.
CLI Example:

```
salt '*' desktop.set_output_volume <volume>
```

### 13.6.160 salt.modules.mac_group

Manage groups on Mac OS 10.7+

salt.modules.mac_group.**add**(*name*, *gid=None*, ***kwargs*)
Add the specified group

CLI Example:

```
salt '*' group.add foo 3456
```

salt.modules.mac_group.**adduser**(*group*, *name*)
Add a user in the group.

CLI Example:

```
salt '*' group.adduser foo bar
```

Verifies if a valid username `bar' as a member of an existing group `foo', if not then adds it.

salt.modules.mac_group.**chgid**(*name*, *gid*)
Change the gid for a named group

CLI Example:

```
salt '*' group.chgid foo 4376
```

salt.modules.mac_group.**delete**(*name*)
Remove the named group

CLI Example:

```
salt '*' group.delete foo
```

salt.modules.mac_group.**deluser**(*group*, *name*)
Remove a user from the group

New in version 2016.3.0.

CLI Example:

```
salt '*' group.deluser foo bar
```

Removes a member user `bar' from a group `foo'. If group is not present then returns True.

salt.modules.mac_group.**getent**(*refresh=False*)
Return info on all groups

CLI Example:

```
salt '*' group.getent
```

salt.modules.mac_group.**info**(*name*)
Return information about a group

CLI Example:

```
salt '*' group.info foo
```

salt.modules.mac_group.**members**(*name*, *members_list*)
Replaces members of the group with a provided list.

New in version 2016.3.0.

CLI Example:
salt `*' group.members foo `user1,user2,user3,...'
Replaces a membership list for a local group `foo'.

### 13.6.161 salt.modules.mac_keychain module

Install certificates into the keychain on Mac OS

New in version 2016.3.0.

salt.modules.mac_keychain.**get_default_keychain**(*user=None*, *domain='user'*)
Get the default keychain
**user** The user to check the default keychain of
**domain** The domain to use valid values are user|system|common|dynamic, the default is user
CLI Example:

```
salt '*' keychain.get_default_keychain
```

salt.modules.mac_keychain.**get_friendly_name**(*cert*, *password*)
Get the friendly name of the given certificate
**cert** The certificate to install
**password** The password for the certificate being installed formatted in the way described for openssl command in the PASS PHRASE ARGUMENTS section

Note: The password given here will show up as plaintext in the returned job info.
CLI Example:

```
salt '*' keychain.get_friendly_name /tmp/test.p12 test123
```

salt.modules.mac_keychain.**get_hash**(*name*, *password=None*)
Returns the hash of a certificate in the keychain.
**name** The name of the certificate (which you can get from keychain.get_friendly_name) or the location of a p12 file.
**password** The password that is used in the certificate. Only required if your passing a p12 file. Note: This will be outputted to logs
CLI Example:

```
salt '*' keychain.get_hash /tmp/test.p12 test123
```

salt.modules.mac_keychain.**install**(*cert*, *password*, *keychain='/Library/Keychains/System.keychain'*, *allow_any=False*, *keychain_password=None*)
Install a certificate
**cert** The certificate to install
**password** The password for the certificate being installed formatted in the way described for openssl command in the PASS PHRASE ARGUMENTS section.

Note: The password given here will show up as plaintext in the job returned info.

**keychain** The keychain to install the certificate to, this defaults to /Library/Keychains/System.keychain

**allow_any** Allow any application to access the imported certificate without warning

**keychain_password** If your keychain is likely to be locked pass the password and it will be unlocked before running the import

Note: The password given here will show up as plaintext in the returned job info.

CLI Example:

```
salt '*' keychain.install test.p12 test123
```

salt.modules.mac_keychain.**list_certs**(*keychain='/Library/Keychains/System.keychain'*)

List all of the installed certificates

**keychain** The keychain to install the certificate to, this defaults to /Library/Keychains/System.keychain

CLI Example:

```
salt '*' keychain.list_certs
```

salt.modules.mac_keychain.**set_default_keychain**(*keychain*, *domain='user'*, *user=None*)

Set the default keychain

**keychain** The location of the keychain to set as default

**domain** The domain to use valid values are user|system|common|dynamic, the default is user

**user** The user to set the default keychain as

CLI Example:

```
salt '*' keychain.set_keychain /Users/fred/Library/Keychains/login.keychain
```

salt.modules.mac_keychain.**uninstall**(*cert_name*, *keychain='/Library/Keychains/System.keychain'*, *keychain_password=None*)

Uninstall a certificate from a keychain

**cert_name** The name of the certificate to remove

**keychain** The keychain to install the certificate to, this defaults to /Library/Keychains/System.keychain

**keychain_password** If your keychain is likely to be locked pass the password and it will be unlocked before running the import

Note: The password given here will show up as plaintext in the returned job info.

CLI Example:

```
salt '*' keychain.install test.p12 test123
```

salt.modules.mac_keychain.**unlock_keychain**(*keychain*, *password*)

Unlock the given keychain with the password

**keychain** The keychain to unlock

**password** The password to use to unlock the keychain.

Note: The password given here will show up as plaintext in the returned job info.

CLI Example:

```
salt '*' keychain.unlock_keychain /tmp/test.p12 test123
```

### 13.6.162 salt.modules.mac_pkgutil module

Installer support for OS X.

Installer is the native .pkg/.mpkg package manager for OS X.

salt.modules.mac_pkgutil.**forget**(*package_id*)

New in version 2016.3.0.

Remove the receipt data about the specified package. Does not remove files.

> **Warning:** DO NOT use this command to fix broken package design

**Parameters** **package_id** (*str*) -- The name of the package to forget
**Returns** True if successful, otherwise False
**Return type** bool

CLI Example:

```
salt '*' pkgutil.forget com.apple.pkg.gcc4.2Leo
```

salt.modules.mac_pkgutil.**install**(*source*, *package_id*)

Install a .pkg from an URI or an absolute path.

**Parameters**

- **source** (*str*) -- The path to a package.
- **package_id** (*str*) -- The package ID

**Returns** True if successful, otherwise False
**Return type** bool

CLI Example:

```
salt '*' pkgutil.install source=/vagrant/build_essentials.pkg package_id=com.
↪apple.pkg.gcc4.2Leo
```

salt.modules.mac_pkgutil.**is_installed**(*package_id*)

Returns whether a given package id is installed.

**Returns** True if installed, otherwise False
**Return type** bool

CLI Example:

```
salt '*' pkgutil.is_installed com.apple.pkg.gcc4.2Leo
```

salt.modules.mac_pkgutil.**list**()

List the installed packages.

**Returns** A list of installed packages
**Return type** *list*

CLI Example:

```
salt '*' pkgutil.list
```

### 13.6.163 salt.modules.mac_ports module

Support for MacPorts under Mac OSX.

This module has some caveats.

1. Updating the database of available ports is quite resource-intensive. However, *refresh=True* is the default for all operations that need an up-to-date copy of available ports. Consider *refresh=False* when you are sure no db update is needed.

2. In some cases MacPorts doesn't always realize when another copy of itself is running and will gleefully tromp all over the available ports database. This makes MacPorts behave in undefined ways until a fresh complete copy is retrieved.

Because of 1 and 2 it is possible to get the salt-minion into a state where *salt mac-machine pkg./something/* won't want to return. Use

*salt-run jobs.active*

on the master to check for potentially long-running calls to *port*.

Finally, ports database updates are always handled with *port selfupdate* as opposed to *port sync*. This makes sense in the MacPorts user commmunity but may confuse experienced Linux admins as Linux package managers don't upgrade the packaging software when doing a package database update. In other words *salt mac-machine pkg.refresh_db* is more like *apt-get update; apt-get upgrade dpkg apt-get* than simply *apt-get update*.

`salt.modules.mac_ports.`**`available_version`**(**names*, ***kwargs*)

This function is an alias of `latest_version`.

Return the latest version of the named package available for upgrade or installation

Options:
**refresh** Update ports with `port selfupdate`
CLI Example:

```
salt '*' pkg.latest_version <package name>
salt '*' pkg.latest_version <package1> <package2> <package3>
```

`salt.modules.mac_ports.`**`install`**(*name=None*, *refresh=False*, *pkgs=None*, ***kwargs*)

Install the passed package(s) with `port install`
**name** The name of the formula to be installed. Note that this parameter is ignored if ``pkgs'' is passed.

CLI Example:

```
salt '*' pkg.install <package name>
```

**version** Specify a version to pkg to install. Ignored if pkgs is specified.

CLI Example:

```
salt '*' pkg.install <package name>
salt '*' pkg.install git-core version='1.8.5.5'
```

**variant** Specify a variant to pkg to install. Ignored if pkgs is specified.

CLI Example:

```
salt '*' pkg.install <package name>
salt '*' pkg.install git-core version='1.8.5.5' variant='+credential_
 ↪osxkeychain+doc+pcre'
```

Multiple Package Installation Options:
**pkgs** A list of formulas to install. Must be passed as a python list.

CLI Example:

```
salt '*' pkg.install pkgs='["foo","bar"]'
salt '*' pkg.install pkgs='["foo@1.2","bar"]'
salt '*' pkg.install pkgs='["foo@1.2+ssl","bar@2.3"]'
```

Returns a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

CLI Example:

```
salt '*' pkg.install 'package package package'
```

salt.modules.mac_ports.**latest_version**(**names, **kwargs*)

Return the latest version of the named package available for upgrade or installation

Options:
**refresh** Update ports with `port selfupdate`
CLI Example:

```
salt '*' pkg.latest_version <package name>
salt '*' pkg.latest_version <package1> <package2> <package3>
```

salt.modules.mac_ports.**list_pkgs**(*versions_as_list=False, **kwargs*)

List the packages currently installed in a dict:

```
{'<package_name>': '<version>'}
```

CLI Example:

```
salt '*' pkg.list_pkgs
```

salt.modules.mac_ports.**list_upgrades**(*refresh=True, **kwargs*)

Check whether or not an upgrade is available for all packages

Options:
**refresh** Update ports with `port selfupdate`
CLI Example:

```
salt '*' pkg.list_upgrades
```

salt.modules.mac_ports.**refresh_db**()

Update ports with `port selfupdate`

salt.modules.mac_ports.**remove**(*name=None, pkgs=None, **kwargs*)

Removes packages with `port uninstall`.
**name** The name of the package to be deleted.
Multiple Package Options:
**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.
New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.remove <package name>
salt '*' pkg.remove <package1>,<package2>,<package3>
salt '*' pkg.remove pkgs='["foo", "bar"]'
```

salt.modules.mac_ports.**upgrade**(*refresh=True*)

Run a full upgrade using MacPorts `port upgrade outdated'

Options:
**refresh** Update ports with `port selfupdate`
Return a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

CLI Example:

```
salt '*' pkg.upgrade
```

salt.modules.mac_ports.**upgrade_available**(*pkg*, *refresh=True*)

Check whether or not an upgrade is available for a given package

CLI Example:

```
salt '*' pkg.upgrade_available <package name>
```

salt.modules.mac_ports.**version**(**names*, ***kwargs*)

Returns a string representing the package version or an empty string if not installed. If more than one package name is specified, a dict of name/version pairs is returned.

CLI Example:

```
salt '*' pkg.version <package name>
salt '*' pkg.version <package1> <package2> <package3>
```

### 13.6.164 salt.modules.mac_power module

Module for editing power settings on Mac OS X

New in version 2016.3.0.

salt.modules.mac_power.**get_computer_sleep**()

Display the amount of idle time until the computer sleeps.

**Returns** A string representing the sleep settings for the computer

**Return type** str

CLI Example:

..code-block:: bash

salt `*' power.get_computer_sleep

salt.modules.mac_power.**get_display_sleep**()

Display the amount of idle time until the display sleeps.

**Returns** A string representing the sleep settings for the displey

**Return type** str

CLI Example:

..code-block:: bash

salt `*' power.get_display_sleep

salt.modules.mac_power.**get_harddisk_sleep**()

Display the amount of idle time until the hard disk sleeps.

**Returns** A string representing the sleep settings for the hard disk

**Return type** str

CLI Example:

..code-block:: bash

salt `*' power.get_harddisk_sleep

salt.modules.mac_power.**get_restart_freeze**()

Displays whether `restart on freeze' is on or off if supported

**Returns** A string value representing the ``restart on freeze'' settings
**Return type** *string*

CLI Example:

```
salt '*' power.get_restart_freeze
```

salt.modules.mac_power.**get_restart_power_failure**()

Displays whether `restart on power failure' is on or off if supported

**Returns** A string value representing the ``restart on power failure'' settings
**Return type** *string*

CLI Example:

```
salt '*' power.get_restart_power_failure
```

salt.modules.mac_power.**get_sleep**()

Displays the amount of idle time until the machine sleeps. Settings for Computer, Display, and Hard Disk are displayed.

**Returns** A dictionary containing the sleep status for Computer, Display, and
Hard Disk :rtype: dict

CLI Example:

```
salt '*' power.get_sleep
```

salt.modules.mac_power.**get_sleep_on_power_button**()

Displays whether `allow power button to sleep computer' is on or off if supported

**Returns** A string value representing the ``allow power button to sleep
computer'' settings :rtype: string

CLI Example:

```
salt '*' power.get_sleep_on_power_button
```

salt.modules.mac_power.**get_wake_on_modem**()

Displays whether `wake on modem' is on or off if supported

**Returns** A string value representing the ``wake on modem'' settings
**Return type** str

CLI Example:

```
salt '*' power.get_wake_on_modem
```

salt.modules.mac_power.**get_wake_on_network**()

Displays whether `wake on network' is on or off if supported

**Returns** A string value representing the ``wake on network'' settings
**Return type** *string*

CLI Example:

```
salt '*' power.get_wake_on_network
```

salt.modules.mac_power.**set_computer_sleep**(*minutes*)

Set the amount of idle time until the computer sleeps. Pass ``Never'' of ``Off'' to never sleep.

**Parameters** **minutes** -- Can be an integer between 1 and 180 or ``Never'' or ``Off''
**Ptype** int, str
**Returns** True if successful, False if not
**Return type** bool

CLI Example:

```
salt '*' power.set_computer_sleep 120
salt '*' power.set_computer_sleep off
```

salt.modules.mac_power.**set_display_sleep**(*minutes*)

Set the amount of idle time until the display sleeps. Pass ``Never'' of ``Off'' to never sleep.

**Parameters** **minutes** -- Can be an integer between 1 and 180 or ``Never'' or ``Off''

**Ptype** int, str

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' power.set_display_sleep 120
salt '*' power.set_display_sleep off
```

salt.modules.mac_power.**set_harddisk_sleep**(*minutes*)

Set the amount of idle time until the harddisk sleeps. Pass ``Never'' of ``Off'' to never sleep.

**Parameters** **minutes** -- Can be an integer between 1 and 180 or ``Never'' or ``Off''

**Ptype** int, str

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' power.set_harddisk_sleep 120
salt '*' power.set_harddisk_sleep off
```

salt.modules.mac_power.**set_restart_freeze**(*enabled*)

Specifies whether the server restarts automatically after a system freeze. This setting doesn't seem to be editable. The command completes successfully but the setting isn't actually updated. This is probably an OS X bug. The functions remains in case they ever fix the bug.

**Parameters** **enabled** (*bool*) -- True to enable, False to disable. ``On'' and ``Off'' are also acceptable values. Additionally you can pass 1 and 0 to represent True and False respectively

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' power.set_restart_freeze True
```

salt.modules.mac_power.**set_restart_power_failure**(*enabled*)

Set whether or not the computer will automatically restart after a power failure.

**Parameters** **enabled** (*bool*) -- True to enable, False to disable. ``On'' and ``Off'' are also acceptable values. Additionally you can pass 1 and 0 to represent True and False respectively

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' power.set_restart_power_failure True
```

salt.modules.mac_power.**set_sleep**(*minutes*)

Sets the amount of idle time until the machine sleeps. Sets the same value for Computer, Display, and Hard Disk. Pass ``Never'' or ``Off'' for computers that should never sleep.

**Parameters** **minutes** -- Can be an integer between 1 and 180 or ``Never'' or ``Off''

**Ptype** int, str

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' power.set_sleep 120
salt '*' power.set_sleep never
```

salt.modules.mac_power.**set_sleep_on_power_button**(*enabled*)

Set whether or not the power button can sleep the computer.

**Parameters** **enabled** (*bool*) -- True to enable, False to disable. ``On'' and ``Off'' are also acceptable values. Additionally you can pass 1 and 0 to represent True and False respectively

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' power.set_sleep_on_power_button True
```

salt.modules.mac_power.**set_wake_on_modem**(*enabled*)

Set whether or not the computer will wake from sleep when modem activity is detected.

**Parameters** **enabled** (*bool*) -- True to enable, False to disable. ``On'' and ``Off'' are also acceptable values. Additionally you can pass 1 and 0 to represent True and False respectively

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' power.set_wake_on_modem True
```

salt.modules.mac_power.**set_wake_on_network**(*enabled*)

Set whether or not the computer will wake from sleep when network activity is detected.

**Parameters** **enabled** (*bool*) -- True to enable, False to disable. ``On'' and ``Off'' are also acceptable values. Additionally you can pass 1 and 0 to represent True and False respectively

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' power.set_wake_on_network True
```

### 13.6.165 salt.modules.mac_service module

The service module for Mac OS X .. versionadded:: 2016.3.0

salt.modules.mac_service.**available**(*name*)

Check that the given service is available.

**Parameters** **name** (*str*) -- The name of the service

**Returns** True if the service is available, otherwise False

**Return type** bool

CLI Example:

```
salt '*' service.available com.openssh.sshd
```

salt.modules.mac_service.**disable**(*name*, *runas=None*)

Disable a launchd service. Raises an error if the service fails to be disabled

**Parameters**

- **name** (*str*) -- Service label, file name, or full path
- **runas** (*str*) -- User to run launchctl commands

**Returns** `True` if successful or if the service is already disabled

**Return type** bool

CLI Example:

```
salt '*' service.disable org.cups.cupsd
```

salt.modules.mac_service.**disabled**(*name*, *runas=None*)

Check if the specified service is not enabled. This is the opposite of `service.enabled`

**Parameters**

- **name** (*str*) -- The name to look up
- **runas** (*str*) -- User to run launchctl commands

**Returns** True if the specified service is NOT enabled, otherwise False

**Return type** bool

CLI Example:

```
salt '*' service.disabled org.cups.cupsd
```

salt.modules.mac_service.**enable**(*name*, *runas=None*)

Enable a launchd service. Raises an error if the service fails to be enabled

**Parameters**

- **name** (*str*) -- Service label, file name, or full path
- **runas** (*str*) -- User to run launchctl commands

**Returns** `True` if successful or if the service is already enabled

**Return type** bool

CLI Example:

```
salt '*' service.enable org.cups.cupsd
```

salt.modules.mac_service.**enabled**(*name*, *runas=None*)

Check if the specified service is enabled

**Parameters**

- **name** (*str*) -- The name of the service to look up
- **runas** (*str*) -- User to run launchctl commands

**Returns** True if the specified service enabled, otherwise False

**Return type** bool

CLI Example:

```
salt '*' service.enabled org.cups.cupsd
```

salt.modules.mac_service.**get_all**(*runas=None*)

Return a list of services that are enabled or available. Can be used to find the name of a service.

**Parameters** **runas** (*str*) -- User to run launchctl commands

**Returns** A list of all the services available or enabled

**Return type** *list*

CLI Example:

```
salt '*' service.get_all
```

salt.modules.mac_service.**get_enabled**(*runas=None*)

Return a list of all services that are enabled. Can be used to find the name of a service.

**Parameters** **runas** (*str*) -- User to run launchctl commands

**Returns** A list of all the services enabled on the system

**Return type** *list*

CLI Example:

```
salt '*' service.get_enabled
salt '*' service.get_enabled running=True
```

salt.modules.mac_service.**launchctl**(*sub_cmd*, **args*, ***kwargs*)

Run a launchctl command and raise an error if it fails

**Parameters**

- **sub_cmd** (*str*) -- Sub command supplied to launchctl
- **args** (*tuple*) -- Tuple containing additional arguments to pass to launchctl
- **kwargs** (*dict*) -- Dictionary containing arguments to pass to `cmd.run_all`
- **return_stdout** (*bool*) -- A keyword argument. If true return the stdout of the launchctl command

**Returns** `True` if successful, raise `CommandExecutionError` if not, or the stdout of the launchctl command if requested

**Return type** bool, str

CLI Example:

```
salt '*' service.launchctl debug org.cups.cupsd
```

salt.modules.mac_service.**list**(*name=None*, *runas=None*)

Run launchctl list and return the output

**Parameters**

- **name** (*str*) -- The name of the service to list
- **runas** (*str*) -- User to run launchctl commands

**Returns** If a name is passed returns information about the named service, otherwise returns a list of all services and pids

**Return type** str

CLI Example:

```
salt '*' service.list
salt '*' service.list org.cups.cupsd
```

salt.modules.mac_service.**missing**(*name*)

The inverse of service.available Check that the given service is not available.

**Parameters** **name** (*str*) -- The name of the service

**Returns** True if the service is not available, otherwise False

**Return type** bool

CLI Example:

```
salt '*' service.missing com.openssh.sshd
```

salt.modules.mac_service.**restart**(*name*, *runas=None*)

Unloads and reloads a launchd service. Raises an error if the service fails to reload

**Parameters**

- **name** (*str*) -- Service label, file name, or full path
- **runas** (*str*) -- User to run launchctl commands

**Returns** `True` if successful

**Return type** bool

CLI Example:

```
salt '*' service.restart org.cups.cupsd
```

salt.modules.mac_service.**show**(*name*)

Show properties of a launchctl service

**Parameters** **name** (*str*) -- Service label, file name, or full path

**Returns** The service information if the service is found

**Return type** dict

CLI Example:

```
salt '*' service.show org.cups.cupsd  # service label
salt '*' service.show org.cups.cupsd.plist  # file name
salt '*' service.show /System/Library/LaunchDaemons/org.cups.cupsd.plist  # full
↪path
```

salt.modules.mac_service.**start**(*name*, *runas=None*)

Start a launchd service. Raises an error if the service fails to start

---

**Note:** To start a service in Mac OS X the service must be enabled first. Use `service.enable` to enable the service.

---

**Parameters**

- **name** (*str*) -- Service label, file name, or full path
- **runas** (*str*) -- User to run launchctl commands

**Returns** `True` if successful or if the service is already running

**Return type** bool

CLI Example:

```
salt '*' service.start org.cups.cupsd
```

salt.modules.mac_service.**status**(*name*, *sig=None*, *runas=None*)

Return the status for a service.

**Parameters**

- **name** (*str*) -- Used to find the service from launchctl. Can be any part of the service name or a regex expression.
- **sig** (*str*) -- Find the service with status.pid instead. Note that `name` must still be provided.
- **runas** (*str*) -- User to run launchctl commands

**Returns** The PID for the service if it is running, otherwise an empty string

**Return type** str

CLI Example:

```
salt '*' service.status cups
```

salt.modules.mac_service.**stop**(*name*, *runas=None*)

Stop a launchd service. Raises an error if the service fails to stop

---

**Note:** Though `service.stop` will unload a service in Mac OS X, the service will start on next boot unless it is disabled. Use `service.disable` to disable the service

---

**Parameters**

- **name** (*str*) -- Service label, file name, or full path

- **runas** (*str*) -- User to run launchctl commands

**Returns** `True` if successful or if the service is already stopped

**Return type** bool

CLI Example:

```
salt '*' service.stop org.cups.cupsd
```

### 13.6.166 salt.modules.mac_shadow module

New in version 2016.3.0.

Manage Mac OSX local directory passwords and policies.

Note that it is usually better to apply password policies through the creation of a configuration profile.

`salt.modules.mac_shadow.`**`del_password`**`(`*name*`)`

Deletes the account password

**Parameters** **name** (*str*) -- The user name of the account

**Returns** True if successful, otherwise False

**Return type** bool

**Raises** CommandExecutionError on user not found or any other unknown error

CLI Example:

```
salt '*' shadow.del_password username
```

`salt.modules.mac_shadow.`**`get_account_created`**`(`*name*`)`

Get the date/time the account was created

**Parameters** **name** (*str*) -- the username of the account

**Returns** the date/time the account was created (yyyy-mm-dd hh:mm:ss)

**Return type** str

**Raises** CommandExecutionError on user not found or any other unknown error

CLI Example:

```
salt '*' shadow.get_account_created admin
```

`salt.modules.mac_shadow.`**`get_change`**`(`*name*`)`

Gets the date on which the password expires

**Parameters** **name** (*str*) -- the name of the user account

**Returns** The date the password will expire

**Return type** str

**Raises** CommandExecutionError on user not found or any other unknown error

CLI Example:

```
salt '*' shadow.get_change username
```

`salt.modules.mac_shadow.`**`get_expire`**`(`*name*`)`

Gets the date on which the account expires

**Parameters** **name** (*str*) -- the name of the user account

**Returns** the date the account expires

**Return type** str

**Raises** CommandExecutionError on user not found or any other unknown error

CLI Example:

```
salt '*' shadow.get_expire username
```

salt.modules.mac_shadow.**get_last_change**(*name*)

Get the date/time the account was changed

**Parameters** **name** (*str*) -- the username of the account

**Returns** the date/time the account was modified (yyyy-mm-dd hh:mm:ss)

**Return type** str

**Raises** CommandExecutionError on user not found or any other unknown error

CLI Example:

```
salt '*' shadow.get_last_change admin
```

salt.modules.mac_shadow.**get_login_failed_count**(*name*)

Get the the number of failed login attempts

**Parameters** **name** (*str*) -- the username of the account

**Returns** The number of failed login attempts

**Return type** int

**Raises** CommandExecutionError on user not found or any other unknown error

CLI Example:

```
salt '*' shadow.get_login_failed_count admin
```

salt.modules.mac_shadow.**get_login_failed_last**(*name*)

Get the date/time of the last failed login attempt

**Parameters** **name** (*str*) -- the username of the account

**Returns** the date/time of the last failed login attempt on this account

(yyyy-mm-dd hh:mm:ss) :rtype: str

**Raises** CommandExecutionError on user not found or any other unknown error

CLI Example:

```
salt '*' shadow.get_login_failed_last admin
```

salt.modules.mac_shadow.**get_maxdays**(*name*)

Get the maximum age of the password

**Parameters** **name** (*str*) -- the username of the account

**Returns** the maximum age of the password in days

**Return type** int

**Raises** CommandExecutionError on user not found or any other unknown error

CLI Example:

```
salt '*' shadow.get_maxdays admin 90
```

salt.modules.mac_shadow.**info**(*name*)

Return information for the specified user

**Parameters** **name** (*str*) -- the username

**Returns** A dictionary containing the user's shadow information

**Return type** dict

CLI Example:

```
salt '*' shadow.info admin
```

salt.modules.mac_shadow.**set_change**(*name*, *date*)

Sets the date on which the password expires. The user will be required to change their password. Format is mm/dd/yyyy

**Parameters**

- **name** (*str*) -- the name of the user account
- **date** (*date*) -- the date the password will expire. Must be in mm/dd/yyyy

format.

**Returns** True if successful, otherwise False

**Return type** bool

**Raises** CommandExecutionError on user not found or any other unknown error

CLI Example:

```
salt '*' shadow.set_change username 09/21/2016
```

salt.modules.mac_shadow.**set_expire**(*name*, *date*)

Sets the date on which the account expires. The user will not be able to login after this date. Date format is mm/dd/yyyy

**Parameters**

- **name** (*str*) -- the name of the user account
- **date** (*datetime*) -- the date the account will expire. Format must be mm/dd/yyyy

**Returns** True if successful, False if not

**Return type** bool

**Raises** CommandExecutionError on user not found or any other unknown error

CLI Example:

```
salt '*' shadow.set_expire username 07/23/2015
```

salt.modules.mac_shadow.**set_inactdays**(*name*, *days*)

Set the number if inactive days before the account is locked. Not available in OS X

**Parameters**

- **name** (*str*) -- The user name
- **days** (*int*) -- The number of days

**Returns** Will always return False until OSX supports this feature.

**Return type** bool

CLI Example:

```
salt '*' shadow.set_inactdays admin 90
```

salt.modules.mac_shadow.**set_maxdays**(*name*, *days*)

Set the maximum age of the password in days

**Parameters**

- **name** (*str*) -- the username of the account
- **days** (*int*) -- the maximum age of the account in days

**Returns** True if successful, False if not

**Return type** bool

**Raises** CommandExecutionError on user not found or any other unknown error

CLI Example:

```
salt '*' shadow.set_maxdays admin 90
```

salt.modules.mac_shadow.**set_mindays**(*name*, *days*)

Set the minimum password age in days. Not available in OS X.

**Parameters**

- **name** (*str*) -- The user name
- **days** (*int*) -- The number of days

**Returns** Will always return False until OSX supports this feature.

**Return type** bool

CLI Example:

```
salt '*' shadow.set_mindays admin 90
```

salt.modules.mac_shadow.**set_password**(*name*, *password*)

Set the password for a named user (insecure, the password will be in the process list while the command is running)

**Parameters** **name** (*str*) -- The name of the local user, which is assumed to be in the local directory service

**Parameters** **password** (*str*) -- The plaintext password to set

**Returns** True if successful, otherwise False

**Return type** bool

**Raises** CommandExecutionError on user not found or any other unknown error

CLI Example:

```
salt '*' mac_shadow.set_password macuser macpassword
```

salt.modules.mac_shadow.**set_warndays**(*name*, *days*)

Set the number of days before the password expires that the user will start to see a warning. Not available in OS X

**Parameters**

- **name** (*str*) -- The user name
- **days** (*int*) -- The number of days

**Returns** Will always return False until OSX supports this feature.

**Return type** bool

CLI Example:

```
salt '*' shadow.set_warndays admin 90
```

### 13.6.167 salt.modules.mac_softwareupdate module

Support for the softwareupdate command on MacOS.

salt.modules.mac_softwareupdate.**download**(*name*)

Download a named update so that it can be installed later with the `update` or `update_all` functions

**Parameters** **name** (*str*) -- The update to download.

**Returns** True if successful, otherwise False

**Return type** bool

CLI Example:

```
salt '*' softwareupdate.download <update name>
```

salt.modules.mac_softwareupdate.**download_all**(*recommended=False*, *restart=True*)

Download all available updates so that they can be installed later with the `update` or `update_all` functions. It returns a list of updates that are now downloaded.

**Parameters** **recommended** (*bool*) -- If set to True, only install the recommended updates. If set to False (default) all updates are installed.

**Parameters** **restart** (*bool*) -- Set this to False if you do not want to install updates that require a restart. Default is True

**Returns** A list containing all downloaded updates on the system.

**Return type** *list*

CLI Example:

```
salt '*' softwareupdate.download_all
```

salt.modules.mac_softwareupdate.**get_catalog**()

New in version 2016.3.0.

Get the current catalog being used for update lookups. Will return a url if a custom catalog has been specified. Otherwise the word `Default' will be returned

**Returns** The catalog being used for update lookups

**Return type** str

CLI Example:

```
salt '*' softwareupdates.get_catalog
```

salt.modules.mac_softwareupdate.**ignore**(*name*)

Ignore a specific program update. When an update is ignored the `-` and version number at the end will be omitted, so ``SecUpd2014-001-1.0'' becomes ``SecUpd2014-001''. It will be removed automatically if present. An update is successfully ignored when it no longer shows up after list_updates.

**Parameters** **name** -- The name of the update to add to the ignore list.

**Ptype** str

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' softwareupdate.ignore <update-name>
```

salt.modules.mac_softwareupdate.**list_available**(*recommended=False*, *restart=False*)

List all available updates.

**Parameters**

- **recommended** (*bool*) -- Show only recommended updates.
- **restart** (*bool*) -- Show only updates that require a restart.

**Returns** Returns a dictionary containing the updates

**Return type** dict

CLI Example:

```
salt '*' softwareupdate.list_available
```

salt.modules.mac_softwareupdate.**list_downloads**()

Return a list of all updates that have been downloaded locally.

**Returns** A list of updates that have been downloaded

**Return type** *list*

CLI Example:

```
salt '*' softwareupdate.list_downloads
```

salt.modules.mac_softwareupdate.**list_ignored**()

List all updates that have been ignored. Ignored updates are shown without the `-` and version number at the end, this is how the softwareupdate command works.

**Returns** The list of ignored updates

**Return type** *list*

CLI Example:

```
salt '*' softwareupdate.list_ignored
```

salt.modules.mac_softwareupdate.**reset_catalog**()

New in version 2016.3.0.

Reset the Software Update Catalog to the default.

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' softwareupdates.reset_catalog
```

salt.modules.mac_softwareupdate.**reset_ignored**()

Make sure the ignored updates are not ignored anymore, returns a list of the updates that are no longer ignored.

**Returns** True if the list was reset, Otherwise False

**Return type** bool

CLI Example:

```
salt '*' softwareupdate.reset_ignored
```

salt.modules.mac_softwareupdate.**schedule_enable**(*enable*)

Enable/disable automatic update scheduling.

**Parameters** **enable** -- True/On/Yes/1 to turn on automatic updates. False/No/Off/0 to turn off automatic updates. If this value is empty, the current status will be returned. :type: bool str

**Returns** True if scheduling is enabled, False if disabled

**Return type** bool

CLI Example:

```
salt '*' softwareupdate.schedule_enable on|off
```

salt.modules.mac_softwareupdate.**schedule_enabled**()

Check the status of automatic update scheduling.

**Returns** True if scheduling is enabled, False if disabled - `True`: Automatic checking is on, - `False`: Automatic checking is off,

**Return type** bool

CLI Example:

```
salt '*' softwareupdate.schedule_enabled
```

salt.modules.mac_softwareupdate.**set_catalog**(*url*)

New in version 2016.3.0.

Set the Software Update Catalog to the URL specified

**Parameters** **url** (*str*) -- The url to the update catalog

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' softwareupdates.set_catalog http://swupd.local:8888/index.sucatalog
```

salt.modules.mac_softwareupdate.**update**(*name*)

Install a named update.

**Parameters** **name** (*str*) -- The name of the of the update to install.

**Returns** True if successfully updated, otherwise False

**Return type** bool

CLI Example:

```
salt '*' softwareupdate.update <update-name>
```

salt.modules.mac_softwareupdate.**update_all**(*recommended=False*, *restart=True*)

Install all available updates. Returns a dictionary containing the name of the update and the status of its

installation.

**Parameters** **recommended** (*bool*) -- If set to True, only install the recommended updates. If set to False (default) all updates are installed.

**Parameters** **restart** (*bool*) -- Set this to False if you do not want to install updates that require a restart. Default is True

**Returns** A dictionary containing the updates that were installed and the status of its installation. If no updates were installed an empty dictionary is returned. :rtype: dict - `True`: The update was installed. - `False`: The update was not installed.

CLI Example:

```
salt '*' softwareupdate.update_all
```

salt.modules.mac_softwareupdate.**update_available**(*name*)

Check whether or not an update is available with a given name.

**Parameters** **name** (*str*) -- The name of the update to look for

**Returns** True if available, False if not

**Return type** bool

CLI Example:

```
salt '*' softwareupdate.update_available <update-name>
salt '*' softwareupdate.update_available "<update with whitespace>"
```

### 13.6.168 salt.modules.mac_user

Manage users on Mac OS 10.7+

**Important**: If you feel that Salt should be using this module to manage users on a minion, and it is using a different module (or gives an error similar to *`user.info' is not available*), see *here*.

salt.modules.mac_user.**add**(*name*, *uid=None*, *gid=None*, *groups=None*, *home=None*, *shell=None*, *fullname=None*, *createhome=True*, ***kwargs*)

Add a user to the minion

CLI Example:

```
salt '*' user.add name <uid> <gid> <groups> <home> <shell>
```

salt.modules.mac_user.**chfullname**(*name*, *fullname*)

Change the user's Full Name

CLI Example:

```
salt '*' user.chfullname foo 'Foo Bar'
```

salt.modules.mac_user.**chgid**(*name*, *gid*)

Change the default group of the user

CLI Example:

```
salt '*' user.chgid foo 4376
```

salt.modules.mac_user.**chgroups**(*name*, *groups*, *append=False*)

Change the groups to which the user belongs. Note that the user's primary group does not have to be one of the groups passed, membership in the user's primary group is automatically assumed.

**groups** Groups to which the user should belong, can be passed either as a python list or a comma-separated string

**append** Instead of removing user from groups not included in the `groups` parameter, just add user to any groups for which they are not members

CLI Example:

```
salt '*' user.chgroups foo wheel,root
```

`salt.modules.mac_user.`**`chhome`**(*name*, *home*, ***kwargs*)

Change the home directory of the user

CLI Example:

```
salt '*' user.chhome foo /Users/foo
```

`salt.modules.mac_user.`**`chshell`**(*name*, *shell*)

Change the default shell of the user

CLI Example:

```
salt '*' user.chshell foo /bin/zsh
```

`salt.modules.mac_user.`**`chuid`**(*name*, *uid*)

Change the uid for a named user

CLI Example:

```
salt '*' user.chuid foo 4376
```

`salt.modules.mac_user.`**`delete`**(*name*, *remove=False*, *force=False*)

Remove a user from the minion

CLI Example:

```
salt '*' user.delete name remove=True force=True
```

`salt.modules.mac_user.`**`disable_auto_login`**()

New in version 2016.3.0.

Disables auto login on the machine

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' user.disable_auto_login
```

`salt.modules.mac_user.`**`enable_auto_login`**(*name*)

New in version 2016.3.0.

Configures the machine to auto login with the specified user

**Parameters** **`name`** (*str*) -- The user account use for auto login

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' user.enable_auto_login stevej
```

`salt.modules.mac_user.`**`get_auto_login`**()

New in version 2016.3.0.

Gets the current setting for Auto Login

**Returns** If enabled, returns the user name, otherwise returns False

**Return type** str, bool

CLI Example:

```
salt '*' user.get_auto_login
```

salt.modules.mac_user.**getent**(*refresh=False*)

Return the list of all info for all users

CLI Example:

```
salt '*' user.getent
```

salt.modules.mac_user.**info**(*name*)

Return user information

CLI Example:

```
salt '*' user.info root
```

salt.modules.mac_user.**list_groups**(*name*)

Return a list of groups the named user belongs to

CLI Example:

```
salt '*' user.list_groups foo
```

salt.modules.mac_user.**list_users**()

Return a list of all users

CLI Example:

```
salt '*' user.list_users
```

salt.modules.mac_user.**primary_group**(*name*)

Return the primary group of the named user

New in version 2016.3.0.

CLI Example:

```
salt '*' user.primary_group saltadmin
```

salt.modules.mac_user.**rename**(*name*, *new_name*)

Change the username for a named user

CLI Example:

```
salt '*' user.rename name new_name
```

### 13.6.169 salt.modules.mac_sysctl module

Module for viewing and modifying sysctl parameters

salt.modules.mac_sysctl.**assign**(*name*, *value*)

Assign a single sysctl parameter for this minion

**name** The name of the sysctl value to edit.

**value** The sysctl value to apply.

CLI Example:

```
salt '*' sysctl.assign net.inet.icmp.icmplim 50
```

salt.modules.mac_sysctl.**get**(*name*)

Return a single sysctl parameter for this minion

**name** The name of the sysctl value to display.

CLI Example:

```
salt '*' sysctl.get hw.physmem
```

salt.modules.mac_sysctl.**persist**(*name*, *value*, *config='/etc/sysctl.conf'*, *apply_change=False*)

Assign and persist a simple sysctl parameter for this minion

**name** The name of the sysctl value to edit.

**value** The sysctl value to apply.

**config** The location of the sysctl configuration file.

**apply_change** Default is False; Default behavior only creates or edits the sysctl.conf file. If apply is set to True, the changes are applied to the system.

CLI Example:

```
salt '*' sysctl.persist net.inet.icmp.icmplim 50
salt '*' sysctl.persist coretemp_load NO config=/etc/sysctl.conf
```

salt.modules.mac_sysctl.**show**(*config_file=False*)

Return a list of sysctl parameters for this minion

CLI Example:

```
salt '*' sysctl.show
```

### 13.6.170 salt.modules.mac_system module

New in version 2016.3.0.

System module for sleeping, restarting, and shutting down the system on Mac OS X.

**Warning**: Using this module will enable `atrun` on the system if it is disabled.

salt.modules.mac_system.**get_boot_arch**()

Get the kernel architecture setting from `com.apple.Boot.plist`

**Returns** A string value representing the boot architecture setting

**Return type** str

CLI Example:

```
salt '*' system.get_boot_arch
```

salt.modules.mac_system.**get_computer_name**()

Gets the computer name

**Returns** The computer name

**Return type** str

CLI Example:

```
salt '*' system.get_computer_name
```

salt.modules.mac_system.**get_disable_keyboard_on_lock**()
Get whether or not the keyboard should be disabled when the X Serve enclosure lock is engaged.
**Returns** True if disable keyboard on lock is on, False if off
**Return type** bool
CLI Example:

..code-block:: bash
salt `*' system.get_disable_keyboard_on_lock

salt.modules.mac_system.**get_remote_events**()
Displays whether remote apple events are on or off.
**Returns** True if remote apple events are on, False if off
**Return type** bool
CLI Example:

```
salt '*' system.get_remote_events
```

salt.modules.mac_system.**get_remote_login**()
Displays whether remote login (SSH) is on or off.
**Returns** True if remote login is on, False if off
**Return type** bool
CLI Example:

```
salt '*' system.get_remote_login
```

salt.modules.mac_system.**get_restart_delay**()
Get the number of seconds after which the computer will start up after a power failure.
**Returns** A string value representing the number of seconds the system will
delay restart after power loss :rtype: str

CLI Example:

```
salt '*' system.get_restart_delay
```

salt.modules.mac_system.**get_startup_disk**()
Displays the current startup disk
**Returns** The current startup disk
**Return type** str
CLI Example:

```
salt '*' system.get_startup_disk
```

salt.modules.mac_system.**get_subnet_name**()
Gets the local subnet name
**Returns** The local subnet name
**Return type** str
CLI Example:

```
salt '*' system.get_subnet_name
```

salt.modules.mac_system.**halt**(*at_time=None*)
Halt a running system
**Parameters** **at_time** (*str*) -- Any valid *at* expression. For example, some valid at
expressions could be: - noon - midnight - fri - 9:00 AM - 2:30 PM tomorrow - now + 10 minutes

Note:: If you pass a time only, with no `AM/PM' designation, you have to double quote the parameter on the command line. For example: ```14:00'"

CLI Example:

```
salt '*' system.halt
salt '*' system.halt 'now + 10 minutes'
```

salt.modules.mac_system.**list_startup_disks**()

List all valid startup disks on the system.

**Returns** A list of valid startup disks

**Return type** *list*

CLI Example:

```
salt '*' system.list_startup_disks
```

salt.modules.mac_system.**restart**(*at_time=None*)

Restart the system

**Parameters** **at_time** (*str*) -- Any valid *at* expression. For example, some valid at expressions could be: - noon - midnight - fri - 9:00 AM - 2:30 PM tomorrow - now + 10 minutes

Note:: If you pass a time only, with no `AM/PM' designation, you have to double quote the parameter on the command line. For example: ```14:00'"

CLI Example:

```
salt '*' system.restart
salt '*' system.restart '12:00 PM fri'
```

salt.modules.mac_system.**set_boot_arch**(*arch='default'*)

Set the kernel to boot in 32 or 64 bit mode on next boot.

---

**Note**: This command fails with the following error:

```
changes to kernel architecture failed to save!
```

The setting is not updated. This is either an apple bug, not available on the test system, or a result of system files now being locked down in OS X (SIP Protection).

---

**Parameters** **arch** (*str*) -- A string representing the desired architecture. If no value is passed, default is assumed. Valid values include: - i386 - x86_64 - default

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' system.set_boot_arch i386
```

salt.modules.mac_system.**set_computer_name**(*name*)

Set the computer name

**Parameters** **name** (*str*) -- The new computer name

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' system.set_computer_name "Mike's Mac"
```

salt.modules.mac_system.**set_disable_keyboard_on_lock**(*enable*)

Get whether or not the keyboard should be disabled when the X Serve enclosure lock is engaged.

**Parameters** **enable** (*bool*) -- True to enable, False to disable. ``On'' and ``Off'' are

also acceptable values. Additionally you can pass 1 and 0 to represent True and False respectively

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' system.set_disable_keyboard_on_lock False
```

salt.modules.mac_system.**set_remote_events**(*enable*)

Set whether the server responds to events sent by other computers (such as AppleScripts)

**Parameters** **enable** (*bool*) -- True to enable, False to disable. ``On'' and ``Off'' are also acceptable values. Additionally you can pass 1 and 0 to represent True and False respectively

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' system.set_remote_events On
```

salt.modules.mac_system.**set_remote_login**(*enable*)

Set the remote login (SSH) to either on or off.

**Parameters** **enable** (*bool*) -- True to enable, False to disable. ``On'' and ``Off'' are also acceptable values. Additionally you can pass 1 and 0 to represent True and False respectively

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' system.set_remote_login True
```

salt.modules.mac_system.**set_restart_delay**(*seconds*)

Set the number of seconds after which the computer will start up after a power failure.

> **Warning**: This command fails with the following error:
>
> `Error,IOServiceOpen returned 0x10000003`
>
> The setting is not updated. This is an apple bug. It seems like it may only work on certain versions of Mac Server X. This article explains the issue in more detail, though it is quite old.
>
> http://lists.apple.com/archives/macos-x-server/2006/Jul/msg00967.html

**Parameters** **seconds** (*int*) -- The number of seconds. Must be a multiple of 30

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' system.set_restart_delay 180
```

salt.modules.mac_system.**set_startup_disk**(*path*)

Set the current startup disk to the indicated path. Use `system.list_startup_disks` to find valid startup disks on the system.

**Parameters** **path** (*str*) -- The valid startup disk path

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' system.set_startup_disk /System/Library/CoreServices
```

salt.modules.mac_system.**set_subnet_name**(*name*)

Set the local subnet name

**Parameters** **name** (*str*) -- The new local subnet name

---

**Note:** Spaces are changed to dashes. Other special characters are removed.

---

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
The following will be set as 'Mikes-Mac'
salt '*' system.set_subnet_name "Mike's Mac"
```

salt.modules.mac_system.**shutdown**(*at_time=None*)

Shutdown the system

**Parameters** **at_time** (*str*) -- Any valid *at* expression. For example, some valid at expressions could be: - noon - midnight - fri - 9:00 AM - 2:30 PM tomorrow - now + 10 minutes

Note:: If you pass a time only, with no `AM/PM' designation, you have to double quote the parameter on the command line. For example: ```14:00'"

CLI Example:

```
salt '*' system.shutdown
salt '*' system.shutdown 'now + 1 hour'
```

salt.modules.mac_system.**sleep**(*at_time=None*)

Sleep the system. If a user is active on the system it will likely fail to sleep.

**Parameters** **at_time** (*str*) -- Any valid *at* expression. For example, some valid at expressions could be: - noon - midnight - fri - 9:00 AM - 2:30 PM tomorrow - now + 10 minutes

Note:: If you pass a time only, with no `AM/PM' designation, you have to double quote the parameter on the command line. For example: ```14:00'"

CLI Example:

```
salt '*' system.sleep
salt '*' system.sleep '10:00 PM'
```

### 13.6.171 salt.modules.mac_timezone module

Module for editing date/time settings on Mac OS X

New in version 2016.3.0.

salt.modules.mac_timezone.**get_date**()

Displays the current date

**Returns** the system date

**Return type** str

CLI Example:

```
salt '*' timezone.get_date
```

salt.modules.mac_timezone.**get_hwclock**()
Get current hardware clock setting (UTC or localtime)

CLI Example:

```
salt '*' timezone.get_hwclock
```

salt.modules.mac_timezone.**get_offset**()
Displays the current time zone offset
**Returns** The current time zone offset
**Return type** str
CLI Example:

```
salt '*' timezone.get_offset
```

salt.modules.mac_timezone.**get_time**()
Get the current system time.
**Returns** The current time in 24 hour format
**Return type** str
CLI Example:

```
salt '*' timezone.get_time
```

salt.modules.mac_timezone.**get_time_server**()
Display the currently set network time server.
**Returns** the network time server
**Return type** str
CLI Example:

```
salt '*' timezone.get_time_server
```

salt.modules.mac_timezone.**get_using_network_time**()
Display whether network time is on or off
**Returns** True if network time is on, False if off
**Return type** bool
CLI Example:

```
salt '*' timezone.get_using_network_time
```

salt.modules.mac_timezone.**get_zone**()
Displays the current time zone
**Returns** The current time zone
**Return type** str
CLI Example:

```
salt '*' timezone.get_zone
```

salt.modules.mac_timezone.**get_zonecode**()
Displays the current time zone abbreviated code
**Returns** The current time zone code
**Return type** str
CLI Example:

```
salt '*' timezone.get_zonecode
```

salt.modules.mac_timezone.**list_zones**()
Displays a list of available time zones. Use this list when setting a time zone using `timezone.set_zone`

**Returns** a list of time zones
**Return type** *list*

CLI Example:

```
salt '*' timezone.list_zones
```

salt.modules.mac_timezone.**set_date**(*date*)

Set the current month, day, and year

**Parameters** **date** (*str*) -- The date to set. Valid date formats are:

- %m:%d:%y
- %m:%d:%Y
- %m/%d/%y
- %m/%d/%Y

**Returns** True if successful, False if not
**Return type** bool
**Raises** SaltInvocationError on Invalid Date format
**Raises** CommandExecutionError on failure

CLI Example:

```
salt '*' timezone.set_date 1/13/2016
```

salt.modules.mac_timezone.**set_hwclock**(*clock*)

Sets the hardware clock to be either UTC or localtime

CLI Example:

```
salt '*' timezone.set_hwclock UTC
```

salt.modules.mac_timezone.**set_time**(*time*)

Sets the current time. Must be in 24 hour format.

**Parameters** **time** (*str*) -- The time to set in 24 hour format.

The value must be double quoted. ie: ```17:46'"

**Returns** True if successful, False if not
**Return type** bool
**Raises** SaltInvocationError on Invalid Time format
**Raises** CommandExecutionError on failure

CLI Example:

```
salt '*' timezone.set_time '"17:34"'
```

salt.modules.mac_timezone.**set_time_server**(*time_server='time.apple.com'*)

Designates a network time server. Enter the IP address or DNS name for the network time server.

**Parameters** **time_server** -- IP or DNS name of the network time server. If nothing is passed the time server will be set to the OS X default of `time.apple.com' :type: str

**Returns** True if successful, False if not
**Return type** bool
**Raises** CommandExecutionError on failure

CLI Example:

```
salt '*' timezone.set_time_server time.acme.com
```

salt.modules.mac_timezone.**set_using_network_time**(*enable*)

Set whether network time is on or off.

**Parameters** **enable** -- True to enable, False to disable. Can also use `on' or `off'

**Type** str bool
**Returns** True if successful, False if not
**Return type** bool
**Raises** CommandExecutionError on failure

CLI Example:

```
salt '*' timezone.set_using_network_time True
```

salt.modules.mac_timezone.**set_zone**(*time_zone*)

Set the local time zone. Use `timezone.list_zones` to list valid time_zone arguments

**Parameters** **time_zone** (*str*) -- The time zone to apply
**Returns** True if successful, False if not
**Return type** bool
**Raises** SaltInvocationError on Invalid Timezone
**Raises** CommandExecutionError on failure

CLI Example:

```
salt '*' timezone.set_zone America/Denver
```

salt.modules.mac_timezone.**zone_compare**(*time_zone*)

Compares the given timezone name with the system timezone name.

**Returns** True if they are the same, False if not
**Return type** bool

CLI Example:

```
salt '*' timezone.zone_compare America/Boise
```

### 13.6.172 salt.modules.mac_xattr module

This module allows you to manage extended attributes on files or directories

```
salt '*' xattr.list /path/to/file
```

salt.modules.mac_xattr.**clear**(*path*)

Causes the all attributes on the file/directory to be removed

**Parameters** **path** (*str*) -- The file(s) to get attributes from
**Returns** True if successful, otherwise False
**Raises** CommandExecutionError on file not found or any other unknown error

CLI Example:

```
salt '*' xattr.delete /path/to/file "com.test.attr"
```

salt.modules.mac_xattr.**delete**(*path*, *attribute*)

Removes the given attribute from the file

**Parameters**

- **path** (*str*) -- The file(s) to get attributes from
- **attribute** (*str*) -- The attribute name to be deleted from the file/directory

**Returns** True if successful, otherwise False
**Return type** bool
**Raises** CommandExecutionError on file not found, attribute not found, and any other unknown error

CLI Example:

```
salt '*' xattr.delete /path/to/file "com.test.attr"
```

salt.modules.mac_xattr.**list**(*path*, ***kwargs*)

List all of the extended attributes on the given file/directory

**Parameters**

- **path** (*str*) -- The file(s) to get attributes from
- **hex** (*bool*) -- Return the values with forced hexadecimal values

**Returns** A dictionary containing extended attributes and values for the given file :rtype: dict

**Raises** CommandExecutionError on file not found or any other unknown error

CLI Example:

```
salt '*' xattr.list /path/to/file
salt '*' xattr.list /path/to/file hex=True
```

salt.modules.mac_xattr.**read**(*path*, *attribute*, ***kwargs*)

Read the given attributes on the given file/directory

**Parameters**

- **path** (*str*) -- The file to get attributes from
- **attribute** (*str*) -- The attribute to read
- **hex** (*bool*) -- Return the values with forced hexadecimal values

**Returns** A string containing the value of the named attribute

**Return type** str

**Raises** CommandExecutionError on file not found, attribute not found, and any other unknown error

CLI Example:

```
salt '*' xattr.read /path/to/file com.test.attr
salt '*' xattr.read /path/to/file com.test.attr hex=True
```

salt.modules.mac_xattr.**write**(*path*, *attribute*, *value*, ***kwargs*)

Causes the given attribute name to be assigned the given value

**Parameters**

- **path** (*str*) -- The file(s) to get attributes from
- **attribute** (*str*) -- The attribute name to be written to the file/directory
- **value** (*str*) -- The value to assign to the given attribute
- **hex** (*bool*) -- Set the values with forced hexadecimal values

**Returns** True if successful, otherwise False

**Return type** bool

**Raises** CommandExecutionError on file not found or any other unknown error

CLI Example:

```
salt '*' xattr.write /path/to/file "com.test.attr" "value"
```

### 13.6.173 salt.modules.makeconf

Support for modifying make.conf under Gentoo

salt.modules.makeconf.**append_cflags**(*value*)
Add to or create a new CFLAGS in the make.conf

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.append_cflags '-pipe'
```

salt.modules.makeconf.**append_cxxflags**(*value*)
Add to or create a new CXXFLAGS in the make.conf

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.append_cxxflags '-pipe'
```

salt.modules.makeconf.**append_emerge_default_opts**(*value*)
Add to or create a new EMERGE_DEFAULT_OPTS in the make.conf

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.append_emerge_default_opts '--jobs'
```

salt.modules.makeconf.**append_features**(*value*)
Add to or create a new FEATURES in the make.conf

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.append_features 'webrsync-gpg'
```

salt.modules.makeconf.**append_gentoo_mirrors**(*value*)
Add to or create a new GENTOO_MIRRORS in the make.conf

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.append_gentoo_mirrors 'http://distfiles.gentoo.org'
```

salt.modules.makeconf.**append_makeopts**(*value*)
Add to or create a new MAKEOPTS in the make.conf

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.append_makeopts '-j3'
```

salt.modules.makeconf.**append_var**(*var*, *value*)
Add to or create a new variable in the make.conf

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.append_var 'LINGUAS' 'en'
```

salt.modules.makeconf.**cflags_contains**(*value*)
Verify if CFLAGS variable contains a value in make.conf

Return True if value is set for var

CLI Example:

```
salt '*' makeconf.cflags_contains '-pipe'
```

salt.modules.makeconf.**chost_contains**(*value*)
Verify if CHOST variable contains a value in make.conf

Return True if value is set for var

CLI Example:

```
salt '*' makeconf.chost_contains 'x86_64-pc-linux-gnu'
```

salt.modules.makeconf.**cxxflags_contains**(*value*)
Verify if CXXFLAGS variable contains a value in make.conf

Return True if value is set for var

CLI Example:

```
salt '*' makeconf.cxxflags_contains '-pipe'
```

salt.modules.makeconf.**emerge_default_opts_contains**(*value*)
Verify if EMERGE_DEFAULT_OPTS variable contains a value in make.conf

Return True if value is set for var

CLI Example:

```
salt '*' makeconf.emerge_default_opts_contains '--jobs'
```

salt.modules.makeconf.**features_contains**(*value*)
Verify if FEATURES variable contains a value in make.conf

Return True if value is set for var

CLI Example:

```
salt '*' makeconf.features_contains 'webrsync-gpg'
```

salt.modules.makeconf.**gentoo_mirrors_contains**(*value*)
Verify if GENTOO_MIRRORS variable contains a value in make.conf

Return True if value is set for var

CLI Example:

```
salt '*' makeconf.gentoo_mirrors_contains 'http://distfiles.gentoo.org'
```

salt.modules.makeconf.**get_cflags**()
Get the value of CFLAGS variable in the make.conf

Return the value of the variable or None if the variable is not in the make.conf

CLI Example:

```
salt '*' makeconf.get_cflags
```

salt.modules.makeconf.**get_chost**()
Get the value of CHOST variable in the make.conf

Return the value of the variable or None if the variable is not in the make.conf

CLI Example:

```
salt '*' makeconf.get_chost
```

salt.modules.makeconf.**get_cxxflags**()
Get the value of CXXFLAGS variable in the make.conf

Return the value of the variable or None if the variable is not in the make.conf

CLI Example:

```
salt '*' makeconf.get_cxxflags
```

salt.modules.makeconf.**get_emerge_default_opts**()
Get the value of EMERGE_DEFAULT_OPTS variable in the make.conf

Return the value of the variable or None if the variable is not in the make.conf

CLI Example:

```
salt '*' makeconf.get_emerge_default_opts
```

salt.modules.makeconf.**get_features**()
Get the value of FEATURES variable in the make.conf

Return the value of the variable or None if the variable is not in the make.conf

CLI Example:

```
salt '*' makeconf.get_features
```

salt.modules.makeconf.**get_gentoo_mirrors**()
Get the value of GENTOO_MIRRORS variable in the make.conf

Return the value of the variable or None if the variable is not in the make.conf

CLI Example:

```
salt '*' makeconf.get_gentoo_mirrors
```

salt.modules.makeconf.**get_makeopts**()
Get the value of MAKEOPTS variable in the make.conf

Return the value of the variable or None if the variable is not in the make.conf

CLI Example:

```
salt '*' makeconf.get_makeopts
```

salt.modules.makeconf.**get_sync**()
Get the value of SYNC variable in the make.conf

Return the value of the variable or None if the variable is not in the make.conf

CLI Example:

```
salt '*' makeconf.get_sync
```

salt.modules.makeconf.**get_var**(*var*)
Get the value of a variable in make.conf

Return the value of the variable or None if the variable is not in make.conf

CLI Example:

```
salt '*' makeconf.get_var 'LINGUAS'
```

salt.modules.makeconf.**makeopts_contains**(*value*)
Verify if MAKEOPTS variable contains a value in make.conf

Return True if value is set for var

CLI Example:

```
salt '*' makeconf.makeopts_contains '-j3'
```

salt.modules.makeconf.**remove_var**(*var*)
Remove a variable from the make.conf

Return a dict containing the new value for the variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.remove_var 'LINGUAS'
```

salt.modules.makeconf.**set_cflags**(*value*)
Set the CFLAGS variable

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.set_cflags '-march=native -O2 -pipe'
```

salt.modules.makeconf.**set_chost**(*value*)
Set the CHOST variable

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.set_chost 'x86_64-pc-linux-gnu'
```

salt.modules.makeconf.**set_cxxflags**(*value*)
Set the CXXFLAGS variable

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.set_cxxflags '-march=native -O2 -pipe'
```

salt.modules.makeconf.**set_emerge_default_opts**(*value*)
Set the EMERGE_DEFAULT_OPTS variable

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.set_emerge_default_opts '--jobs'
```

salt.modules.makeconf.**set_gentoo_mirrors**(*value*)
Set the GENTOO_MIRRORS variable

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.set_gentoo_mirrors 'http://distfiles.gentoo.org'
```

salt.modules.makeconf.**set_makeopts**(*value*)
Set the MAKEOPTS variable

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.set_makeopts '-j3'
```

salt.modules.makeconf.**set_sync**(*value*)
Set the SYNC variable

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.set_sync 'rsync://rsync.namerica.gentoo.org/gentoo-portage'
```

salt.modules.makeconf.**set_var**(*var*, *value*)
Set a variable in the make.conf

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.set_var 'LINGUAS' 'en'
```

salt.modules.makeconf.**sync_contains**(*value*)
Verify if SYNC variable contains a value in make.conf

Return True if value is set for var

CLI Example:

```
salt '*' makeconf.sync_contains 'rsync://rsync.namerica.gentoo.org/gentoo-portage'
```

salt.modules.makeconf.**trim_cflags**(*value*)
Remove a value from CFLAGS variable in the make.conf

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.trim_cflags '-pipe'
```

salt.modules.makeconf.**trim_cxxflags**(*value*)
Remove a value from CXXFLAGS variable in the make.conf

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.trim_cxxflags '-pipe'
```

salt.modules.makeconf.**trim_emerge_default_opts**(*value*)
Remove a value from EMERGE_DEFAULT_OPTS variable in the make.conf

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.trim_emerge_default_opts '--jobs'
```

salt.modules.makeconf.**trim_features**(*value*)
Remove a value from FEATURES variable in the make.conf

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.trim_features 'webrsync-gpg'
```

salt.modules.makeconf.**trim_gentoo_mirrors**(*value*)
Remove a value from GENTOO_MIRRORS variable in the make.conf

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.trim_gentoo_mirrors 'http://distfiles.gentoo.org'
```

salt.modules.makeconf.**trim_makeopts**(*value*)
Remove a value from MAKEOPTS variable in the make.conf

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.trim_makeopts '-j3'
```

salt.modules.makeconf.**trim_var**(*var*, *value*)
Remove a value from a variable in the make.conf

Return a dict containing the new value for variable:

```
{'<variable>': {'old': '<old-value>',
                'new': '<new-value>'}}
```

CLI Example:

```
salt '*' makeconf.trim_var 'LINGUAS' 'en'
```

salt.modules.makeconf.**var_contains**(*var*, *value*)
Verify if variable contains a value in make.conf

Return True if value is set for var

CLI Example:

```
salt '*' makeconf.var_contains 'LINGUAS' 'en'
```

### 13.6.174 salt.modules.marathon module

Module providing a simple management interface to a marathon cluster.

Currently this only works when run through a proxy minion.

New in version 2015.8.2.

salt.modules.marathon.**app**(*id*)
Return the current server configuration for the specified app.

CLI Example: .. code-block:: bash
salt marathon-minion-id marathon.app my-app

salt.modules.marathon.**apps**()
Return a list of the currently installed app ids.

CLI Example: .. code-block:: bash
salt marathon-minion-id marathon.apps

salt.modules.marathon.**has_app**(*id*)
Return whether the given app id is currently configured.

CLI Example: .. code-block:: bash
salt marathon-minion-id marathon.has_app my-app

salt.modules.marathon.**info**()
Return configuration and status information about the marathon instance.

CLI Example: .. code-block:: bash
salt marathon-minion-id marathon.info

salt.modules.marathon.**rm_app**(*id*)
Remove the specified app from the server.

CLI Example: .. code-block:: bash
salt marathon-minion-id marathon.rm_app my-app

salt.modules.marathon.**update_app**(*id*, *config*)
Update the specified app with the given configuration.

CLI Example: .. code-block:: bash
salt marathon-minion-id marathon.update_app my-app `<config yaml>'

### 13.6.175 salt.modules.match

The match module allows for match routines to be run and determine target specs

salt.modules.match.**compound**(*tgt*, *minion_id=None*)
Return True if the minion ID matches the given compound target
**minion_id** Specify the minion ID to match against the target expression

New in version 2014.7.0.
CLI Example:

```
salt '*' match.compound 'L@cheese,foo and *'
```

salt.modules.match.**data**(*tgt*)
Return True if the minion matches the given data target

CLI Example:

```
salt '*' match.data 'spam:eggs'
```

salt.modules.match.**filter_by**(*lookup*, *expr_form='compound'*, *minion_id=None*)
Return the first match in a dictionary of target patterns

New in version 2014.7.0.

CLI Example:

```
salt '*' match.filter_by '{foo*: Foo!, bar*: Bar!}' minion_id=bar03
```

Pillar Example:

```
{% set roles = salt['match.filter_by']({
    'web*': ['app', 'caching'],
    'db*': ['db'],
}) %}
```

salt.modules.match.**glob**(*tgt*, *minion_id=None*)
Return True if the minion ID matches the given glob target
**minion_id** Specify the minion ID to match against the target expression

New in version 2014.7.0.
CLI Example:

```
salt '*' match.glob '*'
```

salt.modules.match.**grain**(*tgt*, *delimiter=':'*)
Return True if the minion matches the given grain target. The `delimiter` argument can be used to specify a different delimiter.

CLI Example:

```
salt '*' match.grain 'os:Ubuntu'
salt '*' match.grain 'ipv6|2001:db8::ff00:42:8329' delimiter='|'
```

**delimiter** Specify an alternate delimiter to use when traversing a nested dict

New in version 2014.7.0.

**delim** Specify an alternate delimiter to use when traversing a nested dict

New in version 0.16.4.

Deprecated since version 2015.8.0.

salt.modules.match.**grain_pcre**(*tgt*, *delimiter=':'*)

Return True if the minion matches the given grain_pcre target. The `delimiter` argument can be used to specify a different delimiter.

CLI Example:

```
salt '*' match.grain_pcre 'os:Fedo.*'
salt '*' match.grain_pcre 'ipv6|2001:.*' delimiter='|'
```

**delimiter** Specify an alternate delimiter to use when traversing a nested dict

New in version 2014.7.0.

**delim** Specify an alternate delimiter to use when traversing a nested dict

New in version 0.16.4.

Deprecated since version 2015.8.0.

salt.modules.match.**ipcidr**(*tgt*)

Return True if the minion matches the given ipcidr target

CLI Example:

```
salt '*' match.ipcidr '192.168.44.0/24'
```

delimiter Pillar Example:

```
'172.16.0.0/12':
  - match: ipcidr
  - nodeclass: internal
```

salt.modules.match.**list**(*tgt*, *minion_id=None*)

Return True if the minion ID matches the given list target

**minion_id** Specify the minion ID to match against the target expression

New in version 2014.7.0.

CLI Example:

```
salt '*' match.list 'server1,server2'
```

salt.modules.match.**pcre**(*tgt*, *minion_id=None*)

Return True if the minion ID matches the given pcre target

**minion_id** Specify the minion ID to match against the target expression

New in version 2014.7.0.

CLI Example:

```
salt '*' match.pcre '.*'
```

salt.modules.match.**pillar**(*tgt*, *delimiter=':'*)

Return True if the minion matches the given pillar target. The `delimiter` argument can be used to specify a different delimiter.

CLI Example:

```
salt '*' match.pillar 'cheese:foo'
salt '*' match.pillar 'clone_url|https://github.com/saltstack/salt.git' delimiter=
 ↪'|'
```

**delimiter** Specify an alternate delimiter to use when traversing a nested dict

New in version 2014.7.0.

**delim** Specify an alternate delimiter to use when traversing a nested dict

New in version 0.16.4.

Deprecated since version 2015.8.0.

`salt.modules.match.`**`pillar_pcre`**(*tgt*, *delimiter=':'*)

Return True if the minion matches the given pillar_pcre target. The `delimiter` argument can be used to specify a different delimiter.

CLI Example:

```
salt '*' match.pillar_pcre 'cheese:(swiss|american)'
salt '*' match.pillar_pcre 'clone_url|https://github\.com/.*\.git' delimiter='|'
```

**delimiter** Specify an alternate delimiter to use when traversing a nested dict

New in version 2014.7.0.

**delim** Specify an alternate delimiter to use when traversing a nested dict

New in version 0.16.4.

Deprecated since version 2015.8.0.

### 13.6.176 salt.modules.mdadm

Salt module to manage RAID arrays with mdadm

`salt.modules.mdadm.`**`assemble`**(*name*, *devices*, *test_mode=False*, ***kwargs*)

Assemble a RAID device.

CLI Examples:

```
salt '*' raid.assemble /dev/md0 ['/dev/xvdd', '/dev/xvde']
```

---

**Note**: Adding `test_mode=True` as an argument will print out the mdadm command that would have been run.

---

**name** The name of the array to assemble.
**devices** The list of devices comprising the array to assemble.
**kwargs** Optional arguments to be passed to mdadm.
**returns**
**test_mode=True**: Prints out the full command.
**test_mode=False (Default)**: Executes command on the host(s) and prints out the mdadm output.

For more info, read the `mdadm` manpage.

`salt.modules.mdadm.`**`create`**(*name*, *level*, *devices*, *metadata='default'*, *test_mode=False*, ***kwargs*)

Create a RAID device.

Changed in version 2014.7.0.

**Warning:** Use with CAUTION, as this function can be very destructive if not used properly!

CLI Examples:

```
salt '*' raid.create /dev/md0 level=1 chunk=256 devices="['/dev/xvdd', '/dev/xvde
↪']" test_mode=True
```

---

**Note:** Adding `test_mode=True` as an argument will print out the mdadm command that would have been run.

---

**name** The name of the array to create.
**level** The RAID level to use when creating the raid.
**devices** A list of devices used to build the array.
**metadata** Version of metadata to use when creating the array.
**kwargs** Optional arguments to be passed to mdadm.
**returns**

**test_mode=True:** Prints out the full command.
**test_mode=False (Default):** Executes command on remote the host(s) and Prints out the mdadm output.

---

**Note:** It takes time to create a RAID array. You can check the progress in ``resync_status:'' field of the results from the following command:

```
salt '*' raid.detail /dev/md0
```

---

For more info, read the `mdadm(8)` manpage

`salt.modules.mdadm.`**`destroy`**(*device*)
Destroy a RAID device.

WARNING This will zero the superblock of all members of the RAID array..

CLI Example:

```
salt '*' raid.destroy /dev/md0
```

`salt.modules.mdadm.`**`detail`**(*device='/dev/md0'*)
Show detail for a specified RAID device

CLI Example:

```
salt '*' raid.detail '/dev/md0'
```

`salt.modules.mdadm.`**`list`**()
List the RAID devices.

CLI Example:

```
salt '*' raid.list
```

`salt.modules.mdadm.`**`save_config`**()
Save RAID configuration to config file.

Same as: mdadm --detail --scan >> /etc/mdadm/mdadm.conf

Fixes this issue with Ubuntu REF: http://askubuntu.com/questions/209702/why-is-my-raid-dev-md1-showing-up-as-dev-md126-is-mdadm-conf-being-ignored

CLI Example:

```
salt '*' raid.save_config
```

salt.modules.mdadm.**stop**()

Shut down all arrays that can be shut down (i.e. are not currently in use).

CLI Example:

```
salt '*' raid.stop
```

### 13.6.177 salt.modules.mdata

Module for managaging metadata in SmartOS Zones

New in version 2016.3.0.

**maintainer** Jorge Schrauwen <sjorge@blackdot.be>

**maturity** new

**platform** smartos

salt.modules.mdata.**delete**(**keyname*)

Delete metadata
**prop** [string] name of property
CLI Example:

```
salt '*' mdata.get salt:role
salt '*' mdata.get user-script salt:role
```

salt.modules.mdata.**get**(**keyname*)

Get metadata
**keyname** [string] name of key

---

**Note:** If no keynames are specified, we get all (public) properties

---

CLI Example:

```
salt '*' mdata.get salt:role
salt '*' mdata.get user-script salt:role
```

salt.modules.mdata.**list**()

List available metadata

CLI Example:

```
salt '*' mdata.list
```

salt.modules.mdata.**put**(*keyname*, *val*)

Put metadata
**prop** [string] name of property
**val** [string] value to set

CLI Example:

```
salt '*' mdata.list
```

### 13.6.178 salt.modules.memcached

Module for Management of Memcached Keys

New in version 2014.1.0.

salt.modules.memcached.**add**(*key*, *value*, *host=`127.0.0.1'*, *port=11211*, *time=0*, *min_compress_len=0*)
Add a key to the memcached server, but only if it does not exist. Returns False if the key already exists.

CLI Example:

```
salt '*' memcached.add <key> <value>
```

salt.modules.memcached.**decrement**(*key*, *delta=1*, *host=`127.0.0.1'*, *port=11211*)
Decrement the value of a key

CLI Example:

```
salt '*' memcached.decrement <key>
salt '*' memcached.decrement <key> 2
```

salt.modules.memcached.**delete**(*key*, *host=`127.0.0.1'*, *port=11211*, *time=0*)
Delete a key from memcache server

CLI Example:

```
salt '*' memcached.delete <key>
```

salt.modules.memcached.**get**(*key*, *host=`127.0.0.1'*, *port=11211*)
Retrieve value for a key

CLI Example:

```
salt '*' memcached.get <key>
```

salt.modules.memcached.**increment**(*key*, *delta=1*, *host=`127.0.0.1'*, *port=11211*)
Increment the value of a key

CLI Example:

```
salt '*' memcached.increment <key>
salt '*' memcached.increment <key> 2
```

salt.modules.memcached.**replace**(*key*, *value*, *host=`127.0.0.1'*, *port=11211*, *time=0*, *min_compress_len=0*)
Replace a key on the memcached server. This only succeeds if the key already exists. This is the opposite of *memcached.add*

CLI Example:

```
salt '*' memcached.replace <key> <value>
```

salt.modules.memcached.**set**(*key*, *value*, *host=`127.0.0.1'*, *port=11211*, *time=0*, *min_compress_len=0*)
Set a key on the memcached server, overwriting the value if it exists.

CLI Example:

```
salt '*' memcached.set <key> <value>
```

salt.modules.memcached.**status**(*host=`127.0.0.1'*, *port=11211*)
Get memcached status

CLI Example:

```
salt '*' memcached.status
```

### 13.6.179 salt.modules.mine

The function cache system allows for data to be stored on the master so it can be easily read by other minions

salt.modules.mine.**delete**(*fun*)
Remove specific function contents of minion. Returns True on success.

CLI Example:

```
salt '*' mine.delete 'network.interfaces'
```

salt.modules.mine.**flush**()
Remove all mine contents of minion. Returns True on success.

CLI Example:

```
salt '*' mine.flush
```

salt.modules.mine.**get**(*tgt*, *fun*, *expr_form='glob'*, *exclude_minion=False*)
Get data from the mine based on the target, function and expr_form

Targets can be matched based on any standard matching system that can be matched on the master via these keywords:

```
glob
pcre
grain
grain_pcre
compound
pillar
pillar_pcre
```

Note that all pillar matches, whether using the compound matching system or the pillar matching system, will be exact matches, with globbing disabled.
**exclude_minion** Excludes the current minion from the result set
CLI Example:

```
salt '*' mine.get '*' network.interfaces
salt '*' mine.get 'os:Fedora' network.interfaces grain
salt '*' mine.get 'os:Fedora and S@192.168.5.0/24' network.ipaddrs compound
```

**See also**:

Retrieving Mine data from Pillar and Orchestrate

This execution module is intended to be executed on minions. Master-side operations such as Pillar or Orchestrate that require Mine data should use the *Mine Runner module* instead; it can be invoked from an SLS file using the *saltutil.runner* module. For example:

```
{% set minion_ips = salt.saltutil.runner('mine.get',
    tgt='*',
    fun='network.ip_addrs',
    tgt_type='glob') %}
```

salt.modules.mine.**get_docker**(*interfaces=None*, *cidrs=None*, *with_container_id=False*)

Get all mine data for `docker.get_containers' and run an aggregation routine. The ``interfaces'' parameter allows for specifying which network interfaces to select ip addresses from. The ``cidrs'' parameter allows for specifying a list of cidrs which the ip address must match.

**with_container_id** Boolean, to expose container_id in the list of results

New in version 2015.8.2.

CLI Example:

```
salt '*' mine.get_docker
salt '*' mine.get_docker interfaces='eth0'
salt '*' mine.get_docker interfaces='["eth0", "eth1"]'
salt '*' mine.get_docker cidrs='107.170.147.0/24'
salt '*' mine.get_docker cidrs='["107.170.147.0/24", "172.17.42.0/24"]'
salt '*' mine.get_docker interfaces='["eth0", "eth1"]' cidrs='["107.170.147.0/24
↪", "172.17.42.0/24"]'
```

salt.modules.mine.**send**(*func*, **args*, ***kwargs*)

Send a specific function to the mine.

CLI Example:

```
salt '*' mine.send network.ip_addrs eth0
salt '*' mine.send eth0_ip_addrs mine_function=network.ip_addrs eth0
```

salt.modules.mine.**update**(*clear=False*)

Execute the configured functions and send the data back up to the master. The functions to be executed are merged from the master config, pillar and minion config under the option *mine_functions*:

```
mine_functions:
  network.ip_addrs:
    - eth0
  disk.usage: []
```

The function cache will be populated with information from executing these functions

CLI Example:

```
salt '*' mine.update
```

### 13.6.180 salt.modules.minion module

Module to provide information about minions

salt.modules.minion.**list**()

Return a list of accepted, denied, unaccepted and rejected keys. This is the same output as *salt-key -L*

CLI Example:

```
salt 'master' minion.list
```

### 13.6.181 salt.modules.mod_random

**Provides access to randomness generators.**

New in version 2014.7.0.

salt.modules.mod_random.**get_str**(*length=20*)

New in version 2014.7.0.

Returns a random string of the specified length.
**length** [20] Any valid number of bytes.
CLI Example:

```
salt '*' random.get_str 128
```

salt.modules.mod_random.**hash**(*value*, *algorithm='sha512'*)

New in version 2014.7.0.

Encodes a value with the specified encoder.
**value** The value to be hashed.
**algorithm** [sha512] The algorithm to use. May be any valid algorithm supported by hashlib.
CLI Example:

```
salt '*' random.hash 'I am a string' md5
```

salt.modules.mod_random.**rand_int**(*start=1*, *end=10*)

Returns a random integer number between the start and end number.
**start** [1] Any valid integer number
**end** [10] Any valid integer number
CLI Example:

```
salt '*' random.rand_int 1 10
```

salt.modules.mod_random.**seed**(*range=10*, *hash=None*)

Returns a random number within a range. Optional hash argument can be any hashable object. If hash is omitted or None, the id of the minion is used.
**hash**: **None** Any hashable object.
**range**: **10** Any valid integer number
CLI Example:

```
salt '*' random.seed 10 hash=None
```

salt.modules.mod_random.**shadow_hash**(*crypt_salt=None*, *password=None*, *algorithm='sha512'*)

Generates a salted hash suitable for /etc/shadow.
**crypt_salt** [None] Salt to be used in the generation of the hash. If one is not provided, a random salt will be generated.
**password** [None] Value to be salted and hashed. If one is not provided, a random password will be generated.
**algorithm** [sha512] Hash algorithm to use.
CLI Example:

```
salt '*' random.shadow_hash 'My5alT' 'MyP@asswd' md5
```

salt.modules.mod_random.**str_encode**(*value*, *encoder='base64'*)

New in version 2014.7.0.
**value** The value to be encoded.
**encoder** [base64] The encoder to use on the subsequent string.

CLI Example:

```
salt '*' random.str_encode 'I am a new string' base64
```

### 13.6.182 salt.modules.modjk

Control Modjk via the Apache Tomcat ``Status'' worker (http://tomcat.apache.org/connectors-doc/reference/status.html)

Below is an example of the configuration needed for this module. This configuration data can be placed either in *grains* or pillar.

If using grains, this can be accomplished *statically* or via a *grain module*.

If using pillar, the yaml configuration can be placed directly into a pillar SLS file, making this both the easier and more dynamic method of configuring this module.

```
modjk:
  default:
    url: http://localhost/jkstatus
    user: modjk
    pass: secret
    realm: authentication realm for digest passwords
    timeout: 5
  otherVhost:
    url: http://otherVhost/jkstatus
    user: modjk
    pass: secret2
    realm: authentication realm2 for digest passwords
    timeout: 600
```

`salt.modules.modjk.`**`bulk_activate`**(*workers*, *lbn*, *profile='default'*)

Activate all the given workers in the specific load balancer

CLI Examples:

```
salt '*' modjk.bulk_activate node1,node2,node3 loadbalancer1
salt '*' modjk.bulk_activate node1,node2,node3 loadbalancer1 other-profile

salt '*' modjk.bulk_activate ["node1","node2","node3"] loadbalancer1
salt '*' modjk.bulk_activate ["node1","node2","node3"] loadbalancer1 other-profile
```

`salt.modules.modjk.`**`bulk_disable`**(*workers*, *lbn*, *profile='default'*)

Disable all the given workers in the specific load balancer

CLI Examples:

```
salt '*' modjk.bulk_disable node1,node2,node3 loadbalancer1
salt '*' modjk.bulk_disable node1,node2,node3 loadbalancer1 other-profile

salt '*' modjk.bulk_disable ["node1","node2","node3"] loadbalancer1
salt '*' modjk.bulk_disable ["node1","node2","node3"] loadbalancer1 other-profile
```

`salt.modules.modjk.`**`bulk_recover`**(*workers*, *lbn*, *profile='default'*)

Recover all the given workers in the specific load balancer

CLI Examples:

```
salt '*' modjk.bulk_recover node1,node2,node3 loadbalancer1
salt '*' modjk.bulk_recover node1,node2,node3 loadbalancer1 other-profile

salt '*' modjk.bulk_recover ["node1","node2","node3"] loadbalancer1
salt '*' modjk.bulk_recover ["node1","node2","node3"] loadbalancer1 other-profile
```

salt.modules.modjk.**bulk_stop**(*workers*, *lbn*, *profile='default'*)

Stop all the given workers in the specific load balancer

CLI Examples:

```
salt '*' modjk.bulk_stop node1,node2,node3 loadbalancer1
salt '*' modjk.bulk_stop node1,node2,node3 loadbalancer1 other-profile

salt '*' modjk.bulk_stop ["node1","node2","node3"] loadbalancer1
salt '*' modjk.bulk_stop ["node1","node2","node3"] loadbalancer1 other-profile
```

salt.modules.modjk.**dump_config**(*profile='default'*)

Dump the original configuration that was loaded from disk

CLI Examples:

```
salt '*' modjk.dump_config
salt '*' modjk.dump_config other-profile
```

salt.modules.modjk.**get_running**(*profile='default'*)

Get the current running config (not from disk)

CLI Examples:

```
salt '*' modjk.get_running
salt '*' modjk.get_running other-profile
```

salt.modules.modjk.**lb_edit**(*lbn*, *settings*, *profile='default'*)

Edit the loadbalancer settings

Note: http://tomcat.apache.org/connectors-doc/reference/status.html Data Parameters for the standard Update Action

CLI Examples:

```
salt '*' modjk.lb_edit loadbalancer1 "{'vlr': 1, 'vlt': 60}"
salt '*' modjk.lb_edit loadbalancer1 "{'vlr': 1, 'vlt': 60}" other-profile
```

salt.modules.modjk.**list_configured_members**(*lbn*, *profile='default'*)

Return a list of member workers from the configuration files

CLI Examples:

```
salt '*' modjk.list_configured_members loadbalancer1
salt '*' modjk.list_configured_members loadbalancer1 other-profile
```

salt.modules.modjk.**recover_all**(*lbn*, *profile='default'*)

Set the all the workers in lbn to recover and activate them if they are not

CLI Examples:

```
salt '*' modjk.recover_all loadbalancer1
salt '*' modjk.recover_all loadbalancer1 other-profile
```

salt.modules.modjk.**reset_stats**(*lbn*, *profile='default'*)
Reset all runtime statistics for the load balancer

CLI Examples:

```
salt '*' modjk.reset_stats loadbalancer1
salt '*' modjk.reset_stats loadbalancer1 other-profile
```

salt.modules.modjk.**version**(*profile='default'*)
Return the modjk version

CLI Examples:

```
salt '*' modjk.version
salt '*' modjk.version other-profile
```

salt.modules.modjk.**worker_activate**(*worker*, *lbn*, *profile='default'*)
Set the worker to activate state in the lbn load balancer

CLI Examples:

```
salt '*' modjk.worker_activate node1 loadbalancer1
salt '*' modjk.worker_activate node1 loadbalancer1 other-profile
```

salt.modules.modjk.**worker_disable**(*worker*, *lbn*, *profile='default'*)
Set the worker to disable state in the lbn load balancer

CLI Examples:

```
salt '*' modjk.worker_disable node1 loadbalancer1
salt '*' modjk.worker_disable node1 loadbalancer1 other-profile
```

salt.modules.modjk.**worker_edit**(*worker*, *lbn*, *settings*, *profile='default'*)
Edit the worker settings

Note: http://tomcat.apache.org/connectors-doc/reference/status.html Data Parameters for the standard Update Action

CLI Examples:

```
salt '*' modjk.worker_edit node1 loadbalancer1 "{'vwf': 500, 'vwd': 60}"
salt '*' modjk.worker_edit node1 loadbalancer1 "{'vwf': 500, 'vwd': 60}" other-
↪profile
```

salt.modules.modjk.**worker_recover**(*worker*, *lbn*, *profile='default'*)
Set the worker to recover this module will fail if it is in OK state

CLI Examples:

```
salt '*' modjk.worker_recover node1 loadbalancer1
salt '*' modjk.worker_recover node1 loadbalancer1 other-profile
```

salt.modules.modjk.**worker_status**(*worker*, *profile='default'*)
Return the state of the worker

CLI Examples:

```
salt '*' modjk.worker_status node1
salt '*' modjk.worker_status node1 other-profile
```

salt.modules.modjk.**worker_stop**(*worker*, *lbn*, *profile='default'*)
Set the worker to stopped state in the lbn load balancer

CLI Examples:

```
salt '*' modjk.worker_activate node1 loadbalancer1
salt '*' modjk.worker_activate node1 loadbalancer1 other-profile
```

salt.modules.modjk.**workers**(*profile='default'*)
Return a list of member workers and their status

CLI Examples:

```
salt '*' modjk.workers
salt '*' modjk.workers other-profile
```

### 13.6.183 salt.modules.mongodb

Module to provide MongoDB functionality to Salt

**configuration** This module uses PyMongo, and accepts configuration details as parameters as well as configuration settings:

```
mongodb.host: 'localhost'
mongodb.port: 27017
mongodb.user: ''
mongodb.password: ''
```

This data can also be passed into pillar. Options passed into opts will overwrite options passed into pillar.

salt.modules.mongodb.**db_exists**(*name*, *user=None*, *password=None*, *host=None*, *port=None*)
Checks if a database exists in Mongodb

CLI Example:

```
salt '*' mongodb.db_exists <name> <user> <password> <host> <port>
```

salt.modules.mongodb.**db_list**(*user=None*, *password=None*, *host=None*, *port=None*)
List all Mongodb databases

CLI Example:

```
salt '*' mongodb.db_list <user> <password> <host> <port>
```

salt.modules.mongodb.**db_remove**(*name*, *user=None*, *password=None*, *host=None*, *port=None*)
Remove a Mongodb database

CLI Example:

```
salt '*' mongodb.db_remove <name> <user> <password> <host> <port>
```

salt.modules.mongodb.**find**(*collection*, *query=None*, *user=None*, *password=None*, *host=None*, *port=None*, *database='admin'*)
Find an object or list of objects in a collection

CLI Example:

```
salt '*' mongodb.find mycollection '[{"foo": "FOO", "bar": "BAR"}]' <user>
↪<password> <host> <port> <database>
```

salt.modules.mongodb.**insert**(*objects*, *collection*, *user=None*, *password=None*, *host=None*, *port=None*, *database='admin'*)

Insert an object or list of objects into a collection

CLI Example:

```
salt '*' mongodb.insert '[{"foo": "FOO", "bar": "BAR"}, {"foo": "BAZ", "bar": "BAM
↪"}]' mycollection <user> <password> <host> <port> <database>
```

salt.modules.mongodb.**remove**(*collection*, *query=None*, *user=None*, *password=None*, *host=None*, *port=None*, *database='admin'*, *w=1*)

Remove an object or list of objects into a collection

CLI Example:

```
salt '*' mongodb.remove mycollection '[{"foo": "FOO", "bar": "BAR"}, {"foo": "BAZ
↪", "bar": "BAM"}]' <user> <password> <host> <port> <database>
```

salt.modules.mongodb.**user_create**(*name*, *passwd*, *user=None*, *password=None*, *host=None*, *port=None*, *database='admin'*)

Create a Mongodb user

CLI Example:

```
salt '*' mongodb.user_create <name> <user> <password> <host> <port> <database>
```

salt.modules.mongodb.**user_exists**(*name*, *user=None*, *password=None*, *host=None*, *port=None*, *database='admin'*)

Checks if a user exists in Mongodb

CLI Example:

```
salt '*' mongodb.user_exists <name> <user> <password> <host> <port> <database>
```

salt.modules.mongodb.**user_grant_roles**(*name*, *roles*, *database*, *user=None*, *password=None*, *host=None*, *port=None*)

Grant one or many roles to a Mongodb user

CLI Examples:

```
salt '*' mongodb.user_grant_roles johndoe '["readWrite"]' dbname admin adminpwd
↪localhost 27017
```

```
salt '*' mongodb.user_grant_roles janedoe '[{"role": "readWrite", "db": "dbname" }
↪, {"role": "read", "db": "otherdb"}]' dbname admin adminpwd localhost 27017
```

salt.modules.mongodb.**user_list**(*user=None*, *password=None*, *host=None*, *port=None*, *database='admin'*)

List users of a Mongodb database

CLI Example:

```
salt '*' mongodb.user_list <user> <password> <host> <port> <database>
```

salt.modules.mongodb.**user_remove**(*name*, *user=None*, *password=None*, *host=None*, *port=None*, *database='admin'*)

Remove a Mongodb user

CLI Example:

```
salt '*' mongodb.user_remove <name> <user> <password> <host> <port> <database>
```

salt.modules.mongodb.**user_revoke_roles**(*name*, *roles*, *database*, *user=None*, *password=None*, *host=None*, *port=None*)

Revoke one or many roles to a Mongodb user

CLI Examples:

```
salt '*' mongodb.user_revoke_roles johndoe '["readWrite"]' dbname admin adminpwd
↪localhost 27017
```

```
salt '*' mongodb.user_revoke_roles janedoe '[{"role": "readWrite", "db": "dbname"
↪}, {"role": "read", "db": "otherdb"}]' dbname admin adminpwd localhost 27017
```

salt.modules.mongodb.**user_roles_exists**(*name*, *roles*, *database*, *user=None*, *password=None*, *host=None*, *port=None*)

Checks if a user of a Mongodb database has specified roles

CLI Examples:

```
salt '*' mongodb.user_roles_exists johndoe '["readWrite"]' dbname admin adminpwd
↪localhost 27017
```

```
salt '*' mongodb.user_roles_exists johndoe '[{"role": "readWrite", "db": "dbname"
↪}, {"role": "read", "db": "otherdb"}]' dbname admin adminpwd localhost 27017
```

### 13.6.184 salt.modules.monit

Monit service module. This module will create a monit type service watcher.

salt.modules.monit.**configtest**()

New in version 2016.3.0.

Test monit configuration syntax

CLI Example:

```
salt '*' monit.configtest
```

salt.modules.monit.**id**(*reset=False*)

New in version 2016.3.0.

Return monit unique id.
**reset** [False] Reset current id and generate a new id when it's True.
CLI Example:

```
salt '*' monit.id [reset=True]
```

salt.modules.monit.**monitor**(*name*)

monitor service via monit

CLI Example:

```
salt '*' monit.monitor <service name>
```

salt.modules.monit.**reload**()
New in version 2016.3.0.

Reload monit configuration

CLI Example:

```
salt '*' monit.reload
```

salt.modules.monit.**restart**(*name*)
Restart service via monit

CLI Example:

```
salt '*' monit.restart <service name>
```

salt.modules.monit.**start**(*name*)
CLI Example:

```
salt '*' monit.start <service name>
```

salt.modules.monit.**status**(*svc_name=''*)
Display a process status from monit

CLI Example:

```
salt '*' monit.status
salt '*' monit.status <service name>
```

salt.modules.monit.**stop**(*name*)
Stops service via monit

CLI Example:

```
salt '*' monit.stop <service name>
```

salt.modules.monit.**summary**(*svc_name=''*)
Display a summary from monit

CLI Example:

```
salt '*' monit.summary
salt '*' monit.summary <service name>
```

salt.modules.monit.**unmonitor**(*name*)
Unmonitor service via monit

CLI Example:

```
salt '*' monit.unmonitor <service name>
```

salt.modules.monit.**validate**()
New in version 2016.3.0.

Check all services

CLI Example:

```
salt '*' monit.validate
```

salt.modules.monit.**version**()
New in version 2016.3.0.

Return version from monit -V

CLI Example:

```
salt '*' monit.version
```

### 13.6.185 salt.modules.moosefs

Module for gathering and managing information about MooseFS

salt.modules.moosefs.**dirinfo**(*path*, *opts=None*)
Return information on a directory located on the Moose

CLI Example:

```
salt '*' moosefs.dirinfo /path/to/dir/ [-[n][h|H]]
```

salt.modules.moosefs.**fileinfo**(*path*)
Return information on a file located on the Moose

CLI Example:

```
salt '*' moosefs.fileinfo /path/to/dir/
```

salt.modules.moosefs.**getgoal**(*path*, *opts=None*)
Return goal(s) for a file or directory

CLI Example:

```
salt '*' moosefs.getgoal /path/to/file [-[n][h|H]]
salt '*' moosefs.getgoal /path/to/dir/ [-[n][h|H][r]]
```

salt.modules.moosefs.**mounts**()
Return a list of current MooseFS mounts

CLI Example:

```
salt '*' moosefs.mounts
```

### 13.6.186 salt.modules.mount

Salt module to manage Unix mounts and the fstab file

salt.modules.mount.**active**(*extended=False*)
List the active mounts.

CLI Example:

```
salt '*' mount.active
```

salt.modules.mount.**automaster**(*config='/etc/auto_salt'*)
List the contents of the auto master

CLI Example:

```
salt '*' mount.automaster
```

salt.modules.mount.**fstab**(*config='/etc/fstab'*)
Changed in version 2016.3.2.

List the contents of the fstab

CLI Example:

```
salt '*' mount.fstab
```

salt.modules.mount.**is_fuse_exec**(*cmd*)
Returns true if the command passed is a fuse mountable application.

CLI Example:

```
salt '*' mount.is_fuse_exec sshfs
```

salt.modules.mount.**is_mounted**(*name*)
New in version 2014.7.0.

Provide information if the path is mounted

CLI Example:

```
salt '*' mount.is_mounted /mnt/share
```

salt.modules.mount.**mount**(*name*, *device*, *mkmnt=False*, *fstype=''*, *opts='defaults'*, *user=None*, *util='mount'*)
Mount a device

CLI Example:

```
salt '*' mount.mount /mnt/foo /dev/sdz1 True
```

salt.modules.mount.**remount**(*name*, *device*, *mkmnt=False*, *fstype=''*, *opts='defaults'*, *user=None*)
Attempt to remount a device, if the device is not already mounted, mount is called

CLI Example:

```
salt '*' mount.remount /mnt/foo /dev/sdz1 True
```

salt.modules.mount.**rm_automaster**(*name*, *device*, *config='/etc/auto_salt'*)
Remove the mount point from the auto_master

CLI Example:

```
salt '*' mount.rm_automaster /mnt/foo /dev/sdg
```

salt.modules.mount.**rm_fstab**(*name*, *device*, *config='/etc/fstab'*)
Changed in version 2016.3.2.

Remove the mount point from the fstab

CLI Example:

```
salt '*' mount.rm_fstab /mnt/foo /dev/sdg
```

salt.modules.mount.**rm_vfstab**(*name*, *device*, *config='/etc/vfstab'*)
New in version 2016.3.2.

Remove the mount point from the vfstab

CLI Example:

```
salt '*' mount.rm_vfstab /mnt/foo /device/c0t0d0p0
```

salt.modules.mount.**set_automaster**(*name*, *device*, *fstype*, *opts='`*, *config='/etc/auto_salt'*, *test=False*, ***kwargs*)

Verify that this mount is represented in the auto_salt, change the mount to match the data passed, or add the mount if it is not present.

CLI Example:

```
salt '*' mount.set_automaster /mnt/foo /dev/sdz1 ext4
```

salt.modules.mount.**set_fstab**(*name*, *device*, *fstype*, *opts='defaults'*, *dump=0*, *pass_num=0*, *config='/etc/fstab'*, *test=False*, *match_on='auto'*, ***kwargs*)

Verify that this mount is represented in the fstab, change the mount to match the data passed, or add the mount if it is not present.

CLI Example:

```
salt '*' mount.set_fstab /mnt/foo /dev/sdz1 ext4
```

salt.modules.mount.**set_vfstab**(*name*, *device*, *fstype*, *opts='-`*, *device_fsck='-`*, *pass_fsck='-`*, *mount_at_boot='yes'*, *config='/etc/vfstab'*, *test=False*, *match_on='auto'*, ***kwargs*)

..verionadded:: 2016.3.2 Verify that this mount is represented in the fstab, change the mount to match the data passed, or add the mount if it is not present.

CLI Example:

```
salt '*' mount.set_vfstab /mnt/foo /device/c0t0d0p0 ufs
```

salt.modules.mount.**swapoff**(*name*)

Deactivate a named swap mount

Changed in version 2016.3.2.

CLI Example:

```
salt '*' mount.swapoff /root/swapfile
```

salt.modules.mount.**swapon**(*name*, *priority=None*)

Activate a swap disk

Changed in version 2016.3.2.

CLI Example:

```
salt '*' mount.swapon /root/swapfile
```

salt.modules.mount.**swaps**()

Return a dict containing information on active swap

Changed in version 2016.3.2.

CLI Example:

```
salt '*' mount.swaps
```

salt.modules.mount.**umount**(*name*, *device=None*, *user=None*, *util='mount'*)
Attempt to unmount a device by specifying the directory it is mounted on

CLI Example:

```
salt '*' mount.umount /mnt/foo
```

New in version 2015.5.0.

```
salt '*' mount.umount /mnt/foo /dev/xvdc1
```

salt.modules.mount.**vfstab**(*config='/etc/vfstab'*)
New in version 2016.3.2.

List the contents of the vfstab

CLI Example:

```
salt '*' mount.vfstab
```

### 13.6.187 salt.modules.mssql

Module to provide MS SQL Server compatibility to salt.

**depends**

- FreeTDS
- pymssql Python module

**configuration** In order to connect to MS SQL Server, certain configuration is required in minion configs/pillars on the relevant minions. Some sample pillars might look like:

```
mssql.server: 'localhost'
mssql.port:   1433
mssql.user:   'sysdba'
mssql.password:   'Some preferable complex password'
mssql.database: ''
```

The default for the port is `1433' and for the database is `' (empty string); in most cases they can be left at the default setting. Options that are directly passed into functions will overwrite options from configs or pillars.

salt.modules.mssql.**db_exists**(*database_name*, ***kwargs*)
Find if a specific database exists on the MS SQL server.

CLI Example:

```
salt minion mssql.db_exists database_name='DBNAME'
```

salt.modules.mssql.**db_list**(***kwargs*)
Return the databse list created on a MS SQL server.

CLI Example:

```
salt minion mssql.db_list
```

salt.modules.mssql.**db_remove**(*database_name*, ***kwargs*)
Drops a specific database from the MS SQL server. It will not drop any of `master', `model', `msdb' or `tempdb'.

CLI Example:

```
salt minion mssql.db_remove database_name='DBNAME'
```

salt.modules.mssql.**login_exists**(*login*, ***kwargs*)
Find if a login exists in the MS SQL server.

CLI Example:

```
salt minion mssql.login_exists 'LOGIN'
```

salt.modules.mssql.**role_create**(*role*, *owner=None*, ***kwargs*)
Creates a new database role. If no owner is specified, the role will be owned by the user that executes CREATE ROLE, which is the user argument or mssql.user option.

CLI Example:

```
salt minion mssql.role_create role=product01 owner=sysdba
```

salt.modules.mssql.**role_exists**(*role*, ***kwargs*)
Checks if a role exists.

CLI Example:

```
salt minion mssql.role_exists db_owner
```

salt.modules.mssql.**role_list**(***kwargs*)
Lists database roles.

CLI Example:

```
salt minion mssql.role_list
```

salt.modules.mssql.**role_remove**(*role*, ***kwargs*)
Remove a database role.

CLI Example:

```
salt minion mssql.role_create role=test_role01
```

salt.modules.mssql.**tsql_query**(*query*, ***kwargs*)
Run a SQL query and return query result as list of tuples, or a list of dictionaries if as_dict was passed, or an empty list if no data is available.

CLI Example:

```
salt minion mssql.tsql_query 'SELECT @@version as version' as_dict=True
```

salt.modules.mssql.**user_create**(*username*, *new_login_password=None*, ***kwargs*)
Creates a new user. If new_login_password is not specified, the user will be created without a login.

CLI Example:

```
salt minion mssql.user_create USERNAME database=DBNAME [new_login_
↪password=PASSWORD]
```

salt.modules.mssql.**user_exists**(*username*, ***kwargs*)
Find if an user exists in a specific database on the MS SQL server.
**Note**: *database* argument is mandatory

CLI Example:

```
salt minion mssql.user_exists 'USERNAME' [database='DBNAME']
```

salt.modules.mssql.**user_list**(***kwargs*)
Get the user list for a specific database on the MS SQL server.

CLI Example:

```
salt minion mssql.user_list [database='DBNAME']
```

salt.modules.mssql.**user_remove**(*username*, ***kwargs*)
Removes an user.

CLI Example:

```
salt minion mssql.user_remove USERNAME database=DBNAME
```

salt.modules.mssql.**version**(***kwargs*)
Return the version of a MS SQL server.

CLI Example:

```
salt minion mssql.version
```

### 13.6.188 salt.modules.munin

Run munin plugins/checks from salt and format the output as data.

salt.modules.munin.**list_plugins**()
List all the munin plugins

CLI Example:

```
salt '*' munin.list_plugins
```

salt.modules.munin.**run**(*plugins*)
Run one or more named munin plugins

CLI Example:

```
salt '*' munin.run uptime
salt '*' munin.run uptime,cpu,load,memory
```

salt.modules.munin.**run_all**()
Run all the munin plugins

CLI Example:

```
salt '*' munin.run_all
```

### 13.6.189 salt.modules.mysql

Module to provide MySQL compatibility to salt.

**depends**

- MySQLdb Python module

**Note**: On CentOS 5 (and possibly RHEL 5) both MySQL-python and python26-mysqldb need to be installed.

**configuration** In order to connect to MySQL, certain configuration is required in /etc/salt/minion on the relevant minions. Some sample configs might look like:

```
mysql.host: 'localhost'
mysql.port: 3306
mysql.user: 'root'
mysql.pass: ''
mysql.db: 'mysql'
mysql.unix_socket: '/tmp/mysql.sock'
mysql.charset: 'utf8'
```

You can also use a defaults file:

```
mysql.default_file: '/etc/mysql/debian.cnf'
```

Changed in version 2014.1.0: `charset' connection argument added. This is a MySQL charset, not a python one.

Changed in version 0.16.2: Connection arguments from the minion config file can be overridden on the CLI by using the arguments defined *here*. Additionally, it is now possible to setup a user with no password.

`salt.modules.mysql.`**`alter_db`**(*name*, *character_set=None*, *collate=None*, ***connection_args*)

Modify database using `ALTER DATABASE %(dbname)s CHARACTER SET %(charset)s COLLATE %(collation)s;` query.

CLI Example:

```
salt '*' mysql.alter_db testdb charset='latin1'
```

`salt.modules.mysql.`**`db_check`**(*name*, *table=None*, ***connection_args*)

Repairs the full database or just a given table

CLI Example:

```
salt '*' mysql.db_check dbname
salt '*' mysql.db_check dbname dbtable
```

`salt.modules.mysql.`**`db_create`**(*name*, *character_set=None*, *collate=None*, ***connection_args*)

Adds a databases to the MySQL server.

**name** The name of the database to manage

**character_set** The character set, if left empty the MySQL default will be used

**collate** The collation, if left empty the MySQL default will be used

CLI Example:

```
salt '*' mysql.db_create 'dbname'
salt '*' mysql.db_create 'dbname' 'utf8' 'utf8_general_ci'
```

`salt.modules.mysql.`**`db_exists`**(*name*, ***connection_args*)

Checks if a database exists on the MySQL server.

CLI Example:

```
salt '*' mysql.db_exists 'dbname'
```

`salt.modules.mysql.`**`db_get`**(*name*, ***connection_args*)

Return a list of databases of a MySQL server using the output from the `SELECT DE-`

FAULT_CHARACTER_SET_NAME,DEFAULT_COLLATION_NAME FROM INFORMATION_SCHEMA.SCHEMATA WHERE SCHEMA_NAME='dbname'; query.

CLI Example:

```
salt '*' mysql.db_get test
```

salt.modules.mysql.**db_list**(***connection_args*)

Return a list of databases of a MySQL server using the output from the SHOW DATABASES query.

CLI Example:

```
salt '*' mysql.db_list
```

salt.modules.mysql.**db_optimize**(*name*, *table=None*, ***connection_args*)

Optimizes the full database or just a given table

CLI Example:

```
salt '*' mysql.db_optimize dbname
```

salt.modules.mysql.**db_remove**(*name*, ***connection_args*)

Removes a databases from the MySQL server.

CLI Example:

```
salt '*' mysql.db_remove 'dbname'
```

salt.modules.mysql.**db_repair**(*name*, *table=None*, ***connection_args*)

Repairs the full database or just a given table

CLI Example:

```
salt '*' mysql.db_repair dbname
```

salt.modules.mysql.**db_tables**(*name*, ***connection_args*)

Shows the tables in the given MySQL database (if exists)

CLI Example:

```
salt '*' mysql.db_tables 'database'
```

salt.modules.mysql.**free_slave**(***connection_args*)

Frees a slave from its master. This is a WIP, do not use.

CLI Example:

```
salt '*' mysql.free_slave
```

salt.modules.mysql.**get_master_status**(***connection_args*)

Retrieves the master status from the minion.

Returns:

```
{'host.domain.com': {'Binlog_Do_DB': '',
                     'Binlog_Ignore_DB': '',
                     'File': 'mysql-bin.000021',
                     'Position': 107}}
```

CLI Example:

```
salt '*' mysql.get_master_status
```

salt.modules.mysql.**get_slave_status**(***connection_args*)

Retrieves the slave status from the minion.

Returns:

```
{'host.domain.com': {'Connect_Retry': 60,
                     'Exec_Master_Log_Pos': 107,
                     'Last_Errno': 0,
                     'Last_Error': '',
                     'Last_IO_Errno': 0,
                     'Last_IO_Error': '',
                     'Last_SQL_Errno': 0,
                     'Last_SQL_Error': '',
                     'Master_Host': 'comet.scion-eng.com',
                     'Master_Log_File': 'mysql-bin.000021',
                     'Master_Port': 3306,
                     'Master_SSL_Allowed': 'No',
                     'Master_SSL_CA_File': '',
                     'Master_SSL_CA_Path': '',
                     'Master_SSL_Cert': '',
                     'Master_SSL_Cipher': '',
                     'Master_SSL_Key': '',
                     'Master_SSL_Verify_Server_Cert': 'No',
                     'Master_Server_Id': 1,
                     'Master_User': 'replu',
                     'Read_Master_Log_Pos': 107,
                     'Relay_Log_File': 'klo-relay-bin.000071',
                     'Relay_Log_Pos': 253,
                     'Relay_Log_Space': 553,
                     'Relay_Master_Log_File': 'mysql-bin.000021',
                     'Replicate_Do_DB': '',
                     'Replicate_Do_Table': '',
                     'Replicate_Ignore_DB': '',
                     'Replicate_Ignore_Server_Ids': '',
                     'Replicate_Ignore_Table': '',
                     'Replicate_Wild_Do_Table': '',
                     'Replicate_Wild_Ignore_Table': '',
                     'Seconds_Behind_Master': 0,
                     'Skip_Counter': 0,
                     'Slave_IO_Running': 'Yes',
                     'Slave_IO_State': 'Waiting for master to send event',
                     'Slave_SQL_Running': 'Yes',
                     'Until_Condition': 'None',
                     'Until_Log_File': '',
                     'Until_Log_Pos': 0}}
```

CLI Example:

```
salt '*' mysql.get_slave_status
```

salt.modules.mysql.**grant_add**(*grant*, *database*, *user*, *host='localhost'*, *grant_option=False*, *escape=True*, *ssl_option=False*, ***connection_args*)

Adds a grant to the MySQL server.

For database, make sure you specify database.table or database.*

CLI Example:

```
salt '*' mysql.grant_add              'SELECT,INSERT,UPDATE,...' 'database.*' 'frank
↪' 'localhost'
```

salt.modules.mysql.**grant_exists**(*grant*, *database*, *user*, *host='localhost'*, *grant_option=False*, *escape=True*, ***connection_args*)

Checks to see if a grant exists in the database

CLI Example:

```
salt '*' mysql.grant_exists              'SELECT,INSERT,UPDATE,...' 'database.*'
↪'frank' 'localhost'
```

salt.modules.mysql.**grant_revoke**(*grant*, *database*, *user*, *host='localhost'*, *grant_option=False*, *escape=True*, ***connection_args*)

Removes a grant from the MySQL server.

CLI Example:

```
salt '*' mysql.grant_revoke              'SELECT,INSERT,UPDATE' 'database.*' 'frank
↪' 'localhost'
```

salt.modules.mysql.**processlist**(***connection_args*)

Retrieves the processlist from the MySQL server via ``SHOW FULL PROCESSLIST''.

**Returns: a list of dicts, with each dict representing a process:**

**{`Command': `Query', `Host': `localhost', `Id': 39, `Info': `SHOW FULL PROCESSLIST', `Rows_examined': 0, `Rows_read': 1, `Rows_sent': 0, `State': None, `Time': 0, `User': `root', `db': `mysql'}**

CLI Example:

```
salt '*' mysql.processlist
```

salt.modules.mysql.**query**(*database*, *query*, ***connection_args*)

Run an arbitrary SQL query and return the results or the number of affected rows.

CLI Example:

```
salt '*' mysql.query mydb "UPDATE mytable set myfield=1 limit 1"
```

Return data:

```
{'query time': {'human': '39.0ms', 'raw': '0.03899'}, 'rows affected': 1L}
```

CLI Example:

```
salt '*' mysql.query mydb "SELECT id,name,cash from users limit 3"
```

Return data:

```
{'columns': ('id', 'name', 'cash'),
    'query time': {'human': '1.0ms', 'raw': '0.001'},
    'results': ((1L, 'User 1', Decimal('110.000000')),
                (2L, 'User 2', Decimal('215.636756')),
                (3L, 'User 3', Decimal('0.040000'))),
    'rows returned': 3L}
```

CLI Example:

```
salt '*' mysql.query mydb 'INSERT into users values (null,"user 4", 5)'
```

Return data:

```
{'query time': {'human': '25.6ms', 'raw': '0.02563'}, 'rows affected': 1L}
```

CLI Example:

```
salt '*' mysql.query mydb 'DELETE from users where id = 4 limit 1'
```

Return data:

```
{'query time': {'human': '39.0ms', 'raw': '0.03899'}, 'rows affected': 1L}
```

Jinja Example: Run a query on `mydb` and use row 0, column 0's data.

```
{{ salt['mysql.query']('mydb', 'SELECT info from mytable limit 1')['results
↪'][0][0] }}
```

salt.modules.mysql.**quote_identifier**(*identifier*, *for_grants=False*)

Return an identifier name (column, table, database, etc) escaped for MySQL

This means surrounded by ```" character and escaping this character inside. It also means doubling the `%' character for MySQLdb internal usage.

**Parameters**

- **identifier** -- the table, column or database identifier
- **for_grants** -- is False by default, when using database names on grant queries you should set it to True to also escape ``_" and ``%" characters as requested by MySQL. Note that theses characters should only be escaped when requesting grants on the database level (*my_%db.**) but not for table level grants (*my_%db.*`foo`)

CLI Example:

```
salt '*' mysql.quote_identifier 'foo`bar'
```

salt.modules.mysql.**showglobal**(***connection_args*)

Retrieves the show global variables from the minion.

**Returns**:: show global variables full dict

CLI Example:

```
salt '*' mysql.showglobal
```

salt.modules.mysql.**showvariables**(***connection_args*)

Retrieves the show variables from the minion.

**Returns**:: show variables full dict

CLI Example:

```
salt '*' mysql.showvariables
```

salt.modules.mysql.**slave_lag**(***connection_args*)

Return the number of seconds that a slave SQL server is lagging behind the master, if the host is not a slave it will return -1. If the server is configured to be a slave for replication but slave IO is not running then -2 will be returned. If there was an error connecting to the database or checking the slave status, -3 will be returned.

CLI Example:

```
salt '*' mysql.slave_lag
```

salt.modules.mysql.**status**(***connection_args*)

Return the status of a MySQL server using the output from the `SHOW STATUS` query.

CLI Example:

```
salt '*' mysql.status
```

salt.modules.mysql.**tokenize_grant**(*grant*)

External wrapper function :param grant: :return: dict

CLI Example:

```
salt '*' mysql.tokenize_grant             "GRANT SELECT, INSERT ON testdb.* TO
 ↪'testuser'@'localhost'"
```

salt.modules.mysql.**user_chpass**(*user*, *host='localhost'*, *password=None*, *password_hash=None*, *allow_passwordless=False*, *unix_socket=None*, *password_column=None*, ***connection_args*)

Change password for a MySQL user

**host** Host for which this user/password combo applies

**password** The password to set for the new user. Will take precedence over the `password_hash` option if both are specified.

**password_hash** The password in hashed form. Be sure to quote the password because YAML doesn't like the `*`. A password hash can be obtained from the mysql command-line client like so:

```
mysql> SELECT PASSWORD('mypass');
+-------------------------------------------+
| PASSWORD('mypass')                        |
+-------------------------------------------+
| *6C8989366EAF75BB670AD8EA7A7FC1176A95CEF4 |
+-------------------------------------------+
1 row in set (0.00 sec)
```

**allow_passwordless** If `True`, then `password` and `password_hash` can be omitted (or set to `None`) to permit a passwordless login.

New in version 0.16.2: The `allow_passwordless` option was added.

CLI Examples:

```
salt '*' mysql.user_chpass frank localhost newpassword
salt '*' mysql.user_chpass frank localhost password_hash='hash'
salt '*' mysql.user_chpass frank localhost allow_passwordless=True
```

salt.modules.mysql.**user_create**(*user*, *host='localhost'*, *password=None*, *password_hash=None*, *allow_passwordless=False*, *unix_socket=False*, *password_column=None*, ***connection_args*)

Creates a MySQL user

**host** Host for which this user/password combo applies

**password** The password to use for the new user. Will take precedence over the `password_hash` option if both are specified.

**password_hash** The password in hashed form. Be sure to quote the password because YAML doesn't like the `*`. A password hash can be obtained from the mysql command-line client like so:

```
mysql> SELECT PASSWORD('mypass');
+-------------------------------------------+
| PASSWORD('mypass')                        |
```

```
+-------------------------------------------+
| *6C8989366EAF75BB670AD8EA7A7FC1176A95CEF4 |
+-------------------------------------------+
1 row in set (0.00 sec)
```

**allow_passwordless** If `True`, then `password` and `password_hash` can be omitted (or set to `None`) to permit a passwordless login.

**unix_socket** If `True` and allow_passwordless is `True` then will be used unix_socket auth plugin.

New in version 0.16.2: The `allow_passwordless` option was added.

CLI Examples:

```
salt '*' mysql.user_create 'username' 'hostname' 'password'
salt '*' mysql.user_create 'username' 'hostname' password_hash='hash'
salt '*' mysql.user_create 'username' 'hostname' allow_passwordless=True
```

salt.modules.mysql.**user_exists**(*user*, *host='localhost'*, *password=None*, *password_hash=None*, *passwordless=False*, *unix_socket=False*, *password_column=None*, ***connection_args*)

Checks if a user exists on the MySQL server. A login can be checked to see if passwordless login is permitted by omitting `password` and `password_hash`, and using `passwordless=True`.

New in version 0.16.2: The `passwordless` option was added.

CLI Example:

```
salt '*' mysql.user_exists 'username' 'hostname' 'password'
salt '*' mysql.user_exists 'username' 'hostname' password_hash='hash'
salt '*' mysql.user_exists 'username' passwordless=True
salt '*' mysql.user_exists 'username' password_column='authentication_string'
```

salt.modules.mysql.**user_grants**(*user*, *host='localhost'*, ***connection_args*)

Shows the grants for the given MySQL user (if it exists)

CLI Example:

```
salt '*' mysql.user_grants 'frank' 'localhost'
```

salt.modules.mysql.**user_info**(*user*, *host='localhost'*, ***connection_args*)

Get full info on a MySQL user

CLI Example:

```
salt '*' mysql.user_info root localhost
```

salt.modules.mysql.**user_list**(***connection_args*)

Return a list of users on a MySQL server

CLI Example:

```
salt '*' mysql.user_list
```

salt.modules.mysql.**user_remove**(*user*, *host='localhost'*, ***connection_args*)

Delete MySQL user

CLI Example:

```
salt '*' mysql.user_remove frank localhost
```

salt.modules.mysql.**version**(***connection_args*)

Return the version of a MySQL server using the output from the `SELECT VERSION()` query.

CLI Example:

```
salt '*' mysql.version
```

### 13.6.190 salt.modules.nacl

This module helps include encrypted passwords in pillars, grains and salt state files.

**depends** libnacl, https://github.com/saltstack/libnacl

This is often useful if you wish to store your pillars in source control or share your pillar data with others that you trust. I don't advise making your pillars public regardless if they are encrypted or not.

When generating keys and encrypting passwords use --local when using salt-call for extra security. Also consider using just the salt runner nacl when encrypting pillar passwords.

The nacl lib uses 32byte keys, these keys are base64 encoded to make your life more simple. To generate your *key* or *keyfile* you can use:

```
salt-call --local nacl.keygen keyfile=/root/.nacl
```

Now with your key, you can encrypt some data:

```
salt-call --local nacl.enc mypass keyfile=/root/.nacl
DRB7Q6/X5gGSRCTpZyxS6hXO5LnlJIIJ4ivbmUlbWj0llUA+uaVyvou3vJ4=
```

To decrypt the data:

```
salt-call --local nacl.dec data='DRB7Q6/
 ↪X5gGSRCTpZyxS6hXO5LnlJIIJ4ivbmUlbWj0llUA+uaVyvou3vJ4=' keyfile=/root/.nacl
mypass
```

The following optional configurations can be defined in the minion or master config. Avoid storing the config in pillars!

```
cat /etc/salt/master.d/nacl.conf
nacl.config:
    key: 'cKEzd4kXsbeCE7/nLTIqXwnUiD1ulg4NoeeYcCFpd9k='
    keyfile: /root/.nacl
```

When the key is defined in the master config you can use it from the nacl runner:

```
salt-run nacl.enc 'myotherpass'
```

Now you can create a pillar with protected data like:

```
pillarexample:
    user: root
    password: {{ salt.nacl.dec('DRB7Q6/
 ↪X5gGSRCTpZyxS6hXO5LnlJIIJ4ivbmUlbWj0llUA+uaVyvou3vJ4=') }}
```

Or do something interesting with grains like:

```
salt-call nacl.enc minionname:dbrole
AL24Z2C5OlkReer3DuQTFdrNLchLuz3NGIhGjZkLtKRYry/b/CksWM8O9yskLwH2AGVLoEXI5jAa

salt minionname grains.setval role 'AL24Z2C5OlkReer3DuQTFdrNLchLuz3NGIhGjZkLtKRYry/b/
 ↪CksWM8O9yskLwH2AGVLoEXI5jAa'

{%- set r = grains.get('role') %}
{%- set role = None %}
{%- if r and 'nacl.dec' in salt %}
    {%- set r = salt['nacl.dec'](r,keyfile='/root/.nacl').split(':') %}
    {%- if opts['id'] == r[0] %}
        {%- set role = r[1] %}
    {%- endif %}
{%- endif %}
base:
    {%- if role %}
    '{{ opts['id'] }}':
        - {{ role }}
    {%- endif %}
```

Multi-line text items like certificates require a bit of extra work. You have to strip the new lines and replace them with `/n' characters. Certificates specifically require some leading white space when calling nacl.enc so that the `--` in the first line (commonly -----BEGIN CERTIFICATE-----) doesn't get interpreted as an argument to nacl.enc. For instance if you have a certificate file that lives in cert.crt:

```
cert=$(cat cert.crt |awk '{printf "%s\n",$0} END {print ""}'); salt-run nacl.enc "
 ↪$cert"
```

Pillar data should look the same, even though the secret will be quite long. However, when calling multiline encrypted secrets from pillar in a state, use the following format to avoid issues with /n creating extra whitespace at the beginning of each line in the cert file:

```
secret.txt:
    file.managed:
        - template: jinja
        - user: user
        - group: group
        - mode: 700
        - contents: "{{- salt['pillar.get']('secret') }}"
```

The `{{-` will tell jinja to strip the whitespace from the beginning of each of the new lines.

`salt.modules.nacl.`**`dec`**(*data*, ***kwargs*)

Takes a key generated from *nacl.keygen* and decrypt some data.

CLI Examples:

```
salt-call --local nacl.dec pEXHQM6cuaF7A=
salt-call --local nacl.dec data='pEXHQM6cuaF7A=' keyfile=/root/.nacl
salt-call --local nacl.dec data='pEXHQM6cuaF7A=' key='cKEzd4kXsbeCE7/
 ↪nLTIqXwnUiD1ulg4NoeeYcCFpd9k='
```

`salt.modules.nacl.`**`enc`**(*data*, ***kwargs*)

Takes a key generated from *nacl.keygen* and encrypt some data.

CLI Examples:

```
salt-call --local nacl.enc datatoenc
salt-call --local nacl.enc datatoenc keyfile=/root/.nacl
salt-call --local nacl.enc datatoenc key='cKEzd4kXsbeCE7/
↪nLTIqXwnUiD1ulg4NoeeYcCFpd9k='
```

salt.modules.nacl.**keygen**(*keyfile=None*)

Use libnacl to generate a private key

CLI Examples:

```
salt-call --local nacl.keygen
salt-call --local nacl.keygen keyfile=/root/.nacl
salt-call --local --out=newline_values_only nacl.keygen > /root/.nacl
```

### 13.6.191 salt.modules.nagios

Run nagios plugins/checks from salt and get the return as data.

salt.modules.nagios.**list_plugins**()

List all the nagios plugins

CLI Example:

```
salt '*' nagios.list_plugins
```

salt.modules.nagios.**retcode**(*plugin*, *args=''*, *key_name=None*)

Run one nagios plugin and return retcode of the execution

salt.modules.nagios.**retcode_pillar**(*pillar_name*)

Run one or more nagios plugins from pillar data and get the result of cmd.retcode The pillar have to be in this format:

```
------
webserver:
    Ping_google:
        - check_icmp: 8.8.8.8
        - check_icmp: google.com
    Load:
        - check_load: -w 0.8 -c 1
    APT:
        - check_apt
-------
```

webserver is the role to check, the next keys are the group and the items the check with the arguments if needed

You must to group different checks(one o more) and always it will return the highest value of all the checks

CLI Example:

```
salt '*' nagios.retcode webserver
```

salt.modules.nagios.**run**(*plugin*, *args=''*)

Run nagios plugin and return all the data execution with cmd.run

CLI Example:

```
salt '*' nagios.run check_apt
salt '*' nagios.run check_icmp '8.8.8.8'
```

salt.modules.nagios.**run_all**(*plugin*, *args=''*)
Run nagios plugin and return all the data execution with cmd.run_all

salt.modules.nagios.**run_all_pillar**(*pillar_name*)
Run one or more nagios plugins from pillar data and get the result of cmd.run_all The pillar have to be in this format:

```
------
webserver:
    Ping_google:
        - check_icmp: 8.8.8.8
        - check_icmp: google.com
    Load:
        - check_load: -w 0.8 -c 1
    APT:
        - check_apt
-------
```

webserver is the role to check, the next keys are the group and the items the check with the arguments if needed

You have to group different checks in a group

CLI Example:

```
salt '*' nagios.run webserver
```

salt.modules.nagios.**run_pillar**(*pillar_name*)
Run one or more nagios plugins from pillar data and get the result of cmd.run The pillar have to be in this format:

```
------
webserver:
    Ping_google:
        - check_icmp: 8.8.8.8
        - check_icmp: google.com
    Load:
        - check_load: -w 0.8 -c 1
    APT:
        - check_apt
-------
```

webserver is the role to check, the next keys are the group and the items the check with the arguments if needed

You have to group different checks in a group

CLI Example:

```
salt '*' nagios.run webserver
```

### 13.6.192 salt.modules.nagios_rpc

Check Host & Service status from Nagios via JSON RPC.

New in version 2015.8.0.

salt.modules.nagios_rpc.**host_status**(*hostname=None*, ***kwargs*)

Check status of a particular host By default statuses are returned in a numeric format.

Parameters:
**hostname** The hostname to check the status of the service in Nagios.
**numeric** Turn to false in order to return status in text format (`OK' instead of 0, `Warning' instead of 1 etc)

**Returns** status: `OK', `Warning', `Critical' or `Unknown'

CLI Example:

```
salt '*' nagios_rpc.host_status hostname=webserver.domain.com
salt '*' nagios_rpc.host_status hostname=webserver.domain.com numeric=False
```

salt.modules.nagios_rpc.**service_status**(*hostname=None*, *service=None*, ***kwargs*)

Check status of a particular service on a host on it in Nagios. By default statuses are returned in a numeric format.

Parameters:
**hostname** The hostname to check the status of the service in Nagios.
**service** The service to check the status of in Nagios.
**numeric** Turn to false in order to return status in text format (`OK' instead of 0, `Warning' instead of 1 etc)

**Returns** status: `OK', `Warning', `Critical' or `Unknown'

CLI Example:

```
salt '*' nagios_rpc.service_status hostname=webserver.domain.com service='HTTP'
salt '*' nagios_rpc.service_status hostname=webserver.domain.com service='HTTP'
 ↪numeric=False
```

### 13.6.193 salt.modules.netaddress

Module for getting information about network addresses.

New in version 2016.3.0.

**depends** netaddr

salt.modules.netaddress.**cidr_broadcast**(*cidr*)

Get the broadcast address associated with a CIDR address.

CLI example:

```
salt myminion netaddress.cidr_netmask 192.168.0.0/20
```

salt.modules.netaddress.**cidr_netmask**(*cidr*)

Get the netmask address associated with a CIDR address.

CLI example:

```
salt myminion netaddress.cidr_netmask 192.168.0.0/20
```

salt.modules.netaddress.**list_cidr_ips**(*cidr*)

Get a list of IP addresses from a CIDR.

CLI example:

```
salt myminion netaddress.list_cidr_ips 192.168.0.0/20
```

salt.modules.netaddress.**list_cidr_ips_ipv6**(*cidr*)
Get a list of IPv6 addresses from a CIDR.

CLI example:

```
salt myminion netaddress.list_cidr_ips_ipv6 192.168.0.0/20
```

### 13.6.194 salt.modules.netbsd_sysctl

Module for viewing and modifying sysctl parameters

salt.modules.netbsd_sysctl.**assign**(*name*, *value*)
Assign a single sysctl parameter for this minion

CLI Example:

```
salt '*' sysctl.assign net.inet.icmp.icmplim 50
```

salt.modules.netbsd_sysctl.**get**(*name*)
Return a single sysctl parameter for this minion

CLI Example:

```
salt '*' sysctl.get hw.physmem
```

salt.modules.netbsd_sysctl.**persist**(*name*, *value*, *config='/etc/sysctl.conf'*)
Assign and persist a simple sysctl parameter for this minion

CLI Example:

```
salt '*' sysctl.persist net.inet.icmp.icmplim 50
```

salt.modules.netbsd_sysctl.**show**(*config_file=False*)
Return a list of sysctl parameters for this minion

CLI Example:

```
salt '*' sysctl.show
```

### 13.6.195 salt.modules.netbsdservice

The service module for NetBSD

---

**Important**: If you feel that Salt should be using this module to manage services on a minion, and it is using a different module (or gives an error similar to *`service.start' is not available*), see *here*.

---

salt.modules.netbsdservice.**available**(*name*)
Returns `True` if the specified service is available, otherwise returns `False`.

CLI Example:

```
salt '*' service.available sshd
```

salt.modules.netbsdservice.**disable**(*name*, ***kwargs*)
Disable the named service to start at boot

CLI Example:

```
salt '*' service.disable <service name>
```

salt.modules.netbsdservice.**disabled**(*name*)
Return True if the named service is enabled, false otherwise

CLI Example:

```
salt '*' service.disabled <service name>
```

salt.modules.netbsdservice.**enable**(*name*, ***kwargs*)
Enable the named service to start at boot

CLI Example:

```
salt '*' service.enable <service name>
```

salt.modules.netbsdservice.**enabled**(*name*, ***kwargs*)
Return True if the named service is enabled, false otherwise

CLI Example:

```
salt '*' service.enabled <service name>
```

salt.modules.netbsdservice.**force_reload**(*name*)
Force-reload the named service

CLI Example:

```
salt '*' service.force_reload <service name>
```

salt.modules.netbsdservice.**get_all**()
Return all available boot services

CLI Example:

```
salt '*' service.get_all
```

salt.modules.netbsdservice.**get_disabled**()
Return a set of services that are installed but disabled

CLI Example:

```
salt '*' service.get_disabled
```

salt.modules.netbsdservice.**get_enabled**()
Return a list of service that are enabled on boot

CLI Example:

```
salt '*' service.get_enabled
```

salt.modules.netbsdservice.**missing**(*name*)
The inverse of service.available. Returns `True` if the specified service is not available, otherwise returns `False`.

CLI Example:

```
salt '*' service.missing sshd
```

salt.modules.netbsdservice.**reload**(*name*)
Reload the named service

CLI Example:

```
salt '*' service.reload <service name>
```

salt.modules.netbsdservice.**restart**(*name*)
Restart the named service

CLI Example:

```
salt '*' service.restart <service name>
```

salt.modules.netbsdservice.**start**(*name*)
Start the specified service

CLI Example:

```
salt '*' service.start <service name>
```

salt.modules.netbsdservice.**status**(*name*, *sig=None*)
Return the status for a service, returns a bool whether the service is running.

CLI Example:

```
salt '*' service.status <service name>
```

salt.modules.netbsdservice.**stop**(*name*)
Stop the specified service

CLI Example:

```
salt '*' service.stop <service name>
```

### 13.6.196 salt.modules.netscaler

Module to provide Citrix Netscaler compatibility to Salt (compatible with netscaler 9.2+)

New in version 2015.2.0.

**depends**

- nsnitro Python module

---

**Note**: You can install nsnitro using:

```
pip install nsnitro
```

---

**configuration** This module accepts connection configuration details either as parameters, or as configuration settings in /etc/salt/minion on the relevant minions

```
netscaler.host: 1.2.3.4
netscaler.user: user
netscaler.pass: password
```

This data can also be passed into pillar. Options passed into opts will overwrite options passed into pillar.

**CLI Examples** Calls relying on configuration passed using /etc/salt/minion, grains, or pillars: .. code-block:: bash

salt-call netscaler.server_exists server_name

Calls passing configuration as opts .. code-block:: bash

salt-call netscaler.server_exists server_name netscaler_host=1.2.3.4 netscaler_user=username netscaler_pass=password salt-call netscaler.server_exists server_name netscaler_host=1.2.3.5 netscaler_user=username2 netscaler_pass=password2 salt-call netscaler.server_enable server_name2 netscaler_host=1.2.3.5

salt.modules.netscaler.**server_add**(*s_name*, *s_ip*, *s_state=None*, ***connection_args*)

Add a server Note: The default server state is ENABLED

CLI Example:

```
salt '*' netscaler.server_add 'serverName' 'serverIpAddress'
salt '*' netscaler.server_add 'serverName' 'serverIpAddress' 'serverState'
```

salt.modules.netscaler.**server_delete**(*s_name*, ***connection_args*)

Delete a server

CLI Example:

```
salt '*' netscaler.server_delete 'serverName'
```

salt.modules.netscaler.**server_disable**(*s_name*, ***connection_args*)

Disable a server globally

CLI Example:

```
salt '*' netscaler.server_disable 'serverName'
```

salt.modules.netscaler.**server_enable**(*s_name*, ***connection_args*)

Enables a server globally

CLI Example:

```
salt '*' netscaler.server_enable 'serverName'
```

salt.modules.netscaler.**server_enabled**(*s_name*, ***connection_args*)

Check if a server is enabled globally

CLI Example:

```
salt '*' netscaler.server_enabled 'serverName'
```

salt.modules.netscaler.**server_exists**(*s_name*, *ip=None*, *s_state=None*, ***connection_args*)

Checks if a server exists

CLI Example:

```
salt '*' netscaler.server_exists 'serverName'
```

salt.modules.netscaler.**server_update**(*s_name*, *s_ip*, ***connection_args*)

Update a server's attributes

CLI Example:

```
salt '*' netscaler.server_update 'serverName' 'serverIP'
```

salt.modules.netscaler.**service_disable**(*s_name*, *s_delay=None*, ***connection_args*)

Disable a service

CLI Example:

```
salt '*' netscaler.service_disable 'serviceName'
salt '*' netscaler.service_disable 'serviceName' 'delayInSeconds'
```

salt.modules.netscaler.**service_enable**(*s_name*, ***connection_args*)

Enable a service

CLI Example:

```
salt '*' netscaler.service_enable 'serviceName'
```

salt.modules.netscaler.**service_exists**(*s_name*, ***connection_args*)

Checks if a service exists

CLI Example:

```
salt '*' netscaler.service_exists 'serviceName'
```

salt.modules.netscaler.**service_up**(*s_name*, ***connection_args*)

Checks if a service is UP

CLI Example:

```
salt '*' netscaler.service_up 'serviceName'
```

salt.modules.netscaler.**servicegroup_add**(*sg_name*, *sg_type='HTTP'*, ***connection_args*)

Add a new service group If no service type is specified, HTTP will be used. Most common service types: HTTP, SSL, and SSL_BRIDGE

CLI Example:

```
salt '*' netscaler.servicegroup_add 'serviceGroupName'
salt '*' netscaler.servicegroup_add 'serviceGroupName' 'serviceGroupType'
```

salt.modules.netscaler.**servicegroup_delete**(*sg_name*, ***connection_args*)

Delete a new service group

CLI Example:

```
salt '*' netscaler.servicegroup_delete 'serviceGroupName'
```

salt.modules.netscaler.**servicegroup_exists**(*sg_name*, *sg_type=None*, ***connection_args*)

Checks if a service group exists

CLI Example:

```
salt '*' netscaler.servicegroup_exists 'serviceGroupName'
```

salt.modules.netscaler.**servicegroup_server_add**(*sg_name*, *s_name*, *s_port*, ***connection_args*)

Add a server:port member to a servicegroup

CLI Example:

```
salt '*' netscaler.servicegroup_server_add 'serviceGroupName' 'serverName'
↪'serverPort'
```

salt.modules.netscaler.**servicegroup_server_delete**(*sg_name*, *s_name*, *s_port*, ***connection_args*)

Remove a server:port member from a servicegroup

CLI Example:

```
salt '*' netscaler.servicegroup_server_delete 'serviceGroupName' 'serverName'
↪'serverPort'
```

salt.modules.netscaler.**servicegroup_server_disable**(*sg_name*, *s_name*, *s_port*, ***connection_args*)

Disable a server:port member of a servicegroup

CLI Example:

```
salt '*' netscaler.servicegroup_server_disable 'serviceGroupName' 'serverName'
↪'serverPort'
```

salt.modules.netscaler.**servicegroup_server_enable**(*sg_name*, *s_name*, *s_port*, ***connection_args*)

Enable a server:port member of a servicegroup

CLI Example:

```
salt '*' netscaler.servicegroup_server_enable 'serviceGroupName' 'serverName'
↪'serverPort'
```

salt.modules.netscaler.**servicegroup_server_exists**(*sg_name*, *s_name*, *s_port=None*, ***connection_args*)

Check if a server:port combination is a member of a servicegroup

CLI Example:

```
salt '*' netscaler.servicegroup_server_exists 'serviceGroupName' 'serverName'
↪'serverPort'
```

salt.modules.netscaler.**servicegroup_server_up**(*sg_name*, *s_name*, *s_port*, ***connection_args*)

Check if a server:port combination is in state UP in a servicegroup

CLI Example:

```
salt '*' netscaler.servicegroup_server_up 'serviceGroupName' 'serverName'
↪'serverPort'
```

salt.modules.netscaler.**vserver_add**(*v_name*, *v_ip*, *v_port*, *v_type*, ***connection_args*)

Add a new lb vserver

CLI Example:

```
salt '*' netscaler.vserver_add 'vserverName' 'vserverIP' 'vserverPort'
↪'vserverType'
salt '*' netscaler.vserver_add 'alex.patate.chaude.443' '1.2.3.4' '443' 'SSL'
```

salt.modules.netscaler.**vserver_delete**(*v_name*, ***connection_args*)

Delete a lb vserver

CLI Example:

```
salt '*' netscaler.vserver_delete 'vserverName'
```

salt.modules.netscaler.**vserver_exists**(*v_name*, *v_ip=None*, *v_port=None*, *v_type=None*, ***connection_args*)

Checks if a vserver exists

CLI Example:

```
salt '*' netscaler.vserver_exists 'vserverName'
```

salt.modules.netscaler.**vserver_servicegroup_add**(*v_name*, *sg_name*, ***connection_args*)

Bind a servicegroup to a vserver

CLI Example:

```
salt '*' netscaler.vserver_servicegroup_add 'vserverName' 'serviceGroupName'
```

salt.modules.netscaler.**vserver_servicegroup_delete**(*v_name*, *sg_name*, ***connection_args*)

Unbind a servicegroup from a vserver

CLI Example:

```
salt '*' netscaler.vserver_servicegroup_delete 'vserverName' 'serviceGroupName'
```

salt.modules.netscaler.**vserver_servicegroup_exists**(*v_name*, *sg_name*, ***connection_args*)

Checks if a servicegroup is tied to a vserver

CLI Example:

```
salt '*' netscaler.vserver_servicegroup_exists 'vserverName' 'serviceGroupName'
```

salt.modules.netscaler.**vserver_sslcert_add**(*v_name*, *sc_name*, ***connection_args*)

Binds a SSL certificate to a vserver

CLI Example:

```
salt '*' netscaler.vserver_sslcert_add 'vserverName' 'sslCertificateName'
```

salt.modules.netscaler.**vserver_sslcert_delete**(*v_name*, *sc_name*, ***connection_args*)

Unbinds a SSL certificate from a vserver

CLI Example:

```
salt '*' netscaler.vserver_sslcert_delete 'vserverName' 'sslCertificateName'
```

salt.modules.netscaler.**vserver_sslcert_exists**(*v_name*, *sc_name*, ***connection_args*)

Checks if a SSL certificate is tied to a vserver

CLI Example:

```
salt '*' netscaler.vserver_sslcert_exists 'vserverName' 'sslCertificateName'
```

### 13.6.197 salt.modules.network

Module for gathering and managing network information

salt.modules.network.**active_tcp**()
Return a dict containing information on all of the running TCP connections (currently linux and solaris only)

Changed in version 2015.8.4: Added support for SunOS

CLI Example:

```
salt '*' network.active_tcp
```

salt.modules.network.**arp**()
Return the arp table from the minion

Changed in version 2015.8.0: Added support for SunOS

CLI Example:

```
salt '*' network.arp
```

salt.modules.network.**calc_net**(*ip_addr*, *netmask=None*)
Returns the CIDR of a subnet based on an IP address (CIDR notation supported) and optional netmask.

CLI Example:

```
salt '*' network.calc_net 172.17.0.5 255.255.255.240
salt '*' network.calc_net 2a02:f6e:a000:80:84d8:8332:7866:4e07/64
```

New in version 2015.8.0.

salt.modules.network.**connect**(*host*, *port=None*, ***kwargs*)
Test connectivity to a host using a particular port from the minion.

New in version 2014.7.0.

CLI Example:

```
salt '*' network.connect archlinux.org 80

salt '*' network.connect archlinux.org 80 timeout=3

salt '*' network.connect archlinux.org 80 timeout=3 family=ipv4

salt '*' network.connect google-public-dns-a.google.com port=53 proto=udp timeout=3
```

salt.modules.network.**convert_cidr**(*cidr*)
returns the network and subnet mask of a cidr addr

New in version 2016.3.0.

CLI Example:

```
salt '*' network.convert_cidr 172.31.0.0/16
```

salt.modules.network.**default_route**(*family=None*)
Return default route(s) from routing table

Changed in version 2015.8.0: Added support for SunOS (Solaris 10, Illumos, SmartOS)

CLI Example:

```
salt '*' network.default_route
```

salt.modules.network.**dig**(*host*)
Performs a DNS lookup with dig

CLI Example:

```
salt '*' network.dig archlinux.org
```

salt.modules.network.**get_bufsize**(*iface*)
Return network buffer sizes as a dict (currently linux only)

CLI Example:

```
salt '*' network.get_bufsize eth0
```

salt.modules.network.**get_hostname**()
Get hostname

CLI Example:

```
salt '*' network.get_hostname
```

salt.modules.network.**get_route**(*ip*)
Return routing information for given destination ip

New in version 2015.5.3.

Changed in version 2015.8.0: Added support for SunOS (Solaris 10, Illumos, SmartOS) Added support for OpenBSD

CLI Example:

```
salt '*' network.get_route 10.10.10.10
```

salt.modules.network.**hw_addr**(*iface*)
Return the hardware address (a.k.a. MAC address) for a given interface

CLI Example:

```
salt '*' network.hw_addr eth0
```

salt.modules.network.**hwaddr**(*iface*)
This function is an alias of hw_addr.
Return the hardware address (a.k.a. MAC address) for a given interface

CLI Example:

```
salt '*' network.hw_addr eth0
```

salt.modules.network.**in_subnet**(*cidr*)
Returns True if host is within specified subnet, otherwise False.

CLI Example:

```
salt '*' network.in_subnet 10.0.0.0/16
```

salt.modules.network.**interface**(*iface*)
Return the inet address for a given interface

New in version 2014.7.0.

CLI Example:

```
salt '*' network.interface eth0
```

salt.modules.network.**interface_ip**(*iface*)
Return the inet address for a given interface

New in version 2014.7.0.

CLI Example:

```
salt '*' network.interface_ip eth0
```

salt.modules.network.**interfaces**()
Return a dictionary of information about all the interfaces on the minion

CLI Example:

```
salt '*' network.interfaces
```

salt.modules.network.**ip_addrs**(*interface=None*, *include_loopback=False*, *cidr=None*, *type=None*)
Returns a list of IPv4 addresses assigned to the host. 127.0.0.1 is ignored, unless `include_loopback=True' is indicated. If `interface' is provided, then only IP addresses from that interface will be returned. Providing a CIDR via `cidr="10.0.0.0/8"' will return only the addresses which are within that subnet. If `type' is `public', then only public addresses will be returned. Ditto for `type'='private'.

CLI Example:

```
salt '*' network.ip_addrs
```

salt.modules.network.**ip_addrs6**(*interface=None*, *include_loopback=False*, *cidr=None*)
Returns a list of IPv6 addresses assigned to the host. ::1 is ignored, unless `include_loopback=True' is indicated. If `interface' is provided, then only IP addresses from that interface will be returned. Providing a CIDR via `cidr="2000::/3"' will return only the addresses which are within that subnet.

CLI Example:

```
salt '*' network.ip_addrs6
```

salt.modules.network.**ip_in_subnet**(*ip_addr*, *cidr*)
Returns True if given IP is within specified subnet, otherwise False.

CLI Example:

```
salt '*' network.ip_in_subnet 172.17.0.4 172.16.0.0/12
```

salt.modules.network.**ipaddrs**(*interface=None*, *include_loopback=False*, *cidr=None*, *type=None*)
This function is an alias of `ip_addrs`.

Returns a list of IPv4 addresses assigned to the host. 127.0.0.1 is ignored, unless `include_loopback=True' is indicated. If `interface' is provided, then only IP addresses from that interface will be returned. Providing a CIDR via `cidr="10.0.0.0/8"' will return only the addresses which are within that subnet. If `type' is `public', then only public addresses will be returned. Ditto for `type'='private'.

CLI Example:

```
salt '*' network.ip_addrs
```

salt.modules.network.**ipaddrs6**(*interface=None*, *include_loopback=False*, *cidr=None*)
This function is an alias of `ip_addrs6`.

Returns a list of IPv6 addresses assigned to the host. ::1 is ignored, unless `include_loopback=True' is indicated. If `interface' is provided, then only IP addresses from that interface will be returned. Providing a CIDR via `cidr="2000::/3"' will return only the addresses which are within that subnet.

CLI Example:

```
salt '*' network.ip_addrs6
```

salt.modules.network.**is_loopback**(*ip_addr*)

Check if the given IP address is a loopback address

New in version 2014.7.0.

Changed in version 2015.8.0: IPv6 support

CLI Example:

```
salt '*' network.is_loopback 127.0.0.1
```

salt.modules.network.**is_private**(*ip_addr*)

Check if the given IP address is a private address

New in version 2014.7.0.

Changed in version 2015.8.0: IPv6 support

CLI Example:

```
salt '*' network.is_private 10.0.0.3
```

salt.modules.network.**mod_bufsize**(*iface*, **args*, ***kwargs*)

Modify network interface buffers (currently linux only)

CLI Example:

```
salt '*' network.mod_bufsize tx=<val> rx=<val> rx-mini=<val> rx-jumbo=<val>
```

salt.modules.network.**mod_hostname**(*hostname*)

Modify hostname

Changed in version 2015.8.0: Added support for SunOS (Solaris 10, Illumos, SmartOS)

CLI Example:

```
salt '*' network.mod_hostname master.saltstack.com
```

salt.modules.network.**netstat**()

Return information on open ports and states

**Note:** On BSD minions, the output contains PID info (where available) for each netstat entry, fetched from sockstat/fstat output.

Changed in version 2014.1.4: Added support for OpenBSD, FreeBSD, and NetBSD

Changed in version 2015.8.0: Added support for SunOS

CLI Example:

```
salt '*' network.netstat
```

salt.modules.network.**ping**(*host*, *timeout=False*, *return_boolean=False*)
Performs an ICMP ping to a host

Changed in version 2015.8.0: Added support for SunOS

CLI Example:

```
salt '*' network.ping archlinux.org
```

New in version 2015.5.0.

Return a True or False instead of ping output.

```
salt '*' network.ping archlinux.org return_boolean=True
```

Set the time to wait for a response in seconds.

```
salt '*' network.ping archlinux.org timeout=3
```

salt.modules.network.**reverse_ip**(*ip_addr*)
Returns the reversed IP address

Changed in version 2015.8.0: IPv6 support

CLI Example:

```
salt '*' network.reverse_ip 172.17.0.4
```

salt.modules.network.**routes**(*family=None*)
Return currently configured routes from routing table

Changed in version 2015.8.0: Added support for SunOS (Solaris 10, Illumos, SmartOS)

CLI Example:

```
salt '*' network.routes
```

salt.modules.network.**subnets**(*interfaces=None*)
Returns a list of IPv4 subnets to which the host belongs

CLI Example:

```
salt '*' network.subnets
salt '*' network.subnets interfaces=eth1
```

salt.modules.network.**subnets6**()
Returns a list of IPv6 subnets to which the host belongs

CLI Example:

```
salt '*' network.subnets
```

salt.modules.network.**traceroute**(*host*)
Performs a traceroute to a 3rd party host

Changed in version 2015.8.0: Added support for SunOS

CLI Example:

```
salt '*' network.traceroute archlinux.org
```

salt.modules.network.**wol**(*mac*, *bcast=`255.255.255.255'*, *destport=9*)
Send Wake On Lan packet to a host

CLI Example:

```
salt '*' network.wol 08-00-27-13-69-77
salt '*' network.wol 080027136977 255.255.255.255 7
salt '*' network.wol 08:00:27:13:69:77 255.255.255.255 7
```

### 13.6.198 salt.modules.neutron

Module for handling OpenStack Neutron calls

**depends**

- neutronclient Python module

**configuration** This module is not usable until the user, password, tenant, and auth URL are specified either in a pillar or in the minion's config file. For example:

```
keystone.user: 'admin'
keystone.password: 'password'
keystone.tenant: 'admin'
keystone.auth_url: 'http://127.0.0.1:5000/v2.0/'
keystone.region_name: 'RegionOne'
keystone.service_type: 'network'
```

If configuration for multiple OpenStack accounts is required, they can be set up as different configuration profiles: For example:

```
openstack1:
  keystone.user: 'admin'
  keystone.password: 'password'
  keystone.tenant: 'admin'
  keystone.auth_url: 'http://127.0.0.1:5000/v2.0/'
  keystone.region_name: 'RegionOne'
  keystone.service_type: 'network'

openstack2:
  keystone.user: 'admin'
  keystone.password: 'password'
  keystone.tenant: 'admin'
  keystone.auth_url: 'http://127.0.0.2:5000/v2.0/'
  keystone.region_name: 'RegionOne'
  keystone.service_type: 'network'
```

With this configuration in place, any of the neutron functions can make use of a configuration profile by declaring it explicitly. For example:

```
salt '*' neutron.network_list profile=openstack1
```

salt.modules.neutron.**add_gateway_router**(*router*, *ext_network*, *profile=None*)
Adds an external network gateway to the specified router

CLI Example:

```
salt '*' neutron.add_gateway_router router-name ext-network-name
```

**Parameters**

- **router** -- ID or name of the router
- **ext_network** -- ID or name of the external network the gateway
- **profile** -- Profile to build on (Optional)

**Returns** Added Gateway router information

salt.modules.neutron.**add_interface_router**(*router*, *subnet*, *profile=None*)

Adds an internal network interface to the specified router

CLI Example:

```
salt '*' neutron.add_interface_router router-name subnet-name
```

**Parameters**

- **router** -- ID or name of the router
- **subnet** -- ID or name of the subnet
- **profile** -- Profile to build on (Optional)

**Returns** Added interface information

salt.modules.neutron.**create_firewall_rule**(*protocol*, *action*, *profile=None*, ***kwargs*)

Creates a new firewall rule

CLI Example:

```
salt '*' neutron.create_firewall_rule protocol action
       tenant_id=TENANT_ID name=NAME description=DESCRIPTION ip_version=IP_VERSION
        source_ip_address=SOURCE_IP_ADDRESS destination_ip_address=DESTINATION_IP_
↪ADDRESS source_port=SOURCE_PORT
        destination_port=DESTINATION_PORT shared=SHARED enabled=ENABLED
```

**Parameters**

- **protocol** -- Protocol for the firewall rule, choose ``tcp'',''udp'',''icmp'' or ``None''.
- **action** -- Action for the firewall rule, choose ``allow'' or ``deny''.
- **tenant_id** -- The owner tenant ID. (Optional)
- **name** -- Name for the firewall rule. (Optional)
- **description** -- Description for the firewall rule. (Optional)
- **ip_version** -- IP protocol version, default: 4. (Optional)
- **source_ip_address** -- Source IP address or subnet. (Optional)
- **destination_ip_address** -- Destination IP address or subnet. (Optional)
- **source_port** -- Source port (integer in [1, 65535] or range in a:b). (Optional)
- **destination_port** -- Destination port (integer in [1, 65535] or range in a:b). (Optional)
- **shared** -- Set shared to True, default: False. (Optional)
- **enabled** -- To enable this rule, default: True. (Optional)

salt.modules.neutron.**create_floatingip**(*floating_network*, *port=None*, *profile=None*)

Creates a new floatingIP

CLI Example:

```
salt '*' neutron.create_floatingip network-name port-name
```

**Parameters**

- **floating_network** -- Network name or ID to allocate floatingIP from
- **port** -- Of the port to be associated with the floatingIP (Optional)
- **profile** -- Profile to build on (Optional)

**Returns** Created floatingIP information

salt.modules.neutron.**create_ikepolicy**(*name*, *profile=None*, ***kwargs*)

Creates a new IKEPolicy

CLI Example:

```
salt '*' neutron.create_ikepolicy ikepolicy-name
        phase1_negotiation_mode=main auth_algorithm=sha1
        encryption_algorithm=aes-128 pfs=group5
```

**Parameters**

- **name** -- Name of the IKE policy
- **phase1_negotiation_mode** -- IKE Phase1 negotiation mode in lowercase, default: main (Optional)
- **auth_algorithm** -- Authentication algorithm in lowercase, default: sha1 (Optional)
- **encryption_algorithm** -- Encryption algorithm in lowercase. default:aes-128 (Optional)
- **pfs** -- Prefect Forward Security in lowercase, default: group5 (Optional)
- **units** -- IKE lifetime attribute. default: seconds (Optional)
- **value** -- IKE lifetime attribute. default: 3600 (Optional)
- **ike_version** -- IKE version in lowercase, default: v1 (Optional)
- **profile** -- Profile to build on (Optional)
- **kwargs** --

**Returns** Created IKE policy information

salt.modules.neutron.**create_ipsec_site_connection**(*name*, *ipsecpolicy*, *ikepolicy*, *vpnservice*, *peer_cidrs*, *peer_address*, *peer_id*, *psk*, *admin_state_up=True*, *profile=None*, ***kwargs*)

Creates a new IPsecSiteConnection

CLI Example:

```
salt '*' neutron.show_ipsec_site_connection connection-name
        ipsec-policy-name ikepolicy-name vpnservice-name
        192.168.XXX.XXX/24 192.168.XXX.XXX 192.168.XXX.XXX secret
```

**Parameters**

- **name** -- Set friendly name for the connection
- **ipsecpolicy** -- IPSec policy ID or name associated with this connection

- **ikepolicy** -- IKE policy ID or name associated with this connection
- **vpnservice** -- VPN service instance ID or name associated with this connection
- **peer_cidrs** -- Remote subnet(s) in CIDR format
- **peer_address** -- Peer gateway public IPv4/IPv6 address or FQDN
- **peer_id** -- Peer router identity for authentication Can be IPv4/IPv6 address, e-mail address, key id, or FQDN
- **psk** -- Pre-shared key string
- **initiator** -- Initiator state in lowercase, default:bi-directional
- **admin_state_up** -- Set admin state up to true or false, default: True (Optional)
- **mtu** -- size for the connection, default:1500 (Optional)
- **dpd_action** -- Dead Peer Detection attribute: hold/clear/disabled/ restart/restart-by-peer (Optional)
- **dpd_interval** -- Dead Peer Detection attribute (Optional)
- **dpd_timeout** -- Dead Peer Detection attribute (Optional)
- **profile** -- Profile to build on (Optional)

**Returns** Created IPSec site connection information

salt.modules.neutron.**create_ipsecpolicy**(*name*, *profile=None*, ***kwargs*)

Creates a new IPsecPolicy

CLI Example:

```
salt '*' neutron.create_ipsecpolicy ipsecpolicy-name
        transform_protocol=esp auth_algorithm=sha1
        encapsulation_mode=tunnel encryption_algorithm=aes-128
```

**Parameters**

- **name** -- Name of the IPSec policy
- **transform_protocol** -- Transform protocol in lowercase, default: esp (Optional)
- **auth_algorithm** -- Authentication algorithm in lowercase, default: sha1 (Optional)
- **encapsulation_mode** -- Encapsulation mode in lowercase, default: tunnel (Optional)
- **encryption_algorithm** -- Encryption algorithm in lowercase, default:aes-128 (Optional)
- **pfs** -- Prefect Forward Security in lowercase, default: group5 (Optional)
- **units** -- IPSec lifetime attribute. default: seconds (Optional)
- **value** -- IPSec lifetime attribute. default: 3600 (Optional)
- **profile** -- Profile to build on (Optional)

**Returns** Created IPSec policy information

salt.modules.neutron.**create_network**(*name*, *router_ext=None*, *admin_state_up=True*, *network_type=None*, *physical_network=None*, *segmentation_id=None*, *shared=None*, *profile=None*)

Creates a new network

CLI Example:

```
salt '*' neutron.create_network network-name
salt '*' neutron.create_network network-name profile=openstack1
```

**Parameters**

- **name** -- Name of network to create
- **admin_state_up** -- should the state of the network be up? default: True (Optional)
- **router_ext** -- True then if create the external network (Optional)
- **network_type** -- the Type of network that the provider is such as GRE, VXLAN, VLAN, FLAT, or LOCAL (Optional)
- **physical_network** -- the name of the physical network as neutron knows it (Optional)
- **segmentation_id** -- the vlan id or GRE id (Optional)
- **shared** -- is the network shared or not (Optional)
- **profile** -- Profile to build on (Optional)

**Returns** Created network information

salt.modules.neutron.**create_port**(*name*, *network*, *device_id=None*, *admin_state_up=True*, *profile=None*)

Creates a new port

CLI Example:

```
salt '*' neutron.create_port network-name port-name
```

**Parameters**

- **name** -- Name of port to create
- **network** -- Network name or ID
- **device_id** -- ID of device (Optional)
- **admin_state_up** -- Set admin state up to true or false, default: true (Optional)
- **profile** -- Profile to build on (Optional)

**Returns** Created port information

salt.modules.neutron.**create_router**(*name*, *ext_network=None*, *admin_state_up=True*, *profile=None*)

Creates a new router

CLI Example:

```
salt '*' neutron.create_router new-router-name
```

**Parameters**

- **name** -- Name of router to create (must be first)
- **ext_network** -- ID or name of the external for the gateway (Optional)
- **admin_state_up** -- Set admin state up to true or false, default:true (Optional)
- **profile** -- Profile to build on (Optional)

**Returns** Created router information

salt.modules.neutron.**create_security_group**(*name=None*, *description=None*, *profile=None*)

Creates a new security group

CLI Example:

```
salt '*' neutron.create_security_group security-group-name
↪description='Security group for servers'
```

**Parameters**

- **name** -- Name of security group (Optional)
- **description** -- Description of security group (Optional)
- **profile** -- Profile to build on (Optional)

**Returns** Created security group information

salt.modules.neutron.**create_security_group_rule**(*security_group*, *remote_group_id=None*, *direction='ingress'*, *protocol=None*, *port_range_min=None*, *port_range_max=None*, *ethertype='IPv4'*, *profile=None*)

Creates a new security group rule

CLI Example:

```
salt '*' neutron.show_security_group_rule security-group-rule-id
```

**Parameters**

- **security_group** -- Security group name or ID to add rule
- **remote_group_id** -- Remote security group name or ID to apply rule (Optional)
- **direction** -- Direction of traffic: ingress/egress, default: ingress (Optional)
- **protocol** -- Protocol of packet: null/icmp/tcp/udp, default: null (Optional)
- **port_range_min** -- Starting port range (Optional)
- **port_range_max** -- Ending port range (Optional)
- **ethertype** -- IPv4/IPv6, default: IPv4 (Optional)
- **profile** -- Profile to build on (Optional)

**Returns** Created security group rule information

salt.modules.neutron.**create_subnet**(*network*, *cidr*, *name=None*, *ip_version=4*, *profile=None*)

Creates a new subnet

CLI Example:

```
salt '*' neutron.create_subnet network-name 192.168.1.0/24
```

**Parameters**

- **network** -- Network ID or name this subnet belongs to
- **cidr** -- CIDR of subnet to create (Ex. `192.168.1.0/24')
- **name** -- Name of the subnet to create (Optional)
- **ip_version** -- Version to use, default is 4(IPv4) (Optional)

- **profile** -- Profile to build on (Optional)

**Returns** Created subnet information

salt.modules.neutron.**create_vpnservice**(*subnet*, *router*, *name*, *admin_state_up=True*, *profile=None*)

Creates a new VPN service

CLI Example:

```
salt '*' neutron.create_vpnservice router-name name
```

**Parameters**

- **subnet** -- Subnet unique identifier for the VPN service deployment
- **router** -- Router unique identifier for the VPN service
- **name** -- Set a name for the VPN service
- **admin_state_up** -- Set admin state up to true or false, default:True (Optional)
- **profile** -- Profile to build on (Optional)

**Returns** Created VPN service information

salt.modules.neutron.**delete_firewall_rule**(*firewall_rule*, *profile=None*)

Deletes the specified firewall_rule

CLI Example:

```
salt '*' neutron.delete_firewall_rule firewall-rule
```

**Parameters**

- **firewall_rule** -- ID or name of firewall rule to delete
- **profile** -- Profile to build on (Optional)

**Returns** True(Succeed) or False

salt.modules.neutron.**delete_floatingip**(*floatingip_id*, *profile=None*)

Deletes the specified floating IP

CLI Example:

```
salt '*' neutron.delete_floatingip floatingip-id
```

**Parameters**

- **floatingip_id** -- ID of floatingIP to delete
- **profile** -- Profile to build on (Optional)

**Returns** True(Succeed) or False

salt.modules.neutron.**delete_ikepolicy**(*ikepolicy*, *profile=None*)

Deletes the specified IKEPolicy

CLI Example:

```
salt '*' neutron.delete_ikepolicy ikepolicy-name
```

**Parameters**

- **ikepolicy** -- ID or name of IKE policy to delete
- **profile** -- Profile to build on (Optional)

**Returns** True(Succeed) or False

salt.modules.neutron.**delete_ipsec_site_connection**(*ipsec_site_connection*, *profile=None*)

Deletes the specified IPsecSiteConnection

CLI Example:

```
salt '*' neutron.delete_ipsec_site_connection connection-name
```

**Parameters**

- **ipsec_site_connection** -- ID or name of ipsec site connection to delete
- **profile** -- Profile to build on (Optional)

**Returns** True(Succeed) or False

salt.modules.neutron.**delete_ipsecpolicy**(*ipsecpolicy*, *profile=None*)

Deletes the specified IPsecPolicy

CLI Example:

```
salt '*' neutron.delete_ipsecpolicy ipsecpolicy-name
```

**Parameters**

- **ipsecpolicy** -- ID or name of IPSec policy to delete
- **profile** -- Profile to build on (Optional)

**Returns** True(Succeed) or False

salt.modules.neutron.**delete_network**(*network*, *profile=None*)

Deletes the specified network

CLI Example:

```
salt '*' neutron.delete_network network-name
salt '*' neutron.delete_network network-name profile=openstack1
```

**Parameters**

- **network** -- ID or name of network to delete
- **profile** -- Profile to build on (Optional)

**Returns** True(Succeed) or False

salt.modules.neutron.**delete_port**(*port*, *profile=None*)

Deletes the specified port

CLI Example:

```
salt '*' neutron.delete_network port-name
salt '*' neutron.delete_network port-name profile=openstack1
```

**Parameters**

- **port** -- port name or ID
- **profile** -- Profile to build on (Optional)

**Returns** True(Succeed) or False

salt.modules.neutron.**delete_quota**(*tenant_id*, *profile=None*)

Delete the specified tenant's quota value

CLI Example:

```
salt '*' neutron.update_quota tenant-id
salt '*' neutron.update_quota tenant-id profile=openstack1
```

**Parameters**

- **tenant_id** -- ID of tenant to quota delete
- **profile** -- Profile to build on (Optional)

**Returns** True(Delete succeed) or False(Delete failed)

salt.modules.neutron.**delete_router**(*router*, *profile=None*)

Delete the specified router

CLI Example:

```
salt '*' neutron.delete_router router-name
```

**Parameters**

- **router** -- ID or name of router to delete
- **profile** -- Profile to build on (Optional)

**Returns** True(Succeed) or False

salt.modules.neutron.**delete_security_group**(*security_group*, *profile=None*)

Deletes the specified security group

CLI Example:

```
salt '*' neutron.delete_security_group security-group-name
```

**Parameters**

- **security_group** -- ID or name of security group to delete
- **profile** -- Profile to build on (Optional)

**Returns** True(Succeed) or False

salt.modules.neutron.**delete_security_group_rule**(*security_group_rule_id*, *profile=None*)

Deletes the specified security group rule

CLI Example:

```
salt '*' neutron.delete_security_group_rule security-group-rule-id
```

**Parameters**

- **security_group_rule_id** -- ID of security group rule to delete
- **profile** -- Profile to build on (Optional)

**Returns** True(Succeed) or False

salt.modules.neutron.**delete_subnet**(*subnet*, *profile=None*)

Deletes the specified subnet

CLI Example:

```
salt '*' neutron.delete_subnet subnet-name
salt '*' neutron.delete_subnet subnet-name profile=openstack1
```

**Parameters**

- **subnet** -- ID or name of subnet to delete

- **profile** -- Profile to build on (Optional)

**Returns** True(Succeed) or False

salt.modules.neutron.**delete_vpnservice**(*vpnservice*, *profile=None*)

Deletes the specified VPN service

CLI Example:

```
salt '*' neutron.delete_vpnservice vpnservice-name
```

**Parameters**

- **vpnservice** -- ID or name of vpn service to delete
- **profile** -- Profile to build on (Optional)

**Returns** True(Succeed) or False

salt.modules.neutron.**get_quotas_tenant**(*profile=None*)

Fetches tenant info in server's context for following quota operation

CLI Example:

```
salt '*' neutron.get_quotas_tenant
salt '*' neutron.get_quotas_tenant profile=openstack1
```

**Parameters** **profile** -- Profile to build on (Optional)

**Returns** Quotas information

salt.modules.neutron.**list_agents**(*profile=None*)

List agents.

CLI Example:

```
salt '*' neutron.list_agents
```

**Parameters** **profile** -- Profile to build on (Optional)

**Returns** agents message.

salt.modules.neutron.**list_extensions**(*profile=None*)

Fetches a list of all extensions on server side

CLI Example:

```
salt '*' neutron.list_extensions
salt '*' neutron.list_extensions profile=openstack1
```

**Parameters** **profile** -- Profile to build on (Optional)

**Returns** List of extensions

salt.modules.neutron.**list_firewall_rules**(*profile=None*)

Fetches a list of all firewall rules for a tenant CLI Example:

```
salt '*' neutron.list_firewall_rules
```

**Parameters** **profile** -- Profile to build on (Optional)

**Returns** List of firewall rules

salt.modules.neutron.**list_firewalls**(*profile=None*)

Fetches a list of all firewalls for a tenant CLI Example:

```
salt '*' neutron.list_firewalls
```

**Parameters** **profile** -- Profile to build on (Optional)
**Returns** List of firewalls

salt.modules.neutron.**list_floatingips**(*profile=None*)
Fetch a list of all floatingIPs for a tenant

CLI Example:

```
salt '*' neutron.list_floatingips
salt '*' neutron.list_floatingips profile=openstack1
```

**Parameters** **profile** -- Profile to build on (Optional)
**Returns** List of floatingIP

salt.modules.neutron.**list_ikepolicies**(*profile=None*)
Fetches a list of all configured IKEPolicies for a tenant

CLI Example:

```
salt '*' neutron.list_ikepolicies
salt '*' neutron.list_ikepolicies profile=openstack1
```

**Parameters** **profile** -- Profile to build on (Optional)
**Returns** List of IKE policy

salt.modules.neutron.**list_ipsec_site_connections**(*profile=None*)
Fetches all configured IPsec Site Connections for a tenant

CLI Example:

```
salt '*' neutron.list_ipsec_site_connections
salt '*' neutron.list_ipsec_site_connections profile=openstack1
```

**Parameters** **profile** -- Profile to build on (Optional)
**Returns** List of IPSec site connection

salt.modules.neutron.**list_ipsecpolicies**(*profile=None*)
Fetches a list of all configured IPsecPolicies for a tenant

CLI Example:

```
salt '*' neutron.list_ipsecpolicies ipsecpolicy-name
salt '*' neutron.list_ipsecpolicies ipsecpolicy-name profile=openstack1
```

**Parameters** **profile** -- Profile to build on (Optional)
**Returns** List of IPSec policy

salt.modules.neutron.**list_l3_agent_hosting_routers**(*router*, *profile=None*)
List L3 agents hosting a router.

CLI Example:

```
salt '*' neutron.list_l3_agent_hosting_routers router
```

:param router:router name or ID to query. :param profile: Profile to build on (Optional) :return: L3 agents message.

salt.modules.neutron.**list_networks**(*profile=None*)
Fetches a list of all networks for a tenant

CLI Example:

```
salt '*' neutron.list_networks
salt '*' neutron.list_networks profile=openstack1
```

**Parameters** **profile** -- Profile to build on (Optional)
**Returns** List of network

salt.modules.neutron.**list_ports**(*profile=None*)
Fetches a list of all networks for a tenant

CLI Example:

```
salt '*' neutron.list_ports
salt '*' neutron.list_ports profile=openstack1
```

**Parameters** **profile** -- Profile to build on (Optional)
**Returns** List of port

salt.modules.neutron.**list_quotas**(*profile=None*)
Fetches all tenants quotas

CLI Example:

```
salt '*' neutron.list_quotas
salt '*' neutron.list_quotas profile=openstack1
```

**Parameters** **profile** -- Profile to build on (Optional)
**Returns** List of quotas

salt.modules.neutron.**list_routers**(*profile=None*)
Fetches a list of all routers for a tenant

CLI Example:

```
salt '*' neutron.list_routers
salt '*' neutron.list_routers profile=openstack1
```

**Parameters** **profile** -- Profile to build on (Optional)
**Returns** List of router

salt.modules.neutron.**list_security_group_rules**(*profile=None*)
Fetches a list of all security group rules for a tenant

CLI Example:

```
salt '*' neutron.list_security_group_rules
salt '*' neutron.list_security_group_rules profile=openstack1
```

**Parameters** **profile** -- Profile to build on (Optional)
**Returns** List of security group rule

salt.modules.neutron.**list_security_groups**(*profile=None*)
Fetches a list of all security groups for a tenant

CLI Example:

```
salt '*' neutron.list_security_groups
salt '*' neutron.list_security_groups profile=openstack1
```

**Parameters** **profile** -- Profile to build on (Optional)
**Returns** List of security group

salt.modules.neutron.**list_subnets**(*profile=None*)
Fetches a list of all networks for a tenant

CLI Example:

```
salt '*' neutron.list_subnets
salt '*' neutron.list_subnets profile=openstack1
```

**Parameters** **profile** -- Profile to build on (Optional)
**Returns** List of subnet

salt.modules.neutron.**list_vpnservices**(*retrieve_all=True*, *profile=None*, ***kwargs*)
Fetches a list of all configured VPN services for a tenant

CLI Example:

```
salt '*' neutron.list_vpnservices
```

**Parameters**

- **retrieve_all** -- True or False, default: True (Optional)
- **profile** -- Profile to build on (Optional)

**Returns** List of VPN service

salt.modules.neutron.**remove_gateway_router**(*router*, *profile=None*)
Removes an external network gateway from the specified router

CLI Example:

```
salt '*' neutron.remove_gateway_router router-name
```

**Parameters**

- **router** -- ID or name of router
- **profile** -- Profile to build on (Optional)

**Returns** True(Succeed) or False

salt.modules.neutron.**remove_interface_router**(*router*, *subnet*, *profile=None*)
Removes an internal network interface from the specified router

CLI Example:

```
salt '*' neutron.remove_interface_router router-name subnet-name
```

**Parameters**

- **router** -- ID or name of the router
- **subnet** -- ID or name of the subnet
- **profile** -- Profile to build on (Optional)

**Returns** True(Succeed) or False

salt.modules.neutron.**show_firewall**(*firewall*, *profile=None*)
Fetches information of a specific firewall rule

CLI Example:

```
salt '*' neutron.show_firewall firewall
```

**Parameters**

- **firewall** -- ID or name of firewall to look up
- **profile** -- Profile to build on (Optional)

**Returns** firewall information

salt.modules.neutron.**show_firewall_rule**(*firewall_rule*, *profile=None*)
Fetches information of a specific firewall rule

CLI Example:

```
salt '*' neutron.show_firewall_rule firewall-rule-name
```

**Parameters**

- **ipsecpolicy** -- ID or name of firewall rule to look up
- **profile** -- Profile to build on (Optional)

**Returns** firewall rule information

salt.modules.neutron.**show_floatingip**(*floatingip_id*, *profile=None*)
Fetches information of a certain floatingIP

CLI Example:

```
salt '*' neutron.show_floatingip floatingip-id
```

**Parameters**

- **floatingip_id** -- ID of floatingIP to look up
- **profile** -- Profile to build on (Optional)

**Returns** Floating IP information

salt.modules.neutron.**show_ikepolicy**(*ikepolicy*, *profile=None*)
Fetches information of a specific IKEPolicy

CLI Example:

```
salt '*' neutron.show_ikepolicy ikepolicy-name
```

**Parameters**

- **ikepolicy** -- ID or name of ikepolicy to look up
- **profile** -- Profile to build on (Optional)

**Returns** IKE policy information

salt.modules.neutron.**show_ipsec_site_connection**(*ipsec_site_connection*, *profile=None*)
Fetches information of a specific IPsecSiteConnection

CLI Example:

```
salt '*' neutron.show_ipsec_site_connection connection-name
```

**Parameters**

- **ipsec_site_connection** -- ID or name of ipsec site connection to look up
- **profile** -- Profile to build on (Optional)

**Returns** IPSec site connection information

salt.modules.neutron.**show_ipsecpolicy**(*ipsecpolicy*, *profile=None*)
Fetches information of a specific IPsecPolicy

CLI Example:

```
salt '*' neutron.show_ipsecpolicy ipsecpolicy-name
```

**Parameters**

- **ipsecpolicy** -- ID or name of IPSec policy to look up
- **profile** -- Profile to build on (Optional)

**Returns** IPSec policy information

`salt.modules.neutron.`**`show_network`**`(`*network*, *profile=None*`)`

Fetches information of a certain network

CLI Example:

```
salt '*' neutron.show_network network-name
salt '*' neutron.show_network network-name profile=openstack1
```

**Parameters**

- **network** -- ID or name of network to look up
- **profile** -- Profile to build on (Optional)

**Returns** Network information

`salt.modules.neutron.`**`show_port`**`(`*port*, *profile=None*`)`

Fetches information of a certain port

CLI Example:

```
salt '*' neutron.show_port port-id
salt '*' neutron.show_port port-id profile=openstack1
```

**Parameters**

- **port** -- ID or name of port to look up
- **profile** -- Profile to build on (Optional)

**Returns** Port information

`salt.modules.neutron.`**`show_quota`**`(`*tenant_id*, *profile=None*`)`

Fetches information of a certain tenant's quotas

CLI Example:

```
salt '*' neutron.show_quota tenant-id
salt '*' neutron.show_quota tenant-id profile=openstack1
```

**Parameters**

- **tenant_id** -- ID of tenant
- **profile** -- Profile to build on (Optional)

**Returns** Quota information

`salt.modules.neutron.`**`show_router`**`(`*router*, *profile=None*`)`

Fetches information of a certain router

CLI Example:

```
salt '*' neutron.show_router router-name
```

**Parameters**

- **router** -- ID or name of router to look up
- **profile** -- Profile to build on (Optional)

**Returns** Router information

salt.modules.neutron.**show_security_group**(*security_group*, *profile=None*)
Fetches information of a certain security group

CLI Example:

```
salt '*' neutron.show_security_group security-group-name
```

**Parameters**

- **security_group** -- ID or name of security group to look up
- **profile** -- Profile to build on (Optional)

**Returns** Security group information

salt.modules.neutron.**show_security_group_rule**(*security_group_rule_id*, *profile=None*)
Fetches information of a certain security group rule

CLI Example:

```
salt '*' neutron.show_security_group_rule security-group-rule-id
```

**Parameters**

- **security_group_rule_id** -- ID of security group rule to look up
- **profile** -- Profile to build on (Optional)

**Returns** Security group rule information

salt.modules.neutron.**show_subnet**(*subnet*, *profile=None*)
Fetches information of a certain subnet

CLI Example:

```
salt '*' neutron.show_subnet subnet-name
```

**Parameters**

- **subnet** -- ID or name of subnet to look up
- **profile** -- Profile to build on (Optional)

**Returns** Subnet information

salt.modules.neutron.**show_vpnservice**(*vpnservice*, *profile=None*, ***kwargs*)
Fetches information of a specific VPN service

CLI Example:

```
salt '*' neutron.show_vpnservice vpnservice-name
```

**Parameters**

- **vpnservice** -- ID or name of vpn service to look up
- **profile** -- Profile to build on (Optional)

**Returns** VPN service information

salt.modules.neutron.**update_firewall_rule**(*firewall_rule*, *protocol=None*, *action=None*, *name=None*, *description=None*, *ip_version=None*, *source_ip_address=None*, *destination_ip_address=None*, *source_port=None*, *destination_port=None*, *shared=None*, *enabled=None*, *profile=None*)

Update a firewall rule

CLI Example:

```
salt '*' neutron.update_firewall_rule firewall_rule protocol=PROTOCOL
↪action=ACTION
        name=NAME description=DESCRIPTION ip_version=IP_VERSION
        source_ip_address=SOURCE_IP_ADDRESS destination_ip_address=DESTINATION_IP_
↪ADDRESS
        source_port=SOURCE_PORT destination_port=DESTINATION_PORT shared=SHARED
↪enabled=ENABLED
```

**Parameters**

- **firewall_rule** -- ID or name of firewall rule to update.
- **protocol** -- Protocol for the firewall rule, choose ``tcp'',''udp'',''icmp'' or ``None''. (Optional)
- **action** -- Action for the firewall rule, choose ``allow'' or ``deny''. (Optional)
- **name** -- Name for the firewall rule. (Optional)
- **description** -- Description for the firewall rule. (Optional)
- **ip_version** -- IP protocol version, default: 4. (Optional)
- **source_ip_address** -- Source IP address or subnet. (Optional)
- **destination_ip_address** -- Destination IP address or subnet. (Optional)
- **source_port** -- Source port (integer in [1, 65535] or range in a:b). (Optional)
- **destination_port** -- Destination port (integer in [1, 65535] or range in a:b). (Optional)
- **shared** -- Set shared to True, default: False. (Optional)
- **enabled** -- To enable this rule, default: True. (Optional)
- **profile** -- Profile to build on (Optional)

salt.modules.neutron.**update_floatingip**(*floatingip_id*, *port*, *profile=None*)

Updates a floatingIP

CLI Example:

```
salt '*' neutron.update_floatingip network-name port-name
```

**Parameters**

- **floatingip_id** -- ID of floatingIP
- **port** -- ID or name of port
- **profile** -- Profile to build on (Optional)

**Returns** Value of updated floating IP information

salt.modules.neutron.**update_network**(*network*, *name*, *profile=None*)

Updates a network

CLI Example:

```
salt '*' neutron.update_network network-name new-network-name
```

**Parameters**

- **network** -- ID or name of network to update
- **name** -- Name of this network
- **profile** -- Profile to build on (Optional)

**Returns** Value of updated network information

salt.modules.neutron.**update_port**(*port*, *name*, *admin_state_up=True*, *profile=None*)

Updates a port

CLI Example:

```
salt '*' neutron.update_port port-name network-name new-port-name
```

**Parameters**

- **port** -- Port name or ID
- **name** -- Name of this port
- **admin_state_up** -- Set admin state up to true or false, default: true (Optional)
- **profile** -- Profile to build on (Optional)

**Returns** Value of updated port information

salt.modules.neutron.**update_quota**(*tenant_id*, *subnet=None*, *router=None*, *network=None*, *floatingip=None*, *port=None*, *security_group=None*, *security_group_rule=None*, *profile=None*)

Update a tenant's quota

CLI Example:

```
salt '*' neutron.update_quota tenant-id subnet=40 router=50
                              network=10 floatingip=30 port=30
```

**Parameters**

- **tenant_id** -- ID of tenant
- **subnet** -- Value of subnet quota (Optional)
- **router** -- Value of router quota (Optional)
- **network** -- Value of network quota (Optional)
- **floatingip** -- Value of floatingip quota (Optional)
- **port** -- Value of port quota (Optional)
- **security_group** -- Value of security group (Optional)
- **security_group_rule** -- Value of security group rule (Optional)
- **profile** -- Profile to build on (Optional)

**Returns** Value of updated quota

salt.modules.neutron.**update_router**(*router*, *name=None*, *admin_state_up=None*, *profile=None*, ***kwargs*)

Updates a router

CLI Example:

```
salt '*' neutron.update_router router_id name=new-router-name
        admin_state_up=True
```

**Parameters**

- **router** -- ID or name of router to update
- **name** -- Name of this router
- **ext_network** -- ID or name of the external for the gateway (Optional)
- **admin_state_up** -- Set admin state up to true or false, default: true (Optional)
- **profile** -- Profile to build on (Optional)
- **kwargs** --

**Returns** Value of updated router information

salt.modules.neutron.**update_security_group**(*security_group*, *name=None*, *description=None*, *profile=None*)

Updates a security group

CLI Example:

```
salt '*' neutron.update_security_group security-group-name                    new-
↪security-group-name
```

**Parameters**

- **security_group** -- ID or name of security group to update
- **name** -- Name of this security group (Optional)
- **description** -- Description of security group (Optional)
- **profile** -- Profile to build on (Optional)

**Returns** Value of updated security group information

salt.modules.neutron.**update_subnet**(*subnet*, *name*, *profile=None*)

Updates a subnet

CLI Example:

```
salt '*' neutron.update_subnet subnet-name new-subnet-name
```

**Parameters**

- **subnet** -- ID or name of subnet to update
- **name** -- Name of this subnet
- **profile** -- Profile to build on (Optional)

**Returns** Value of updated subnet information

salt.modules.neutron.**update_vpnservice**(*vpnservice*, *desc*, *profile=None*)

Updates a VPN service

CLI Example:

```
salt '*' neutron.update_vpnservice vpnservice-name desc='VPN Service1'
```

**Parameters**

- **vpnservice** -- ID or name of vpn service to update
- **desc** -- Set a description for the VPN service
- **profile** -- Profile to build on (Optional)

**Returns** Value of updated VPN service information

### 13.6.199 salt.modules.nfs3

Module for managing NFS version 3.

salt.modules.nfs3.**del_export**(*exports='/etc/exports'*, *path=None*)

Remove an export

CLI Example:

```
salt '*' nfs.del_export /media/storage
```

salt.modules.nfs3.**list_exports**(*exports='/etc/exports'*)

List configured exports

CLI Example:

```
salt '*' nfs.list_exports
```

### 13.6.200 salt.modules.nftables

Support for nftables

salt.modules.nftables.**append**(*table='filter'*, *chain=None*, *rule=None*, *family='ipv4'*)

Append a rule to the specified table & chain.

**This function accepts a rule in a standard nftables command format**, starting with the chain. Trying to force users to adapt to a new method of creating rules would be irritating at best, and we already have a parser that can handle it.

CLI Example:

```
salt '*' nftables.append filter input \
    rule='input tcp dport 22 log accept'

IPv6:
salt '*' nftables.append filter input \
    rule='input tcp dport 22 log accept' \
    family=ipv6
```

salt.modules.nftables.**build_rule**(*table=None*, *chain=None*, *command=None*, *position=''*, *full=None*, *family='ipv4'*, ***kwargs*)

Build a well-formatted nftables rule based on kwargs. A *table* and *chain* are not required, unless *full* is True.

If *full* is *True*, then *table*, *chain* and *command* are required. *command* may be specified as either insert, append, or delete. This will return the nftables command, exactly as it would be used from the command line.

If a position is required (as with *insert* or *delete*), it may be specified as *position*. This will only be useful if *full* is True.

If *connstate* is passed in, it will automatically be changed to *state*.

CLI Examples:

```
salt '*' nftables.build_rule match=state \
    connstate=RELATED,ESTABLISHED jump=ACCEPT
salt '*' nftables.build_rule filter input command=insert position=3 \
    full=True match=state state=related,established jump=accept

IPv6:
salt '*' nftables.build_rule match=state \
    connstate=related,established jump=accept \
    family=ipv6
salt '*' nftables.build_rule filter input command=insert position=3 \
    full=True match=state state=related,established jump=accept \
    family=ipv6
```

salt.modules.nftables.**check**(*table='filter'*, *chain=None*, *rule=None*, *family='ipv4'*)

Check for the existence of a rule in the table and chain

**This function accepts a rule in a standard nftables command format**, starting with the chain. Trying to force users to adapt to a new method of creating rules would be irritating at best, and we already have a parser that can handle it.

CLI Example:

```
salt '*' nftables.check filter input \
    rule='input tcp dport 22 log accept'

IPv6:
salt '*' nftables.check filter input \
    rule='input tcp dport 22 log accept' \
    family=ipv6
```

salt.modules.nftables.**check_chain**(*table='filter'*, *chain=None*, *family='ipv4'*)

New in version 2014.7.0.

Check for the existence of a chain in the table

CLI Example:

```
salt '*' nftables.check_chain filter input

IPv6:
salt '*' nftables.check_chain filter input family=ipv6
```

salt.modules.nftables.**check_table**(*table=None*, *family='ipv4'*)

Check for the existence of a table

CLI Example:

```
salt '*' nftables.check_table nat
```

salt.modules.nftables.**delete**(*table*, *chain=None*, *position=None*, *rule=None*, *family='ipv4'*)

**Delete a rule from the specified table & chain, specifying either the rule** in its entirety, or the rule's position in the chain.

**This function accepts a rule in a standard nftables command format**, starting with the chain. Trying to force users to adapt to a new method of creating rules would be irritating at best, and we already have a parser that can handle it.

CLI Examples:

```
salt '*' nftables.delete filter input position=3

salt '*' nftables.delete filter input \
    rule='input tcp dport 22 log accept'

IPv6:
salt '*' nftables.delete filter input position=3 family=ipv6

salt '*' nftables.delete filter input \
    rule='input tcp dport 22 log accept' \
    family=ipv6
```

salt.modules.nftables.**delete_chain**(*table='filter'*, *chain=None*, *family='ipv4'*)

New in version 2014.7.0.

Delete the chain from the specified table.

CLI Example:

```
salt '*' nftables.delete_chain filter input

salt '*' nftables.delete_chain filter foo

IPv6:
salt '*' nftables.delete_chain filter input family=ipv6

salt '*' nftables.delete_chain filter foo family=ipv6
```

salt.modules.nftables.**delete_table**(*table*, *family='ipv4'*)

New in version 2014.7.0.

Create new custom table.

CLI Example:

```
salt '*' nftables.delete_table filter

IPv6:
salt '*' nftables.delete_table filter family=ipv6
```

salt.modules.nftables.**flush**(*table='filter'*, *chain=''*, *family='ipv4'*)

Flush the chain in the specified table, flush all chains in the specified table if chain is not specified.

CLI Example:

```
salt '*' nftables.flush filter

salt '*' nftables.flush filter input

IPv6:
salt '*' nftables.flush filter input family=ipv6
```

salt.modules.nftables.**get_rule_handle**(*table='filter'*, *chain=None*, *rule=None*, *family='ipv4'*)

Get the handle for a particular rule

**This function accepts a rule in a standard nftables command format**, starting with the chain. Trying to force users to adapt to a new method of creating rules would be irritating at best, and we already have a parser that can handle it.

CLI Example:

```
salt '*' nftables.get_rule_handle filter input \
    rule='input tcp dport 22 log accept'

IPv6:
salt '*' nftables.get_rule_handle filter input \
    rule='input tcp dport 22 log accept' \
    family=ipv6
```

salt.modules.nftables.**get_rules**(*family='ipv4'*)

Return a data structure of the current, in-memory rules

CLI Example:

```
salt '*' nftables.get_rules

salt '*' nftables.get_rules family=ipv6
```

salt.modules.nftables.**get_saved_rules**(*conf_file=None*, *family='ipv4'*)

Return a data structure of the rules in the conf file

CLI Example:

```
salt '*' nftables.get_saved_rules
```

salt.modules.nftables.**insert**(*table='filter'*, *chain=None*, *position=None*, *rule=None*, *family='ipv4'*)

Insert a rule into the specified table & chain, at the specified position.

If position is not specified, rule will be inserted in first position.

**This function accepts a rule in a standard nftables command format**, starting with the chain. Trying to force users to adapt to a new method of creating rules would be irritating at best, and we already have a parser that can handle it.

CLI Examples:

```
salt '*' nftables.insert filter input \
    rule='input tcp dport 22 log accept'

salt '*' nftables.insert filter input position=3 \
    rule='input tcp dport 22 log accept'

IPv6:
salt '*' nftables.insert filter input \
    rule='input tcp dport 22 log accept' \
    family=ipv6

salt '*' nftables.insert filter input position=3 \
    rule='input tcp dport 22 log accept' \
    family=ipv6
```

salt.modules.nftables.**new_chain**(*table='filter'*, *chain=None*, *table_type=None*, *hook=None*, *priority=None*, *family='ipv4'*)

New in version 2014.7.0.

Create new chain to the specified table.

CLI Example:

```
salt '*' nftables.new_chain filter input

salt '*' nftables.new_chain filter input \
```

```
        table_type=filter hook=input priority=0

salt '*' nftables.new_chain filter foo

IPv6:
salt '*' nftables.new_chain filter input family=ipv6

salt '*' nftables.new_chain filter input \
        table_type=filter hook=input priority=0 family=ipv6

salt '*' nftables.new_chain filter foo family=ipv6
```

salt.modules.nftables.**new_table**(*table*, *family='ipv4'*)

New in version 2014.7.0.

Create new custom table.

CLI Example:

```
salt '*' nftables.new_table filter

IPv6:
salt '*' nftables.new_table filter family=ipv6
```

salt.modules.nftables.**save**(*filename=None*, *family='ipv4'*)

Save the current in-memory rules to disk

CLI Example:

```
salt '*' nftables.save /etc/nftables
```

salt.modules.nftables.**version**()

Return version from nftables --version

CLI Example:

```
salt '*' nftables.version
```

### 13.6.201 salt.modules.nginx

Support for nginx

salt.modules.nginx.**build_info**()

Return server and build arguments

CLI Example:

```
salt '*' nginx.build_info
```

salt.modules.nginx.**configtest**()

test configuration and exit

CLI Example:

```
salt '*' nginx.configtest
```

salt.modules.nginx.**signal**(*signal=None*)

Signals nginx to start, reload, reopen or stop.

CLI Example:

```
salt '*' nginx.signal reload
```

salt.modules.nginx.**status**(*url='http://127.0.0.1/status'*)

Return the data from an Nginx status page as a dictionary. http://wiki.nginx.org/HttpStubStatusModule

**url** The URL of the status page. Defaults to `http://127.0.0.1/status`

CLI Example:

```
salt '*' nginx.status
```

salt.modules.nginx.**version**()

Return server version from nginx -v

CLI Example:

```
salt '*' nginx.version
```

### 13.6.202 salt.modules.node

Module for full system inspection.

salt.modules.node.**build**(*format='qcow2'*, *path='/tmp/'*)

Build an image from a current system description. The image is a system image can be output in bootable ISO or QCOW2 formats.

Node uses the image building library Kiwi to perform the actual build.

Parameters:

- **format**: Specifies output format: ``qcow2'' or ``iso. Default: *qcow2*.
- **path**: Specifies output path where to store built image. Default: */tmp*.

CLI Example:

```
salt myminion node.build
salt myminion node.build format=iso path=/opt/builds/
```

salt.modules.node.**export**(*local=False*, *path='/tmp'*, *format='qcow2'*)

Export an image description for Kiwi.

Parameters:

- **local**: Specifies True or False if the export has to be in the local file. Default: False.
- **path**: **If *local=True*, then specifies the path where file with the Kiwi description is written.** Default: */tmp*.

CLI Example:

```
salt myminion node.export
salt myminion node.export format=iso path=/opt/builds/
```

salt.modules.node.**inspect**(*mode='all'*, *priority=19*, ***kwargs*)

Start node inspection and save the data to the database for further query.

Parameters:

- **mode**: Clarify inspection mode: configuration, payload, all (default)

  **payload**

  - **filter**: Comma-separated directories to track payload.
- **priority**: (advanced) Set priority of the inspection. Default is low priority.

CLI Example:

```
salt '*' node.inspect
salt '*' node.inspect configuration
salt '*' node.inspect payload filter=/opt,/ext/oracle
```

salt.modules.node.**query**(*scope*, ***kwargs*)

Query the node for specific information.

Parameters:

- **scope**: Specify scope of the query.
  - **System**: Return system data.
  - **Software**: Return software information.
  - **Services**: Return known services.
  - **Identity**: **Return user accounts information for this system.**

    **accounts** Can be either `local', `remote' or `all' (equal to ``local,remote''). Remote accounts cannot be resolved on all systems, but only those, which supports `passwd -S -a'.

    **disabled** True (or False, default) to return only disabled accounts.
  - **payload**: **Payload scope parameters:**

    **filter** Include only results which path starts from the filter string.

    **time** Display time in Unix ticks or format according to the configured TZ (default) Values: ticks, tz (default)

    **size** Format size. Values: B, KB, MB, GB

    **type** Include payload type. Values (comma-separated): directory (or dir), link, file (default) Example (returns everything): type=directory,link,file

    **owners** Resolve UID/GID to an actual names or leave them numeric (default). Values: name (default), id

    **brief** Return just a list of payload elements, if True. Default: False.
  - **all**: Return all information (default).

CLI Example:

```
salt '*' node.query scope=os
salt '*' node.query payload type=file,link filter=/etc size=Kb brief=False
```

### 13.6.203 salt.modules.nova

Module for handling OpenStack Nova calls

**depends**

- novaclient Python module

**configuration** This module is not usable until the user, password, tenant, and auth URL are specified either in a pillar or in the minion's config file. For example:

```
keystone.user: admin
keystone.password: verybadpass
keystone.tenant: admin
keystone.auth_url: 'http://127.0.0.1:5000/v2.0/'
# Optional
keystone.region_name: 'regionOne'
```

If configuration for multiple OpenStack accounts is required, they can be set up as different configuration profiles: For example:

```
openstack1:
  keystone.user: admin
  keystone.password: verybadpass
  keystone.tenant: admin
  keystone.auth_url: 'http://127.0.0.1:5000/v2.0/'

openstack2:
  keystone.user: admin
  keystone.password: verybadpass
  keystone.tenant: admin
  keystone.auth_url: 'http://127.0.0.2:5000/v2.0/'
```

With this configuration in place, any of the nova functions can make use of a configuration profile by declaring it explicitly. For example:

```
salt '*' nova.flavor_list profile=openstack1
```

salt.modules.nova.**boot**(*name*, *flavor_id=0*, *image_id=0*, *profile=None*, *timeout=300*)

Boot (create) a new instance

**name** Name of the new instance (must be first)

**flavor_id** Unique integer ID for the flavor

**image_id** Unique integer ID for the image

**timeout** How long to wait, after creating the instance, for the provider to return information about it (default 300 seconds).

New in version 2014.1.0.

CLI Example:

```
salt '*' nova.boot myinstance flavor_id=4596 image_id=2
```

The flavor_id and image_id are obtained from nova.flavor_list and nova.image_list

```
salt '*' nova.flavor_list
salt '*' nova.image_list
```

salt.modules.nova.**delete**(*instance_id*, *profile=None*)

Delete an instance

**instance_id** ID of the instance to be deleted

CLI Example:

```
salt '*' nova.delete 1138
```

salt.modules.nova.**flavor_create**(*name*, *flavor_id=0*, *ram=0*, *disk=0*, *vcpus=1*, *profile=None*)

Add a flavor to nova (nova flavor-create). The following parameters are required:

**name** Name of the new flavor (must be first)

**flavor_id** Unique integer ID for the new flavor

**ram** Memory size in MB

**disk** Disk size in GB

**vcpus** Number of vcpus

CLI Example:

```
salt '*' nova.flavor_create myflavor flavor_id=6                    ram=4096 disk=10
↪vcpus=1
```

salt.modules.nova.**flavor_delete**(*flavor_id*, *profile=None*)
Delete a flavor from nova by id (nova flavor-delete)

CLI Example:

```
salt '*' nova.flavor_delete 7
```

salt.modules.nova.**flavor_list**(*profile=None*)
Return a list of available flavors (nova flavor-list)

CLI Example:

```
salt '*' nova.flavor_list
```

salt.modules.nova.**image_list**(*name=None*, *profile=None*)
Return a list of available images (nova images-list + nova image-show) If a name is provided, only that image will be displayed.

CLI Examples:

```
salt '*' nova.image_list
salt '*' nova.image_list myimage
```

salt.modules.nova.**image_meta_delete**(*image_id=None*, *name=None*, *keys=None*, *profile=None*)
Delete a key=value pair from the metadata for an image (nova image-meta set)

CLI Examples:

```
salt '*' nova.image_meta_delete                  6f52b2ff-0b31-4d84-8fd1-
 ↪af45b84824f6 keys=cheese
salt '*' nova.image_meta_delete name=myimage keys=salad,beans
```

salt.modules.nova.**image_meta_set**(*image_id=None*, *name=None*, *profile=None*, ***kwargs*)
Sets a key=value pair in the metadata for an image (nova image-meta set)

CLI Examples:

```
salt '*' nova.image_meta_set 6f52b2ff-0b31-4d84-8fd1-af45b84824f6
 ↪cheese=gruyere
salt '*' nova.image_meta_set name=myimage salad=pasta beans=baked
```

salt.modules.nova.**keypair_add**(*name*, *pubfile=None*, *pubkey=None*, *profile=None*)
Add a keypair to nova (nova keypair-add)

CLI Examples:

```
salt '*' nova.keypair_add mykey pubfile='/home/myuser/.ssh/id_rsa.pub'
salt '*' nova.keypair_add mykey pubkey='ssh-rsa <key> myuser@mybox'
```

salt.modules.nova.**keypair_delete**(*name*, *profile=None*)
Add a keypair to nova (nova keypair-delete)

CLI Example:

```
salt '*' nova.keypair_delete mykey'
```

salt.modules.nova.**keypair_list**(*profile=None*)
Return a list of available keypairs (nova keypair-list)

CLI Example:

```
salt '*' nova.keypair_list
```

salt.modules.nova.**list**(*profile=None*)
To maintain the feel of the nova command line, this function simply calls the server_list function.

CLI Example:

```
salt '*' nova.list
```

salt.modules.nova.**lock**(*instance_id*, *profile=None*)
Lock an instance
**instance_id** ID of the instance to be locked
CLI Example:

```
salt '*' nova.lock 1138
```

salt.modules.nova.**resume**(*instance_id*, *profile=None*)
Resume an instance
**instance_id** ID of the instance to be resumed
CLI Example:

```
salt '*' nova.resume 1138
```

salt.modules.nova.**secgroup_create**(*name*, *description*, *profile=None*)
Add a secgroup to nova (nova secgroup-create)

CLI Example:

```
salt '*' nova.secgroup_create mygroup 'This is my security group'
```

salt.modules.nova.**secgroup_delete**(*name*, *profile=None*)
Delete a secgroup to nova (nova secgroup-delete)

CLI Example:

```
salt '*' nova.secgroup_delete mygroup
```

salt.modules.nova.**secgroup_list**(*profile=None*)
Return a list of available security groups (nova items-list)

CLI Example:

```
salt '*' nova.secgroup_list
```

salt.modules.nova.**server_by_name**(*name*, *profile=None*)
Return information about a server
**name** Server Name
CLI Example:

```
salt '*' nova.server_by_name myserver profile=openstack
```

salt.modules.nova.**server_list**(*profile=None*)
Return list of active servers

CLI Example:

```
salt '*' nova.server_list
```

salt.modules.nova.**server_list_detailed**(*profile=None*)
Return detailed list of active servers

CLI Example:

```
salt '*' nova.server_list_detailed
```

salt.modules.nova.**server_show**(*server_id*, *profile=None*)
Return detailed information for an active server

CLI Example:

```
salt '*' nova.server_show <server_id>
```

salt.modules.nova.**show**(*server_id*, *profile=None*)
To maintain the feel of the nova command line, this function simply calls the server_show function.

CLI Example:

```
salt '*' nova.show
```

salt.modules.nova.**suspend**(*instance_id*, *profile=None*)
Suspend an instance
**instance_id** ID of the instance to be suspended
CLI Example:

```
salt '*' nova.suspend 1138
```

salt.modules.nova.**volume_attach**(*name*, *server_name*, *device='/dev/xvdb'*, *profile=None*, *timeout=300*)
Attach a block storage volume
**name** Name of the new volume to attach
**server_name** Name of the server to attach to
**device** Name of the device on the server
**profile** Profile to build on
CLI Example:

```
salt '*' nova.volume_attach myblock slice.example.com profile=openstack
salt '*' nova.volume_attach myblock server.example.com                 device='/
↪dev/xvdb' profile=openstack
```

salt.modules.nova.**volume_create**(*name*, *size=100*, *snapshot=None*, *voltype=None*, *profile=None*)
Create a block storage volume
**name** Name of the new volume (must be first)
**size** Volume size
**snapshot** Block storage snapshot id
**voltype** Type of storage
**profile** Profile to build on
CLI Example:

```
salt '*' nova.volume_create myblock size=300 profile=openstack
```

salt.modules.nova.**volume_delete**(*name*, *profile=None*)
Destroy the volume
**name** Name of the volume
**profile** Profile to build on
CLI Example:

```
salt '*' nova.volume_delete myblock profile=openstack
```

salt.modules.nova.**volume_detach**(*name*, *profile=None*, *timeout=300*)

Attach a block storage volume

**name** Name of the new volume to attach

**server_name** Name of the server to detach from

**profile** Profile to build on

CLI Example:

```
salt '*' nova.volume_detach myblock profile=openstack
```

salt.modules.nova.**volume_list**(*search_opts=None*, *profile=None*)

List storage volumes

**search_opts** Dictionary of search options

**profile** Profile to use

CLI Example:

```
salt '*' nova.volume_list                search_opts='{"display_name": "myblock"}
 ↪'                profile=openstack
```

salt.modules.nova.**volume_show**(*name*, *profile=None*)

Create a block storage volume

**name** Name of the volume

**profile** Profile to use

CLI Example:

```
salt '*' nova.volume_show myblock profile=openstack
```

### 13.6.204 salt.modules.npm

Manage and query NPM packages.

salt.modules.npm.**install**(*pkg=None*, *pkgs=None*, *dir=None*, *runas=None*, *registry=None*, *env=None*, *dry_run=False*, *silent=True*)

Install an NPM package.

If no directory is specified, the package will be installed globally. If no package is specified, the dependencies (from package.json) of the package in the given directory will be installed.

**pkg** A package name in any format accepted by NPM, including a version identifier

**pkgs** A list of package names in the same format as the `name` parameter

New in version 2014.7.0.

**dir** The target directory in which to install the package, or None for global installation

**runas** The user to run NPM with

**registry** The NPM registry to install the package from.

New in version 2014.7.0.

**env** Environment variables to set when invoking npm. Uses the same `env` format as the *cmd.run* execution function.

New in version 2014.7.0.

**silent** Whether or not to run NPM install with --silent flag.

New in version 2016.3.0.

**dry_run** Whether or not to run NPM install with --dry-run flag.

New in version 2015.8.4.

**silent** Whether or not to run NPM install with --silent flag.

New in version 2015.8.5.

CLI Example:

```
salt '*' npm.install coffee-script

salt '*' npm.install coffee-script@1.0.1
```

salt.modules.npm.**list**(*pkg=None*, *dir=None*, *runas=None*, *env=None*)

List installed NPM packages.

If no directory is specified, this will return the list of globally- installed packages.

**pkg** Limit package listing by name

**dir** The directory whose packages will be listed, or None for global installation

**runas** The user to run NPM with

New in version 2014.7.0.

**env** Environment variables to set when invoking npm. Uses the same `env` format as the *cmd.run* execution function.

New in version 2014.7.0.

CLI Example:

```
salt '*' npm.list
```

salt.modules.npm.**uninstall**(*pkg*, *dir=None*, *runas=None*, *env=None*)

Uninstall an NPM package.

If no directory is specified, the package will be uninstalled globally.

**pkg** A package name in any format accepted by NPM

**dir** The target directory from which to uninstall the package, or None for global installation

**runas** The user to run NPM with

**env** Environment variables to set when invoking npm. Uses the same `env` format as the *cmd.run* execution function.

New in version 2015.5.3.

CLI Example:

```
salt '*' npm.uninstall coffee-script
```

### 13.6.205 salt.modules.nspawn

Manage nspawn containers

New in version 2015.8.0.

systemd-nspawn(1) is a tool used to manage lightweight namespace containers. This execution module provides several functions to help manage these containers.

Minions running systemd >= 219 will place new containers in `/var/lib/machines`, while those running systemd < 219 will place them in `/var/lib/container`.

salt.modules.nspawn.**bootstrap_container**(*name*, *dist=None*, *version=None*)

Bootstrap a container from package servers, if dist is None the os the minion is running as will be created, otherwise the needed bootstrapping tools will need to be available on the host.

CLI Example:

```
salt myminion nspawn.bootstrap_container <name>
```

salt.modules.nspawn.**bootstrap_salt**(*name*, *config=None*, *approve_key=True*, *install=True*, *pub_key=None*, *priv_key=None*, *bootstrap_url=None*, *force_install=False*, *unconditional_install=False*, *bootstrap_delay=None*, *bootstrap_args=None*, *bootstrap_shell=None*)

Bootstrap a container from package servers, if dist is None the os the minion is running as will be created, otherwise the needed bootstrapping tools will need to be available on the host.

CLI Example:

```
salt '*' nspawn.bootstrap_salt arch1
```

salt.modules.nspawn.**copy_to**(*name*, **args*, ***kwargs*)

Copy a file from the host into a container

**name** Container name

**source** File to be copied to the container

**dest** Destination on the container. Must be an absolute path.

**overwrite** [False] Unless this option is set to `True`, then if a file exists at the location specified by the `dest` argument, an error will be raised.

makedirs : False

Create the parent directory on the container if it does not already exist.

CLI Example:

```
salt 'minion' nspawn.copy_to /tmp/foo /root/foo
```

salt.modules.nspawn.**disable**(*name*, **args*, ***kwargs*)

Set the named container to *not* be launched at boot

CLI Example:

```
salt myminion nspawn.enable <name>
```

salt.modules.nspawn.**enable**(*name*, **args*, ***kwargs*)

Set the named container to be launched at boot

CLI Example:

```
salt myminion nspawn.enable <name>
```

salt.modules.nspawn.**exists**(*name*)

Returns true if the named container exists

CLI Example:

```
salt myminion nspawn.exists <name>
```

salt.modules.nspawn.**info**(*name*, ***kwargs*)

Return info about a container

---

**Note:** The container must be running for `machinectl` to gather information about it. If the container is stopped, then this function will start it.

---

**start** [False] If `True`, then the container will be started to retrieve the info. A `Started` key will be in the return data if the container was started.

CLI Example:

```
salt myminion nspawn.info arch1
salt myminion nspawn.info arch1 force_start=False
```

salt.modules.nspawn.**list_all**()

Lists all nspawn containers

CLI Example:

```
salt myminion nspawn.list_all
```

salt.modules.nspawn.**list_running**()

Lists running nspawn containers

---

**Note**: `nspawn.list` also works to list running containers

---

CLI Example:

```
salt myminion nspawn.list_running
salt myminion nspawn.list
```

salt.modules.nspawn.**list_stopped**()

Lists stopped nspawn containers

CLI Example:

```
salt myminion nspawn.list_stopped
```

salt.modules.nspawn.**pid**(*name*, **args*, ***kwargs*)

Returns the PID of a container

**name** Container name

CLI Example:

```
salt myminion nspawn.pid arch1
```

salt.modules.nspawn.**poweroff**(*name*)

Issue a clean shutdown to the container. Equivalent to running `machinectl poweroff` on the named container.

For convenience, running `nspawn.stop``(as shown in the CLI examples below) is equivalent to running ``nspawn.poweroff`.

---

**Note**: `machinectl poweroff` is only supported in systemd >= 219. On earlier systemd versions, running this function will simply issue a clean shutdown via `systemctl`.

---

CLI Examples:

```
salt myminion nspawn.poweroff arch1
salt myminion nspawn.stop arch1
```

salt.modules.nspawn.**pull_dkr**(*url*, *name*, *index*)

Execute a `machinectl pull-dkr` to download a docker image and add it to /var/lib/machines as a new container.

**Note:** Requires systemd >= 219

**url** URL from which to download the container
**name** Name for the new container
**index** URL of the Docker index server from which to pull (must be an `http://` or `https://` URL).

CLI Examples:

```
salt myminion nspawn.pull_dkr centos/centos6 cent6 index=https://get.docker.com
salt myminion nspawn.pull_docker centos/centos6 cent6 index=https://get.docker.com
```

`salt.modules.nspawn.`**`pull_raw`**(*url*, *name*, *verify=False*)
Execute a `machinectl pull-raw` to download a .qcow2 or raw disk image, and add it to /var/lib/machines as a new container.

**Note:** Requires systemd >= 219

**url** URL from which to download the container
**name** Name for the new container
**verify** [False] Perform signature or checksum verification on the container. See the `machinectl(1)` man page (section titled ``Image Transfer Commands'') for more information on requirements for image verification. To perform signature verification, use `verify=signature`. For checksum verification, use `verify=checksum`. By default, no verification will be performed.

CLI Examples:

```
salt myminion nspawn.pull_raw http://ftp.halifax.rwth-aachen.de/fedora/linux/
↪releases/21/Cloud/Images/x86_64/Fedora-Cloud-Base-20141203-21.x86_64.raw.xz
↪fedora21
```

`salt.modules.nspawn.`**`pull_tar`**(*url*, *name*, *verify=False*)
Execute a `machinectl pull-raw` to download a .tar container image, and add it to /var/lib/machines as a new container.

**Note:** Requires systemd >= 219

**url** URL from which to download the container
**name** Name for the new container
**verify** [False] Perform signature or checksum verification on the container. See the `machinectl(1)` man page (section titled ``Image Transfer Commands'') for more information on requirements for image verification. To perform signature verification, use `verify=signature`. For checksum verification, use `verify=checksum`. By default, no verification will be performed.

CLI Examples:

```
salt myminion nspawn.pull_tar http://foo.domain.tld/containers/archlinux-2015.02.
↪01.tar.gz arch2
```

`salt.modules.nspawn.`**`reboot`**(*name*, **args*, ***kwargs*)
Reboot the container by sending a SIGINT to its init process. Equivalent to running `machinectl reboot` on the named container.

For convenience, running `nspawn.restart` (as shown in the CLI examples below) is equivalent to running `nspawn.reboot`.

**Note:** `machinectl reboot` is only supported in systemd >= 219. On earlier systemd versions, running this function will instead restart the container via `systemctl`.

CLI Examples:

```
salt myminion nspawn.reboot arch1
salt myminion nspawn.restart arch1
```

`salt.modules.nspawn.`**`remove`**(*name*, **args*, ***kwargs*)

Remove the named container

**Warning:** This function will remove all data associated with the container. It will not, however, remove the btrfs subvolumes created by pulling container images (*`nspawn.pull_raw`*, *`nspawn.pull_tar`*, *`nspawn.pull_dkr`*).

**stop** [False] If `True`, the container will be destroyed even if it is running/frozen.

CLI Examples:

```
salt '*' nspawn.remove foo
salt '*' nspawn.remove foo stop=True
```

`salt.modules.nspawn.`**`retcode`**(*name*, *cmd*, *no_start=False*, *preserve_state=True*, *stdin=None*, *python_shell=True*, *output_loglevel='debug'*, *use_vt=False*, *ignore_retcode=False*, *keep_env=None*)

Run *`cmd.retcode`* within a container

**name** Name of the container in which to run the command

**cmd** Command to run

**no_start** [False] If the container is not running, don't start it

**preserve_state** [True] After running the command, return the container to its previous state

**stdin** [None] Standard input to be used for the command

**output_loglevel** [debug] Level at which to log the output from the command. Set to `quiet` to suppress logging.

**use_vt** [False] Use SaltStack's utils.vt to stream output to console. Assumes `output=all`.

**keep_env** [None] If not passed, only a sane default PATH environment variable will be set. If `True`, all environment variables from the container's host will be kept. Otherwise, a comma-separated list (or Python list) of environment variable names can be passed, and those environment variables will be kept.

CLI Example:

```
salt myminion nspawn.retcode mycontainer 'ip addr show'
```

`salt.modules.nspawn.`**`run`**(*name*, *cmd*, *no_start=False*, *preserve_state=True*, *stdin=None*, *python_shell=True*, *output_loglevel='debug'*, *use_vt=False*, *ignore_retcode=False*, *keep_env=None*)

Run *`cmd.run`* within a container

**name** Name of the container in which to run the command

**cmd** Command to run

**no_start** [False] If the container is not running, don't start it

**preserve_state** [True] After running the command, return the container to its previous state

**stdin** [None] Standard input to be used for the command

**output_loglevel** [debug] Level at which to log the output from the command. Set to `quiet` to suppress logging.

**use_vt** [False] Use SaltStack's utils.vt to stream output to console.
**keep_env** [None] If not passed, only a sane default PATH environment variable will be set. If `True`, all environment variables from the container's host will be kept. Otherwise, a comma-separated list (or Python list) of environment variable names can be passed, and those environment variables will be kept.
CLI Example:

```
salt myminion nspawn.run mycontainer 'ifconfig -a'
```

salt.modules.nspawn.**run_all**(*name*, *cmd*, *no_start=False*, *preserve_state=True*, *stdin=None*, *python_shell=True*, *output_loglevel='debug'*, *use_vt=False*, *ignore_retcode=False*, *keep_env=None*)
Run *cmd.run_all* within a container

---

**Note:** While the command is run within the container, it is initiated from the host. Therefore, the PID in the return dict is from the host, not from the container.

---

**name** Name of the container in which to run the command
**cmd** Command to run
**no_start** [False] If the container is not running, don't start it
**preserve_state** [True] After running the command, return the container to its previous state
**stdin** [None] Standard input to be used for the command
**output_loglevel** [debug] Level at which to log the output from the command. Set to `quiet` to suppress logging.
**use_vt** [False] Use SaltStack's utils.vt to stream output to console. Assumes `output=all`.
**keep_env** [None] If not passed, only a sane default PATH environment variable will be set. If `True`, all environment variables from the container's host will be kept. Otherwise, a comma-separated list (or Python list) of environment variable names can be passed, and those environment variables will be kept.

CLI Example:

```
salt myminion nspawn.run_all mycontainer 'ip addr show'
```

salt.modules.nspawn.**run_stderr**(*name*, *cmd*, *no_start=False*, *preserve_state=True*, *stdin=None*, *python_shell=True*, *output_loglevel='debug'*, *use_vt=False*, *ignore_retcode=False*, *keep_env=None*)
Run *cmd.run_stderr* within a container
**name** Name of the container in which to run the command
**cmd** Command to run
**no_start** [False] If the container is not running, don't start it
**preserve_state** [True] After running the command, return the container to its previous state
**stdin** [None] Standard input to be used for the command
**output_loglevel** [debug] Level at which to log the output from the command. Set to `quiet` to suppress logging.
**use_vt** [False] Use SaltStack's utils.vt to stream output to console. Assumes `output=all`.
**keep_env** [None] If not passed, only a sane default PATH environment variable will be set. If `True`, all environment variables from the container's host will be kept. Otherwise, a comma-separated list (or Python list) of environment variable names can be passed, and those environment variables will be kept.
CLI Example:

```
salt myminion nspawn.run_stderr mycontainer 'ip addr show'
```

salt.modules.nspawn.**run_stdout**(*name*, *cmd*, *no_start=False*, *preserve_state=True*, *stdin=None*, *python_shell=True*, *output_loglevel='debug'*, *use_vt=False*, *ignore_retcode=False*, *keep_env=None*)

Run `cmd.run_stdout` within a container

**name** Name of the container in which to run the command

**cmd** Command to run

**no_start** [False] If the container is not running, don't start it

**preserve_state** [True] After running the command, return the container to its previous state

**stdin** [None] Standard input to be used for the command

**output_loglevel** [debug] Level at which to log the output from the command. Set to `quiet` to suppress logging.

**use_vt** [False] Use SaltStack's utils.vt to stream output to console. Assumes `output=all`.

**keep_env** [None] If not passed, only a sane default PATH environment variable will be set. If `True`, all environment variables from the container's host will be kept. Otherwise, a comma-separated list (or Python list) of environment variable names can be passed, and those environment variables will be kept.

CLI Example:

```
salt myminion nspawn.run_stdout mycontainer 'ifconfig -a'
```

salt.modules.nspawn.**start**(*name*, **args*, ***kwargs*)

Start the named container

CLI Example:

```
salt myminion nspawn.start <name>
```

salt.modules.nspawn.**state**(*name*, **args*, ***kwargs*)

Return state of container (running or stopped)

CLI Example:

```
salt myminion nspawn.state <name>
```

salt.modules.nspawn.**terminate**(*name*)

Kill all processes in the container without issuing a clean shutdown. Equivalent to running `machinectl terminate` on the named container.

For convenience, running `nspawn.stop` and passing `kill=True` (as shown in the CLI examples below) is equivalent to running `nspawn.terminate`.

---

**Note**: `machinectl terminate` is only supported in systemd >= 219. On earlier systemd versions, running this function will simply issue a clean shutdown via `systemctl`.

---

CLI Examples:

```
salt myminion nspawn.terminate arch1
salt myminion nspawn.stop arch1 kill=True
```

### 13.6.206 salt.modules.omapi

This module interacts with an ISC DHCP Server via OMAPI. server_ip and server_port params may be set in the minion config or pillar:

```
omapi.server_ip: 127.0.0.1
omapi.server_port: 7991
```

**depends** pypureomapi Python module

salt.modules.omapi.**add_host**(*mac*, *name=None*, *ip=None*, *ddns=False*, *group=None*, *supersede_host=False*)

Add a host object for the given mac.

CLI Example:

```
salt dhcp-server omapi.add_host ab:ab:ab:ab:ab:ab name=host1
```

Add ddns-hostname and a fixed-ip statements:

```
salt dhcp-server omapi.add_host ab:ab:ab:ab:ab:ab name=host1 ip=10.1.1.1 ddns=true
```

salt.modules.omapi.**delete_host**(*mac=None*, *name=None*)

Delete the host with the given mac or name.

CLI Examples:

```
salt dhcp-server omapi.delete_host name=host1
salt dhcp-server omapi.delete_host mac=ab:ab:ab:ab:ab:ab
```

### 13.6.207 salt.modules.openbsd_sysctl

Module for viewing and modifying OpenBSD sysctl parameters

salt.modules.openbsd_sysctl.**assign**(*name*, *value*)

Assign a single sysctl parameter for this minion

CLI Example:

```
salt '*' sysctl.assign net.inet.ip.forwarding 1
```

salt.modules.openbsd_sysctl.**get**(*name*)

Return a single sysctl parameter for this minion

CLI Example:

```
salt '*' sysctl.get hw.physmem
```

salt.modules.openbsd_sysctl.**persist**(*name*, *value*, *config='/etc/sysctl.conf'*)

Assign and persist a simple sysctl parameter for this minion

CLI Example:

```
salt '*' sysctl.persist net.inet.ip.forwarding 1
```

salt.modules.openbsd_sysctl.**show**(*config_file=False*)

Return a list of sysctl parameters for this minion

CLI Example:

```
salt '*' sysctl.show
```

### 13.6.208 salt.modules.openbsdpkg

Package support for OpenBSD

**Important**: If you feel that Salt should be using this module to manage packages on a minion, and it is using a different module (or gives an error similar to *`pkg.install' is not available*), see *here*.

salt.modules.openbsdpkg.**install**(*name=None, pkgs=None, sources=None, **kwargs*)

Install the passed package

Return a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

CLI Example, Install one package:

```
salt '*' pkg.install <package name>
```

CLI Example, Install more than one package:

```
salt '*' pkg.install pkgs='["<package name>", "<package name>"]'
```

CLI Example, Install more than one package from a alternate source (e.g. salt file-server, HTTP, FTP, local filesystem):

```
salt '*' pkg.install sources='[{"<pkg name>": "salt://pkgs/<pkg filename>"}]'
```

salt.modules.openbsdpkg.**latest_version**(**names, **kwargs*)

The available version of the package in the repository

CLI Example:

```
salt '*' pkg.latest_version <package name>
```

salt.modules.openbsdpkg.**list_pkgs**(*versions_as_list=False, **kwargs*)

List the packages currently installed as a dict:

```
{'<package_name>': '<version>'}
```

CLI Example:

```
salt '*' pkg.list_pkgs
```

salt.modules.openbsdpkg.**purge**(*name=None, pkgs=None, **kwargs*)

Package purges are not supported, this function is identical to `remove()`.

**name** The name of the package to be deleted.

Multiple Package Options:

**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.purge <package name>
salt '*' pkg.purge <package1>,<package2>,<package3>
salt '*' pkg.purge pkgs='["foo", "bar"]'
```

salt.modules.openbsdpkg.**remove**(*name=None*, *pkgs=None*, ***kwargs*)

Remove a single package with pkg_delete

Multiple Package Options:

**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.remove <package name>
salt '*' pkg.remove <package1>,<package2>,<package3>
salt '*' pkg.remove pkgs='["foo", "bar"]'
```

salt.modules.openbsdpkg.**version**(**names*, ***kwargs*)

Returns a string representing the package version or an empty string if not installed. If more than one package name is specified, a dict of name/version pairs is returned.

CLI Example:

```
salt '*' pkg.version <package name>
salt '*' pkg.version <package1> <package2> <package3> ...
```

### 13.6.209 salt.modules.openbsdrcctl

The rcctl service module for OpenBSD

salt.modules.openbsdrcctl.**available**(*name*)

Return True if the named service is available.

CLI Example:

```
salt '*' service.available sshd
```

salt.modules.openbsdrcctl.**disable**(*name*, ***kwargs*)

Disable the named service to not start at boot.

CLI Example:

```
salt '*' service.disable <service name>
```

salt.modules.openbsdrcctl.**disabled**(*name*)

Return True if the named service is disabled at boot, False otherwise.

CLI Example:

```
salt '*' service.disabled <service name>
```

salt.modules.openbsdrcctl.**enable**(*name*, ***kwargs*)

Enable the named service to start at boot.

**flags** [None] Set optional flags to run the service with.

service.flags can be used to change the default flags.

CLI Example:

```
salt '*' service.enable <service name>
salt '*' service.enable <service name> flags=<flags>
```

salt.modules.openbsdrcctl.**enabled**(*name*, ***kwargs*)

Return True if the named service is enabled at boot and the provided flags match the configured ones (if any). Return False otherwise.

**name** Service name

CLI Example:

```
salt '*' service.enabled <service name>
salt '*' service.enabled <service name> flags=<flags>
```

salt.modules.openbsdrcctl.**get_all**()

Return all installed services.

CLI Example:

```
salt '*' service.get_all
```

salt.modules.openbsdrcctl.**get_disabled**()

Return what services are available but not enabled to start at boot.

CLI Example:

```
salt '*' service.get_disabled
```

salt.modules.openbsdrcctl.**get_enabled**()

Return what services are set to run on boot.

CLI Example:

```
salt '*' service.get_enabled
```

salt.modules.openbsdrcctl.**missing**(*name*)

The inverse of service.available. Return True if the named service is not available.

CLI Example:

```
salt '*' service.missing sshd
```

salt.modules.openbsdrcctl.**reload**(*name*)

Reload the named service.

CLI Example:

```
salt '*' service.reload <service name>
```

salt.modules.openbsdrcctl.**restart**(*name*)

Restart the named service.

CLI Example:

```
salt '*' service.restart <service name>
```

salt.modules.openbsdrcctl.**start**(*name*)

Start the named service.

CLI Example:

```
salt '*' service.start <service name>
```

salt.modules.openbsdrcctl.**status**(*name*, *sig=None*)
Return the status for a service, returns a bool whether the service is running.

CLI Example:

```
salt '*' service.status <service name>
```

salt.modules.openbsdrcctl.**stop**(*name*)
Stop the named service.

CLI Example:

```
salt '*' service.stop <service name>
```

### 13.6.210 salt.modules.openbsdservice

The service module for OpenBSD

---

**Important**: If you feel that Salt should be using this module to manage services on a minion, and it is using a different module (or gives an error similar to *`service.start' is not available*), see *here*.

---

salt.modules.openbsdservice.**available**(*name*)
New in version 2014.7.0.

Returns `True` if the specified service is available, otherwise returns `False`.

CLI Example:

```
salt '*' service.available sshd
```

salt.modules.openbsdservice.**disabled**(*name*)
New in version 2014.7.0.

Return True if the named service is disabled, false otherwise

CLI Example:

```
salt '*' service.disabled <service name>
```

salt.modules.openbsdservice.**enabled**(*name*, ***kwargs*)
New in version 2014.7.0.

Return True if the named service is enabled, false otherwise

CLI Example:

```
salt '*' service.enabled <service name>
```

salt.modules.openbsdservice.**get_all**()
New in version 2014.7.0.

Return all available boot services

CLI Example:

```
salt '*' service.get_all
```

salt.modules.openbsdservice.**get_disabled**()
New in version 2014.7.0.

Return a set of services that are installed but disabled

CLI Example:

```
salt '*' service.get_disabled
```

salt.modules.openbsdservice.**get_enabled**()
New in version 2014.7.0.

Return a list of service that are enabled on boot

CLI Example:

```
salt '*' service.get_enabled
```

salt.modules.openbsdservice.**missing**(*name*)
New in version 2014.7.0.

The inverse of service.available. Returns `True` if the specified service is not available, otherwise returns `False`.

CLI Example:

```
salt '*' service.missing sshd
```

salt.modules.openbsdservice.**reload**(*name*)
New in version 2014.7.0.

Reload the named service

CLI Example:

```
salt '*' service.reload <service name>
```

salt.modules.openbsdservice.**restart**(*name*)
Restart the named service

CLI Example:

```
salt '*' service.restart <service name>
```

salt.modules.openbsdservice.**start**(*name*)
Start the specified service

CLI Example:

```
salt '*' service.start <service name>
```

salt.modules.openbsdservice.**status**(*name*, *sig=None*)
Return the status for a service, returns a bool whether the service is running.

CLI Example:

```
salt '*' service.status <service name>
```

salt.modules.openbsdservice.**stop**(*name*)
Stop the specified service

CLI Example:

```
salt '*' service.stop <service name>
```

### 13.6.211 salt.modules.openstack_config

Modify, retrieve, or delete values from OpenStack configuration files.

**maintainer** Jeffrey C. Ollie <jeff@ocjtech.us>

**maturity** new

**depends**

**platform** linux

salt.modules.openstack_config.**delete**(*filename*, *section*, *parameter*)
Delete a value from an OpenStack configuration file.
**filename** The full path to the configuration file
**section** The section from which to delete the parameter
**parameter** The parameter to delete
CLI Example:

```
salt-call openstack_config.delete /etc/keystone/keystone.conf sql connection
```

salt.modules.openstack_config.**get**(*filename*, *section*, *parameter*)
Get a value from an OpenStack configuration file.
**filename** The full path to the configuration file
**section** The section from which to search for the parameter
**parameter** The parameter to return
CLI Example:

```
salt-call openstack_config.get /etc/keystone/keystone.conf sql connection
```

salt.modules.openstack_config.**set**(*filename*, *section*, *parameter*, *value*)
Set a value in an OpenStack configuration file.
**filename** The full path to the configuration file
**section** The section in which the parameter will be set
**parameter** The parameter to change
**value** The value to set
CLI Example:

```
salt-call openstack_config.set /etc/keystone/keystone.conf sql connection foo
```

### 13.6.212 salt.modules.openvswitch module

Support for Open vSwitch - module with basic Open vSwitch commands.

Suitable for setting up Openstack Neutron.

**codeauthor** Jiri Kotlin <jiri.kotlin@ultimum.io>

salt.modules.openvswitch.**bridge_create**(*br*, *may_exist=True*)
Creates a new bridge.

**Args**: br: A string - bridge name may_exist: Bool, if False - attempting to create a bridge that exists returns False.
**Returns**: True on success, else False.
New in version 2016.3.0.

CLI Example: .. code-block:: bash
salt `*' openvswitch.bridge_create br0

salt.modules.openvswitch.**bridge_delete**(*br*, *if_exists=True*)
Deletes bridge and all of its ports.
**Args**: br: A string - bridge name if_exists: Bool, if False - attempting to delete a bridge that does not exist returns False.
**Returns**: True on success, else False.
New in version 2016.3.0.

CLI Example: .. code-block:: bash
salt `*' openvswitch.bridge_delete br0

salt.modules.openvswitch.**bridge_exists**(*br*)
Tests whether bridge exists as a real or fake bridge.
**Returns**: True if Bridge exists, else False.
New in version 2016.3.0.

CLI Example: .. code-block:: bash
salt `*' openvswitch.bridge_exists br0

salt.modules.openvswitch.**bridge_list**()
Lists all existing real and fake bridges.
**Returns**: List of bridges (or empty list), False on failure.
New in version 2016.3.0.

CLI Example: .. code-block:: bash
salt `*' openvswitch.bridge_list

salt.modules.openvswitch.**interface_get_options**(*port*)
Port's interface's optional parameters.
**Args**: port: A string - port name.
**Returns**: String containing optional parameters of port's interface, False on failure.
New in version 2016.3.0.

CLI Example: .. code-block:: bash
salt `*' openvswitch.interface_get_options tap0

salt.modules.openvswitch.**interface_get_type**(*port*)
Type of port's interface.
**Args**: port: A string - port name.
**Returns**: String - type of interface or empty string, False on failure.
New in version 2016.3.0.

CLI Example: .. code-block:: bash
salt `*' openvswitch.interface_get_type tap0

salt.modules.openvswitch.**port_add**(*br*, *port*, *may_exist=False*)
Creates on bridge a new port named port.
**Returns**: True on success, else False.
**Args**: br: A string - bridge name port: A string - port name may_exist: Bool, if False - attempting to create a port that exists returns False.
New in version 2016.3.0.

CLI Example: .. code-block:: bash

salt `*' openvswitch.port_add br0 8080

salt.modules.openvswitch.**port_create_gre**(*br*, *port*, *id*, *remote*)

Generic Routing Encapsulation - creates GRE tunnel between endpoints.

**Args**: br: A string - bridge name. port: A string - port name. id: An integer - unsigned 32-bit number, tunnel's key. remote: A string - remote endpoint's IP address.

**Returns**: True on success, else False.

New in version 2016.3.0.

CLI Example: .. code-block:: bash

salt `*' openvswitch.port_create_gre br0 gre1 5001 192.168.1.10

salt.modules.openvswitch.**port_create_vlan**(*br*, *port*, *id*)

Isolate VM traffic using VLANs.

**Args**: br: A string - bridge name. port: A string - port name. id: An integer in the valid range 0 to 4095 (inclusive), name of VLAN.

**Returns**: True on success, else False.

New in version 2016.3.0.

CLI Example: .. code-block:: bash

salt `*' openvswitch.port_create_vlan br0 tap0 100

salt.modules.openvswitch.**port_create_vxlan**(*br*, *port*, *id*, *remote*, *dst_port=None*)

Virtual eXtensible Local Area Network - creates VXLAN tunnel between endpoints.

**Args**: br: A string - bridge name. port: A string - port name. id: An integer - unsigned 64-bit number, tunnel's key. remote: A string - remote endpoint's IP address. dst_port: An integer - port to use when creating tunnelport in the switch.

**Returns**: True on success, else False.

New in version 2016.3.0.

CLI Example: .. code-block:: bash

salt `*' openvswitch.port_create_vxlan br0 vx1 5001 192.168.1.10 8472

salt.modules.openvswitch.**port_get_tag**(*port*)

Lists tags of the port.

**Args**: port: A string - port name.

**Returns**: List of tags (or empty list), False on failure.

New in version 2016.3.0.

CLI Example: .. code-block:: bash

salt `*' openvswitch.port_get_tag tap0

salt.modules.openvswitch.**port_list**(*br*)

Lists all of the ports within bridge.

**Args**: br: A string - bridge name.

**Returns**: List of bridges (or empty list), False on failure.

New in version 2016.3.0.

CLI Example: .. code-block:: bash

salt `*' openvswitch.port_list br0

salt.modules.openvswitch.**port_remove**(*br*, *port*, *if_exists=True*)

Deletes port.

**Args**: br: A string - bridge name (If bridge is None, port is removed from whatever bridge contains it) port: A string - port name. if_exists: Bool, if False - attempting to delete a por that does not exist returns False. (Default True)

**Returns**: True on success, else False.

New in version 2016.3.0.

CLI Example: .. code-block:: bash
salt `*' openvswitch.port_remove br0 8080

### 13.6.213 salt.modules.opkg module

Support for Opkg

**Important:** If you feel that Salt should be using this module to manage packages on a minion, and it is using a different module (or gives an error similar to *`pkg.install' is not available*), see *here*.

**Note:** For version comparison support, the `opkg-utils` package must be installed.

`salt.modules.opkg.`**`available_version`**`(*names, **kwargs)`
Return the latest version of the named package available for upgrade or installation. If more than one package name is specified, a dict of name/version pairs is returned.

If the latest version of a given package is already installed, an empty string will be returned for that package.

CLI Example:

```
salt '*' pkg.latest_version <package name>
salt '*' pkg.latest_version <package name>
salt '*' pkg.latest_version <package1> <package2> <package3> ...
```

`salt.modules.opkg.`**`del_repo`**`(alias)`
Delete a repo from /etc/opkg/*.conf

If the file does not contain any other repo configuration, the file itself will be deleted.

CLI Examples:

```
salt '*' pkg.del_repo alias
```

`salt.modules.opkg.`**`file_dict`**`(*packages)`
List the files that belong to a package, grouped by package. Not specifying any packages will return a list of _every_ file on the system's package database (not generally recommended).

CLI Examples:

```
salt '*' pkg.file_list httpd
salt '*' pkg.file_list httpd postfix
salt '*' pkg.file_list
```

`salt.modules.opkg.`**`file_list`**`(*packages)`
List the files that belong to a package. Not specifying any packages will return a list of _every_ file on the system's package database (not generally recommended).

CLI Examples:

```
salt '*' pkg.file_list httpd
salt '*' pkg.file_list httpd postfix
salt '*' pkg.file_list
```

`salt.modules.opkg.`**`get_repo`**`(alias)`
Display a repo from the /etc/opkg/*.conf

CLI Examples:

```
salt '*' pkg.get_repo alias
```

salt.modules.opkg.**hold**(*name=None, pkgs=None, sources=None, **kwargs*)

Set package in `hold' state, meaning it will not be upgraded.

**name** The name of the package, e.g., `tmux'

CLI Example:

```
salt '*' pkg.hold <package name>
```

**pkgs** A list of packages to hold. Must be passed as a python list.

CLI Example:

```
salt '*' pkg.hold pkgs='["foo", "bar"]'
```

salt.modules.opkg.**install**(*name=None, refresh=False, pkgs=None, sources=None, **kwargs*)

Install the passed package, add refresh=True to update the opkg database.

**name** The name of the package to be installed. Note that this parameter is ignored if either ``pkgs'' or ``sources'' is passed. Additionally, please note that this option can only be used to install packages from a software repository. To install a package file manually, use the ``sources'' option.

CLI Example:

```
salt '*' pkg.install <package name>
```

**refresh** Whether or not to refresh the package database before installing.

Multiple Package Installation Options:

**pkgs** A list of packages to install from a software repository. Must be passed as a python list.

CLI Example:

```
salt '*' pkg.install pkgs='["foo", "bar"]'
```

**sources** A list of IPK packages to install. Must be passed as a list of dicts, with the keys being package names, and the values being the source URI or local path to the package. Dependencies are automatically resolved and marked as auto-installed.

CLI Example:

```
salt '*' pkg.install sources='[{"foo": "salt://foo.deb"},{"bar": "salt://bar.
↪deb"}]'
```

**install_recommends** Whether to install the packages marked as recommended. Default is True.

Returns a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

salt.modules.opkg.**latest_version**(**names, **kwargs*)

Return the latest version of the named package available for upgrade or installation. If more than one package name is specified, a dict of name/version pairs is returned.

If the latest version of a given package is already installed, an empty string will be returned for that package.

CLI Example:

```
salt '*' pkg.latest_version <package name>
salt '*' pkg.latest_version <package name>
salt '*' pkg.latest_version <package1> <package2> <package3> ...
```

salt.modules.opkg.**list_pkgs**(*versions_as_list=False*, ***kwargs*)

List the packages currently installed in a dict:

```
{'<package_name>': '<version>'}
```

CLI Example:

```
salt '*' pkg.list_pkgs
salt '*' pkg.list_pkgs versions_as_list=True
```

salt.modules.opkg.**list_repos**()

Lists all repos on /etc/opkg/*.conf

CLI Example:

```
salt '*' pkg.list_repos
```

salt.modules.opkg.**list_upgrades**(*refresh=True*)

List all available package upgrades.

CLI Example:

```
salt '*' pkg.list_upgrades
```

salt.modules.opkg.**mod_repo**(*alias*, ***kwargs*)

Modify one or more values for a repo. If the repo does not exist, it will be created, so long as uri is defined.

The following options are available to modify a repo definition:
**alias** alias by which opkg refers to the repo.
**uri** the URI to the repo.
**compressed** defines (True or False) if the index file is compressed
**enabled** enable or disable (True or False) repository but do not remove if disabled.
**refresh** enable or disable (True or False) auto-refresh of the repositories
CLI Examples:

```
salt '*' pkg.mod_repo alias uri=http://new/uri
salt '*' pkg.mod_repo alias enabled=False
```

salt.modules.opkg.**owner**(**paths*)

Return the name of the package that owns the file. Multiple file paths can be passed. Like `pkg.version <salt.modules.opkg.version`, if a single path is passed, a string will be returned, and if multiple paths are passed, a dictionary of file/package name pairs will be returned.

If the file is not owned by a package, or is not present on the minion, then an empty string will be returned for that path.

CLI Example:
salt `*' pkg.owner /usr/bin/apachectl salt `*' pkg.owner /usr/bin/apachectl /usr/bin/basename

salt.modules.opkg.**purge**(*name=None*, *pkgs=None*, ***kwargs*)

Package purges are not supported by opkg, this function is identical to *pkg.remove*.
**name** The name of the package to be deleted.
Multiple Package Options:
**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.
Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.purge <package name>
salt '*' pkg.purge <package1>,<package2>,<package3>
salt '*' pkg.purge pkgs='["foo", "bar"]'
```

salt.modules.opkg.**refresh_db**()

Updates the opkg database to latest packages based upon repositories

Returns a dict, with the keys being package databases and the values being the result of the update attempt. Values can be one of the following:

- `True`: Database updated successfully
- `False`: Problem updating database

CLI Example:

```
salt '*' pkg.refresh_db
```

salt.modules.opkg.**remove**(*name=None*, *pkgs=None*, ***kwargs*)

Remove packages using `opkg remove`.

**name** The name of the package to be deleted.

Multiple Package Options:

**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.remove <package name>
salt '*' pkg.remove <package1>,<package2>,<package3>
salt '*' pkg.remove pkgs='["foo", "bar"]'
```

salt.modules.opkg.**unhold**(*name=None*, *pkgs=None*, *sources=None*, ***kwargs*)

Set package current in `hold' state to install state, meaning it will be upgraded.

**name** The name of the package, e.g., `tmux'

CLI Example:

```
salt '*' pkg.unhold <package name>
```

**pkgs** A list of packages to hold. Must be passed as a python list.

CLI Example:

```
salt '*' pkg.unhold pkgs='["foo", "bar"]'
```

salt.modules.opkg.**upgrade**(*refresh=True*)

Upgrades all packages via `opkg upgrade`

Returns a dict containing the changes.

**{`<package>': {`old': `<old-version>', `new': `<new-version>'}}**

CLI Example:

```
salt '*' pkg.upgrade
```

salt.modules.opkg.**upgrade_available**(*name*)

Check whether or not an upgrade is available for a given package

CLI Example:

```
salt '*' pkg.upgrade_available <package name>
```

salt.modules.opkg.**version**(**names*, ***kwargs*)

Returns a string representing the package version or an empty string if not installed. If more than one package name is specified, a dict of name/version pairs is returned.

CLI Example:

```
salt '*' pkg.version <package name>
salt '*' pkg.version <package1> <package2> <package3> ...
```

salt.modules.opkg.**version_cmp**(*pkg1*, *pkg2*, *ignore_epoch=False*)

Do a cmp-style comparison on two packages. Return -1 if pkg1 < pkg2, 0 if pkg1 == pkg2, and 1 if pkg1 > pkg2. Return None if there was a problem making the comparison.

**ignore_epoch** [False] Set to `True` to ignore the epoch when comparing versions

New in version 2016.3.4.

CLI Example:

```
salt '*' pkg.version_cmp '0.2.4-0' '0.2.4.1-0'
```

### 13.6.214 salt.modules.oracle

Oracle DataBase connection module

**maintainer** Vladimir Bormotov <bormotov@gmail.com>

**maturity** new

**depends** cx_Oracle

**platform** all

**configuration** module provide connections for multiple Oracle DB instances.

**OS Environment**

```
ORACLE_HOME: path to oracle product
PATH: path to Oracle Client libs need to be in PATH
```

**pillar**

```
oracle.dbs: list of known based
oracle.dbs.<db>.uri: connection credentials in format:
    user/password@host[:port]/sid[ as {sysdba|sysoper}]
```

salt.modules.oracle.**client_version**()

Oracle Client Version

CLI Example:

```
salt '*' oracle.client_version
```

salt.modules.oracle.**run_query**(*db*, *query*)

Run SQL query and return result

CLI Example:

```
salt '*' oracle.run_query my_db "select * from my_table"
```

salt.modules.oracle.**show_dbs**(**dbs*)
Show databases configuration from pillar. Filter by **args*

CLI Example:

```
salt '*' oracle.show_dbs
salt '*' oracle.show_dbs my_db
```

salt.modules.oracle.**show_env**()
Show Environment used by Oracle Client

CLI Example:

```
salt '*' oracle.show_env
```

---

**Note:** at first _connect() NLS_LANG will forced to `.AL32UTF8'

---

salt.modules.oracle.**show_pillar**(*item=None*)
Show Pillar segment oracle.* and subitem with notation ``item:subitem''

CLI Example:

```
salt '*' oracle.show_pillar
salt '*' oracle.show_pillar dbs:my_db
```

salt.modules.oracle.**version**(**dbs*)
Server Version (select banner from v$version)

CLI Example:

```
salt '*' oracle.version
salt '*' oracle.version my_db
```

### 13.6.215 salt.modules.osquery

Support for OSQuery - https://osquery.io.

New in version 2015.8.0.

salt.modules.osquery.**acpi_tables**(*attrs=None*, *where=None*)
Return acpi_tables information from osquery

CLI Example:

```
salt '*' osquery.acpi_tables
```

salt.modules.osquery.**alf**(*attrs=None*, *where=None*)
Return alf information from osquery

CLI Example:

```
salt '*' osquery.alf
```

salt.modules.osquery.**alf_exceptions**(*attrs=None*, *where=None*)
Return alf_exceptions information from osquery

CLI Example:

```
salt '*' osquery.alf_exceptions
```

salt.modules.osquery.**alf_explicit_auths**(*attrs=None*, *where=None*)
Return alf_explicit_auths information from osquery

CLI Example:

```
salt '*' osquery.alf_explicit_auths
```

salt.modules.osquery.**alf_services**(*attrs=None*, *where=None*)
Return alf_services information from osquery

CLI Example:

```
salt '*' osquery.alf_services
```

salt.modules.osquery.**apps**(*attrs=None*, *where=None*)
Return apps information from osquery

CLI Example:

```
salt '*' osquery.apps
```

salt.modules.osquery.**apt_sources**(*attrs=None*, *where=None*)
Return apt_sources information from osquery

CLI Example:

```
salt '*' osquery.apt_sources
```

salt.modules.osquery.**arp_cache**(*attrs=None*, *where=None*)
Return arp_cache information from osquery

CLI Example:

```
salt '*' osquery.arp_cache
```

salt.modules.osquery.**block_devices**(*attrs=None*, *where=None*)
Return block_devices information from osquery

CLI Example:

```
salt '*' osquery.block_devices
```

salt.modules.osquery.**certificates**(*attrs=None*, *where=None*)
Return certificates information from osquery

CLI Example:

```
salt '*' osquery.certificates
```

salt.modules.osquery.**chrome_extensions**(*attrs=None*, *where=None*)
Return chrome_extensions information from osquery

CLI Example:

```
salt '*' osquery.chrome_extensions
```

salt.modules.osquery.**cpuid**(*attrs=None*, *where=None*)
Return cpuid information from osquery

CLI Example:

```
salt '*' osquery.cpuid
```

salt.modules.osquery.**crontab**(*attrs=None*, *where=None*)
Return crontab information from osquery

CLI Example:

```
salt '*' osquery.crontab
```

salt.modules.osquery.**deb_packages**(*attrs=None*, *where=None*)
Return deb_packages information from osquery

CLI Example:

```
salt '*' osquery.deb_packages
```

salt.modules.osquery.**etc_hosts**(*attrs=None*, *where=None*)
Return etc_hosts information from osquery

CLI Example:

```
salt '*' osquery.etc_hosts
```

salt.modules.osquery.**etc_services**(*attrs=None*, *where=None*)
Return etc_services information from osquery

CLI Example:

```
salt '*' osquery.etc_services
```

salt.modules.osquery.**file**(*attrs=None*, *where=None*)
Return file information from osquery

CLI Example:

```
salt '*' osquery.file
```

salt.modules.osquery.**file_changes**(*attrs=None*, *where=None*)
Return file_changes information from osquery

CLI Example:

```
salt '*' osquery.file_changes
```

salt.modules.osquery.**firefox_addons**(*attrs=None*, *where=None*)
Return firefox_addons information from osquery

CLI Example:

```
salt '*' osquery.firefox_addons
```

salt.modules.osquery.**groups**(*attrs=None*, *where=None*)
Return groups information from osquery

CLI Example:

```
salt '*' osquery.groups
```

salt.modules.osquery.**hardware_events**(*attrs=None*, *where=None*)
Return hardware_events information from osquery

CLI Example:

```
salt '*' osquery.hardware_events
```

salt.modules.osquery.**hash**(*attrs=None*, *where=None*)
Return hash information from osquery

CLI Example:

```
salt '*' osquery.hash
```

salt.modules.osquery.**homebrew_packages**(*attrs=None*, *where=None*)
Return homebrew_packages information from osquery

CLI Example:

```
salt '*' osquery.homebrew_packages
```

salt.modules.osquery.**interface_addresses**(*attrs=None*, *where=None*)
Return interface_addresses information from osquery

CLI Example:

```
salt '*' osquery.interface_addresses
```

salt.modules.osquery.**interface_details**(*attrs=None*, *where=None*)
Return interface_details information from osquery

CLI Example:

```
salt '*' osquery.interface_details
```

salt.modules.osquery.**iokit_devicetree**(*attrs=None*, *where=None*)
Return iokit_devicetree information from osquery

CLI Example:

```
salt '*' osquery.iokit_devicetree
```

salt.modules.osquery.**iokit_registry**(*attrs=None*, *where=None*)
Return iokit_registry information from osquery

CLI Example:

```
salt '*' osquery.iokit_registry
```

salt.modules.osquery.**kernel_extensions**(*attrs=None*, *where=None*)
Return kernel_extensions information from osquery

CLI Example:

```
salt '*' osquery.kernel_extensions
```

salt.modules.osquery.**kernel_info**(*attrs=None*, *where=None*)
Return kernel_info information from osquery

CLI Example:

```
salt '*' osquery.kernel_info
```

salt.modules.osquery.**kernel_integrity**(*attrs=None*, *where=None*)
Return kernel_integrity information from osquery

CLI Example:

```
salt '*' osquery.kernel_integrity
```

salt.modules.osquery.**kernel_modules**(*attrs=None*, *where=None*)
Return kernel_modules information from osquery

CLI Example:

```
salt '*' osquery.kernel_modules
```

salt.modules.osquery.**keychain_items**(*attrs=None*, *where=None*)
Return keychain_items information from osquery

CLI Example:

```
salt '*' osquery.keychain_items
```

salt.modules.osquery.**last**(*attrs=None*, *where=None*)
Return last information from osquery

CLI Example:

```
salt '*' osquery.last
```

salt.modules.osquery.**launchd**(*attrs=None*, *where=None*)
Return launchd information from osquery

CLI Example:

```
salt '*' osquery.launchd
```

salt.modules.osquery.**listening_ports**(*attrs=None*, *where=None*)
Return listening_ports information from osquery

CLI Example:

```
salt '*' osquery.listening_ports
```

salt.modules.osquery.**logged_in_users**(*attrs=None*, *where=None*)
Return logged_in_users information from osquery

CLI Example:

```
salt '*' osquery.logged_in_users
```

salt.modules.osquery.**memory_map**(*attrs=None*, *where=None*)
Return memory_map information from osquery

CLI Example:

```
salt '*' osquery.memory_map
```

salt.modules.osquery.**mounts**(*attrs=None*, *where=None*)
Return mounts information from osquery

CLI Example:

```
salt '*' osquery.mounts
```

salt.modules.osquery.**nfs_shares**(*attrs=None*, *where=None*)
Return nfs_shares information from osquery

CLI Example:

```
salt '*' osquery.nfs_shares
```

salt.modules.osquery.**nvram**(*attrs=None*, *where=None*)
Return nvram information from osquery

CLI Example:

```
salt '*' osquery.nvram
```

salt.modules.osquery.**os_version**(*attrs=None*, *where=None*)
Return os_version information from osquery

CLI Example:

```
salt '*' osquery.os_version
```

salt.modules.osquery.**osquery_extensions**(*attrs=None*, *where=None*)
Return osquery_extensions information from osquery

CLI Example:

```
salt '*' osquery.osquery_extensions
```

salt.modules.osquery.**osquery_flags**(*attrs=None*, *where=None*)
Return osquery_flags information from osquery

CLI Example:

```
salt '*' osquery.osquery_flags
```

salt.modules.osquery.**osquery_info**(*attrs=None*, *where=None*)
Return osquery_info information from osquery

CLI Example:

```
salt '*' osquery.osquery_info
```

salt.modules.osquery.**osquery_registry**(*attrs=None*, *where=None*)
Return osquery_registry information from osquery

CLI Example:

```
salt '*' osquery.osquery_registry
```

salt.modules.osquery.**passwd_changes**(*attrs=None*, *where=None*)
Return passwd_changes information from osquery

CLI Example:

```
salt '*' osquery.passwd_changes
```

salt.modules.osquery.**pci_devices**(*attrs=None*, *where=None*)
Return pci_devices information from osquery

CLI Example:

```
salt '*' osquery.pci_devices
```

salt.modules.osquery.**preferences**(*attrs=None*, *where=None*)
Return preferences information from osquery

CLI Example:

```
salt '*' osquery.preferences
```

salt.modules.osquery.**process_envs**(*attrs=None*, *where=None*)
Return process_envs information from osquery

CLI Example:

```
salt '*' osquery.process_envs
```

salt.modules.osquery.**process_memory_map**(*attrs=None*, *where=None*)
Return process_memory_map information from osquery

CLI Example:

```
salt '*' osquery.process_memory_map
```

salt.modules.osquery.**process_open_files**(*attrs=None*, *where=None*)
Return process_open_files information from osquery

CLI Example:

```
salt '*' osquery.process_open_files
```

salt.modules.osquery.**process_open_sockets**(*attrs=None*, *where=None*)
Return process_open_sockets information from osquery

CLI Example:

```
salt '*' osquery.process_open_sockets
```

salt.modules.osquery.**processes**(*attrs=None*, *where=None*)
Return processes information from osquery

CLI Example:

```
salt '*' osquery.processes
```

salt.modules.osquery.**quarantine**(*attrs=None*, *where=None*)
Return quarantine information from osquery

CLI Example:

```
salt '*' osquery.quarantine
```

salt.modules.osquery.**query**(*sql=None*)
Return time information from osquery

CLI Example:

```
salt '*' osquery.query "select * from users;"
```

salt.modules.osquery.**routes**(*attrs=None*, *where=None*)
Return routes information from osquery

CLI Example:

```
salt '*' osquery.routes
```

salt.modules.osquery.**rpm_packages**(*attrs=None*, *where=None*)
Return cpuid information from osquery

CLI Example:

```
salt '*' osquery.rpm_packages
```

salt.modules.osquery.**safari_extensions**(*attrs=None*, *where=None*)
Return safari_extensions information from osquery

CLI Example:

```
salt '*' osquery.safari_extensions
```

salt.modules.osquery.**shared_memory**(*attrs=None*, *where=None*)
Return shared_memory information from osquery

CLI Example:

```
salt '*' osquery.shared_memory
```

salt.modules.osquery.**shell_history**(*attrs=None*, *where=None*)
Return shell_history information from osquery

CLI Example:

```
salt '*' osquery.shell_history
```

salt.modules.osquery.**smbios_tables**(*attrs=None*, *where=None*)
Return smbios_tables information from osquery

CLI Example:

```
salt '*' osquery.smbios_tables
```

salt.modules.osquery.**startup_items**(*attrs=None*, *where=None*)
Return startup_items information from osquery

CLI Example:

```
salt '*' osquery.startup_items
```

salt.modules.osquery.**suid_bin**(*attrs=None*, *where=None*)
Return suid_bin information from osquery

CLI Example:

```
salt '*' osquery.suid_bin
```

salt.modules.osquery.**system_controls**(*attrs=None*, *where=None*)
Return system_controls information from osquery

CLI Example:

```
salt '*' osquery.system_controls
```

salt.modules.osquery.**time**(*attrs=None*)
Return time information from osquery

CLI Example:

```
salt '*' osquery.time
```

salt.modules.osquery.**usb_devices**(*attrs=None*, *where=None*)
Return usb_devices information from osquery

CLI Example:

```
salt '*' osquery.usb_devices
```

salt.modules.osquery.**users**(*attrs=None*, *where=None*)
Return users information from osquery

CLI Example:

```
salt '*' osquery.users
```

salt.modules.osquery.**version**()
Return version of osquery

CLI Example:

```
salt '*' osquery.version
```

salt.modules.osquery.**xattr_where_from**(*attrs=None*, *where=None*)
Return xattr_where_from information from osquery

CLI Example:

```
salt '*' osquery.xattr_where_from
```

salt.modules.osquery.**xprotect_entries**(*attrs=None*, *where=None*)
Return xprotect_entries information from osquery

CLI Example:

```
salt '*' osquery.xprotect_entries
```

salt.modules.osquery.**xprotect_reports**(*attrs=None*, *where=None*)
Return xprotect_reports information from osquery

CLI Example:

```
salt '*' osquery.xprotect_reports
```

### 13.6.216 salt.modules.pacman

A module to wrap pacman calls, since Arch is the best (https://wiki.archlinux.org/index.php/Arch_is_the_best)

**Important**: If you feel that Salt should be using this module to manage packages on a minion, and it is using a different module (or gives an error similar to *`pkg.install' is not available*), see *here*.

salt.modules.pacman.**file_dict**(**packages*)

List the files that belong to a package, grouped by package. Not specifying any packages will return a list of _every_ file on the system's package database (not generally recommended).

CLI Examples:

```
salt '*' pkg.file_list httpd
salt '*' pkg.file_list httpd postfix
salt '*' pkg.file_list
```

salt.modules.pacman.**file_list**(**packages*)

List the files that belong to a package. Not specifying any packages will return a list of _every_ file on the system's package database (not generally recommended).

CLI Examples:

```
salt '*' pkg.file_list httpd
salt '*' pkg.file_list httpd postfix
salt '*' pkg.file_list
```

salt.modules.pacman.**install**(*name=None*, *refresh=False*, *sysupgrade=False*, *pkgs=None*, *sources=None*, ***kwargs*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any pacman commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *`config option`* called `systemd.scope`, with a value of `False` (no quotes).

Install (`pacman -S`) the specified packag(s). Add `refresh=True` to install with `-y`, add `sysupgrade=True` to install with `-u`.

**name** The name of the package to be installed. Note that this parameter is ignored if either `pkgs` or `sources` is passed. Additionally, please note that this option can only be used to install packages from a software repository. To install a package file manually, use the `sources` option.

CLI Example:

```
salt '*' pkg.install <package name>
```

**refresh** Whether or not to refresh the package database before installing.

**sysupgrade** Whether or not to upgrade the system packages before installing.

Multiple Package Installation Options:

**pkgs** A list of packages to install from a software repository. Must be passed as a python list. A specific version number can be specified by using a single-element dict representing the package and its version. As with the `version` parameter above, comparison operators can be used to target a specific version of a package.

CLI Examples:

```
salt '*' pkg.install pkgs='["foo", "bar"]'
salt '*' pkg.install pkgs='["foo", {"bar": "1.2.3-4"}]'
salt '*' pkg.install pkgs='["foo", {"bar": "<1.2.3-4"}]'
```

**sources** A list of packages to install. Must be passed as a list of dicts, with the keys being package names, and the values being the source URI or local path to the package.

CLI Example:

```
salt '*' pkg.install                 sources='[{"foo": "salt://foo.pkg.tar.xz
 ↪"},                 {"bar": "salt://bar.pkg.tar.xz"}]'
```

Returns a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

salt.modules.pacman.**latest_version**(**names*, ***kwargs*)

Return the latest version of the named package available for upgrade or installation. If more than one package name is specified, a dict of name/version pairs is returned.

If the latest version of a given package is already installed, an empty string will be returned for that package.

CLI Example:

```
salt '*' pkg.latest_version <package name>
salt '*' pkg.latest_version <package1> <package2> <package3> ...
```

salt.modules.pacman.**list_pkgs**(*versions_as_list=False*, ***kwargs*)

List the packages currently installed as a dict:

```
{'<package_name>': '<version>'}
```

CLI Example:

```
salt '*' pkg.list_pkgs
```

salt.modules.pacman.**list_upgrades**(*refresh=False*, *root=None*, ***kwargs*)

List all available package upgrades on this system

CLI Example:

```
salt '*' pkg.list_upgrades
```

salt.modules.pacman.**owner**(**paths*)

New in version 2014.7.0.

Return the name of the package that owns the file. Multiple file paths can be passed. Like `pkg.version <salt.modules.yumpkg.version`, if a single path is passed, a string will be returned, and if multiple paths are passed, a dictionary of file/package name pairs will be returned.

If the file is not owned by a package, or is not present on the minion, then an empty string will be returned for that path.

CLI Example:

salt `*' pkg.owner /usr/bin/apachectl salt `*' pkg.owner /usr/bin/apachectl /usr/bin/zsh

salt.modules.pacman.**purge**(*name=None*, *pkgs=None*, ***kwargs*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now

used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any pacman commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *`config option`* called `systemd.scope`, with a value of `False` (no quotes).

Recursively remove a package and all dependencies which were installed with it, this will call a `pacman -Rsc`

**name** The name of the package to be deleted.

Multiple Package Options:

**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.purge <package name>
salt '*' pkg.purge <package1>,<package2>,<package3>
salt '*' pkg.purge pkgs='["foo", "bar"]'
```

`salt.modules.pacman.`**`refresh_db`**(*root=None*)

Just run a `pacman -Sy`, return a dict:

```
{'<database name>': Bool}
```

CLI Example:

```
salt '*' pkg.refresh_db
```

`salt.modules.pacman.`**`remove`**(*name=None*, *pkgs=None*, ***kwargs*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any pacman commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *`config option`* called `systemd.scope`, with a value of `False` (no quotes).

Remove packages with `pacman -R`.

**name** The name of the package to be deleted.

Multiple Package Options:

**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.remove <package name>
salt '*' pkg.remove <package1>,<package2>,<package3>
salt '*' pkg.remove pkgs='["foo", "bar"]'
```

`salt.modules.pacman.`**`upgrade`**(*refresh=False*, *root=None*, ***kwargs*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any pacman commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage

of systemd-run(1) can be suppressed by setting a *config option* called `systemd.scope`, with a value of `False` (no quotes).

Run a full system upgrade, a pacman -Syu
**refresh** Whether or not to refresh the package database before installing.
Return a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

CLI Example:

```
salt '*' pkg.upgrade
```

`salt.modules.pacman.`**`upgrade_available`**(*name*)
Check whether or not an upgrade is available for a given package

CLI Example:

```
salt '*' pkg.upgrade_available <package name>
```

`salt.modules.pacman.`**`version`**(**names*, ***kwargs*)
Returns a string representing the package version or an empty string if not installed. If more than one package name is specified, a dict of name/version pairs is returned.

CLI Example:

```
salt '*' pkg.version <package name>
salt '*' pkg.version <package1> <package2> <package3> ...
```

### 13.6.217 salt.modules.pagerduty

Module for Firing Events via PagerDuty

New in version 2014.1.0.

**configuration** This module can be used by specifying the name of a configuration profile in the minion config, minion pillar, or master config.

For example:

```
my-pagerduty-account:
    pagerduty.api_key: F3Rbyjbve43rfFWf2214
    pagerduty.subdomain: mysubdomain
```

`salt.modules.pagerduty.`**`create_event`**(*service_key=None*, *description=None*, *details=None*, *incident_key=None*, *profile=None*)
Create an event in PagerDuty. Designed for use in states.

CLI Example:

```
salt myminion pagerduty.create_event <service_key> <description> <details>
 ↪profile=my-pagerduty-account
```

The following parameters are required:
**service_key** This key can be found by using pagerduty.list_services.
**description** This is a short description of the event.
**details** This can be a more detailed description of the event.

**profile** This refers to the configuration profile to use to connect to the PagerDuty service.

salt.modules.pagerduty.**list_escalation_policies**(*profile=None*, *api_key=None*)
This function is an alias of `list_policies`.

List escalation policies belonging to this account

CLI Example:

salt myminion pagerduty.list_policies my-pagerduty-account salt myminion pagerduty.list_escalation_policies my-pagerduty-account

salt.modules.pagerduty.**list_incidents**(*profile=None*, *api_key=None*)
List incidents belonging to this account

CLI Example:

salt myminion pagerduty.list_incidents my-pagerduty-account

salt.modules.pagerduty.**list_maintenance_windows**(*profile=None*, *api_key=None*)
This function is an alias of `list_windows`.

List maintenance windows belonging to this account

CLI Example:

salt myminion pagerduty.list_windows my-pagerduty-account salt myminion pagerduty.list_maintenance_windows my-pagerduty-account

salt.modules.pagerduty.**list_policies**(*profile=None*, *api_key=None*)
List escalation policies belonging to this account

CLI Example:

salt myminion pagerduty.list_policies my-pagerduty-account salt myminion pagerduty.list_escalation_policies my-pagerduty-account

salt.modules.pagerduty.**list_schedules**(*profile=None*, *api_key=None*)
List schedules belonging to this account

CLI Example:

salt myminion pagerduty.list_schedules my-pagerduty-account

salt.modules.pagerduty.**list_services**(*profile=None*, *api_key=None*)
List services belonging to this account

CLI Example:

salt myminion pagerduty.list_services my-pagerduty-account

salt.modules.pagerduty.**list_users**(*profile=None*, *api_key=None*)
List users belonging to this account

CLI Example:

salt myminion pagerduty.list_users my-pagerduty-account

salt.modules.pagerduty.**list_windows**(*profile=None*, *api_key=None*)
List maintenance windows belonging to this account

CLI Example:

salt myminion pagerduty.list_windows my-pagerduty-account salt myminion pagerduty.list_maintenance_windows my-pagerduty-account

### 13.6.218 salt.modules.pagerduty_util

Module for manageing PagerDuty resource

**configuration** This module can be used by specifying the name of a configuration profile in the minion config, minion pillar, or master config. The default configuration profile name is `pagerduty'.

For example:

```
pagerduty:
    pagerduty.api_key: F3Rbyjbve43rfFWf2214
    pagerduty.subdomain: mysubdomain
```

For PagerDuty API details, see https://developer.pagerduty.com/documentation/rest

salt.modules.pagerduty_util.**create_or_update_resource**(*resource_name*, *identifier_fields*, *data*, *diff=None*, *profile='pagerduty'*, *subdomain=None*, *api_key=None*)

create or update any pagerduty resource Helper method for present().

Determining if two resources are the same is different for different PD resource, so this method accepts a diff function. The diff function will be invoked as diff(state_information, object_returned_from_pagerduty), and should return a dict of data to pass to the PagerDuty update API method, or None if no update is to be performed. If no diff method is provided, the default behavor is to scan the keys in the state_information, comparing the matching values in the object_returned_from_pagerduty, and update any values that differ.
**examples**: create_or_update_resource(``user'', ["id","name","email"]) create_or_update_resource(``escalation_policies'', ["id","name"], diff=my_diff_function)

salt.modules.pagerduty_util.**delete_resource**(*resource_name*, *key*, *identifier_fields*, *profile='pagerduty'*, *subdomain=None*, *api_key=None*)

delete any pagerduty resource

Helper method for absent()
**example**: delete_resource(``users'', key, ["id","name","email"]) # delete by id or name or email

salt.modules.pagerduty_util.**get_escalation_policies**(*profile='pagerduty'*, *subdomain=None*, *api_key=None*)

List escalation_policies belonging to this account

CLI Example:
salt myminion pagerduty.get_escalation_policies

salt.modules.pagerduty_util.**get_resource**(*resource_name*, *key*, *identifier_fields*, *profile='pagerduty'*, *subdomain=None*, *api_key=None*)

Get any single pagerduty resource by key.

We allow flexible lookup by any of a list of identifier_fields. So, for example, you can look up users by email address or name by calling:
get_resource(`users', key, ['name', `email'], ...)
This method is mainly used to translate state sls into pagerduty id's for dependent objects. For example, a pagerduty escalation policy contains one or more schedules, which must be passed by their pagerduty id. We look up the schedules by name (using this method), and then translate the names into id's.

This method is implemented by getting all objects of the resource type (cached into __context__), then brute force searching through the list and trying to match any of the identifier_fields. The __context__ cache is purged after any create, update or delete to the resource.

salt.modules.pagerduty_util.**get_schedules**(*profile='pagerduty'*, *subdomain=None*, *api_key=None*)

List schedules belonging to this account

CLI Example:

salt myminion pagerduty.get_schedules

salt.modules.pagerduty_util.**get_services**(*profile='pagerduty'*, *subdomain=None*, *api_key=None*)

List services belonging to this account

CLI Example:

salt myminion pagerduty.get_services

salt.modules.pagerduty_util.**get_users**(*profile='pagerduty'*, *subdomain=None*, *api_key=None*)

List users belonging to this account

CLI Example:

salt myminion pagerduty.get_users

salt.modules.pagerduty_util.**resource_absent**(*resource*, *identifier_fields*, *profile='pagerduty'*, *subdomain=None*, *api_key=None*, ***kwargs*)

Generic resource.absent state method. Pagerduty state modules should be a thin wrapper over this method, with a custom diff function.

This method calls delete_resource() and formats the result as a salt state return value.
**example**: resource_absent(``users'', [''id'',''name'',''email''])

salt.modules.pagerduty_util.**resource_present**(*resource*, *identifier_fields*, *diff=None*, *profile='pagerduty'*, *subdomain=None*, *api_key=None*, ***kwargs*)

Generic resource.present state method. Pagerduty state modules should be a thin wrapper over this method, with a custom diff function.

This method calls create_or_update_resource() and formats the result as a salt state return value.
**example**: resource_present(``users'', [''id'',''name'',''email''])

### 13.6.219 salt.modules.pam

Support for pam

salt.modules.pam.**read_file**(*file_name*)

This is just a test function, to make sure parsing works

CLI Example:

```
salt '*' pam.read_file /etc/pam.d/login
```

### 13.6.220 salt.modules.parted

Module for managing partitions on POSIX-like systems.

**depends**

- parted, partprobe, lsblk (usually parted and util-linux packages)

Some functions may not be available, depending on your version of parted.

Check the manpage for `parted(8)` for more information, or the online docs at:

http://www.gnu.org/software/parted/manual/html_chapter/parted_2.html

In light of parted not directly supporting partition IDs, some of this module has been written to utilize sfdisk instead. For further information, please reference the man page for `sfdisk(8)`.

salt.modules.parted.**align_check**(*device*, *part_type*, *partition*)
Check if partition satisfies the alignment constraint of part_type. Type must be ``minimal'' or ``optimal''.

CLI Example:

```
salt '*' partition.align_check /dev/sda minimal 1
```

salt.modules.parted.**check**(*device*, *minor*)
Checks if the file system on partition <minor> has any errors.

CLI Example:

```
salt '*' partition.check 1
```

salt.modules.parted.**cp**(*device*, *from_minor*, *to_minor*)
Copies the file system on the partition <from-minor> to partition <to-minor>, deleting the original contents of the destination partition.

CLI Example:

```
salt '*' partition.cp /dev/sda 2 3
```

salt.modules.parted.**exists**(*device=''*)
Check to see if the partition exists

CLI Example:

```
salt '*' partition.exists /dev/sdb1
```

salt.modules.parted.**get_block_device**()
Retrieve a list of disk devices

New in version 2014.7.0.

CLI Example:

```
salt '*' partition.get_block_device
```

salt.modules.parted.**get_id**(*device*, *minor*)
Prints the system ID for the partition. Some typical values are:

```
 b: FAT32 (vfat)
 7: HPFS/NTFS
82: Linux Swap
83: Linux
8e: Linux LVM
fd: Linux RAID Auto
```

CLI Example:

```
salt '*' partition.get_id /dev/sda 1
```

salt.modules.parted.**list**(*device*, *unit=None*)
Prints partition information of given <device>

CLI Examples:

```
salt '*' partition.list /dev/sda
salt '*' partition.list /dev/sda unit=s
salt '*' partition.list /dev/sda unit=kB
```

salt.modules.parted.**mkfs**(*device*, *fs_type*)

Makes a file system <fs_type> on partition <device>, destroying all data that resides on that partition. <fs_type> must be one of ``ext2'', ``fat32'', ``fat16'', ``linux-swap'' or ``reiserfs'' (if libreiserfs is installed)

CLI Example:

```
salt '*' partition.mkfs /dev/sda2 fat32
```

salt.modules.parted.**mklabel**(*device*, *label_type*)

Create a new disklabel (partition table) of label_type.

Type should be one of ``aix'', ``amiga'', ``bsd'', ``dvh'', ``gpt'', ``loop'', ``mac'', ``msdos'', ``pc98'', or ``sun''.

CLI Example:

```
salt '*' partition.mklabel /dev/sda msdos
```

salt.modules.parted.**mkpart**(*device*, *part_type*, *fs_type=None*, *start=None*, *end=None*)

Make a part_type partition for filesystem fs_type, beginning at start and ending at end (by default in megabytes). part_type should be one of ``primary'', ``logical'', or ``extended''.

CLI Examples:

```
salt '*' partition.mkpart /dev/sda primary fs_type=fat32 start=0 end=639
salt '*' partition.mkpart /dev/sda primary start=0 end=639
```

salt.modules.parted.**mkpartfs**(*device*, *part_type*, *fs_type*, *start*, *end*)

Make a <part_type> partition with a new filesystem of <fs_type>, beginning at <start> and ending at <end> (by default in megabytes).

<part_type> should be one of ``primary'', ``logical'', or ``extended''. <fs_type> must be one of ``ext2'', ``fat32'', ``fat16'', ``linux-swap'' or ``reiserfs'' (if libreiserfs is installed)

CLI Example:

```
salt '*' partition.mkpartfs /dev/sda logical ext2 440 670
```

salt.modules.parted.**name**(*device*, *partition*, *name*)

Set the name of partition to name. This option works only on Mac, PC98, and GPT disklabels. The name can be placed in quotes, if necessary.

CLI Example:

```
salt '*' partition.name /dev/sda 1 'My Documents'
```

salt.modules.parted.**probe**(**devices*)

Ask the kernel to update its local partition data. When no args are specified all block devices are tried.

Caution: Generally only works on devices with no mounted partitions and may take a long time to return if specified devices are in use.

CLI Examples:

```
salt '*' partition.probe
salt '*' partition.probe /dev/sda
salt '*' partition.probe /dev/sda /dev/sdb
```

salt.modules.parted.**rescue**(*device*, *start*, *end*)

Rescue a lost partition that was located somewhere between start and end. If a partition is found, parted will ask if you want to create an entry for it in the partition table.

CLI Example:

```
salt '*' partition.rescue /dev/sda 0 8056
```

salt.modules.parted.**resize**(*device*, *minor*, *start*, *end*)
Resizes the partition with number <minor>.

The partition will start <start> from the beginning of the disk, and end <end> from the beginning of the disk. resize never changes the minor number. Extended partitions can be resized, so long as the new extended partition completely contains all logical partitions.

CLI Example:

```
salt '*' partition.resize /dev/sda 3 200 850
```

salt.modules.parted.**rm**(*device*, *minor*)
Removes the partition with number <minor>.

CLI Example:

```
salt '*' partition.rm /dev/sda 5
```

salt.modules.parted.**set**(*device*, *minor*, *flag*, *state*)
Changes a flag on the partition with number <minor>.

A flag can be either ``on'' or ``off'' (make sure to use proper quoting, see *YAML Idiosyncrasies*). Some or all of these flags will be available, depending on what disk label you are using.
**Valid flags are**: **bios_grub**, **legacy_boot**, **boot**, **lba**, **root**, **swap**, **hidden**, **raid**, LVM, PALO, PREP, DIAG
CLI Example:

```
salt '*' partition.set /dev/sda 1 boot '"on"'
```

salt.modules.parted.**set_id**(*device*, *minor*, *system_id*)
Sets the system ID for the partition. Some typical values are:

```
 b: FAT32 (vfat)
 7: HPFS/NTFS
82: Linux Swap
83: Linux
8e: Linux LVM
fd: Linux RAID Auto
```

CLI Example:

```
salt '*' partition.set_id /dev/sda 1 83
```

salt.modules.parted.**system_types**()
List the system types that are supported by the installed version of sfdisk

CLI Example:

```
salt '*' partition.system_types
```

salt.modules.parted.**toggle**(*device*, *partition*, *flag*)
**Toggle the state of <flag> on <partition>. Valid flags are the same as** the set command.
CLI Example:

```
salt '*' partition.toggle /dev/sda 1 boot
```

### 13.6.221 salt.modules.pecl

Manage PHP pecl extensions.

`salt.modules.pecl.`**`install`**(*pecls*, *defaults=False*, *force=False*, *preferred_state='stable'*)

New in version 0.17.0.

Installs one or several pecl extensions.

**pecls** The pecl extensions to install.

**defaults** Use default answers for extensions such as pecl_http which ask questions before installation. Without this option, the pecl.installed state will hang indefinitely when trying to install these extensions.

**force** Whether to force the installed version or not

CLI Example:

```
salt '*' pecl.install fuse
```

`salt.modules.pecl.`**`list`**(*channel=None*)

List installed pecl extensions.

CLI Example:

```
salt '*' pecl.list
```

`salt.modules.pecl.`**`uninstall`**(*pecls*)

Uninstall one or several pecl extensions.

**pecls** The pecl extensions to uninstall.

CLI Example:

```
salt '*' pecl.uninstall fuse
```

`salt.modules.pecl.`**`update`**(*pecls*)

Update one or several pecl extensions.

**pecls** The pecl extensions to update.

CLI Example:

```
salt '*' pecl.update fuse
```

### 13.6.222 salt.modules.philips_hue module

Philips HUE lamps module for proxy.

New in version 2015.8.3.

### 13.6.223 salt.modules.pillar

Extract the pillar data for this minion

`salt.modules.pillar.`**`ext`**(*external*, *pillar=None*)

Changed in version 2016.3.6,2016.11.3,Nitrogen: The supported ext_pillar types are now tunable using the *on_demand_ext_pillar* config option. Earlier releases used a hard-coded default.

Generate the pillar and apply an explicit external pillar

**external** A single ext_pillar to add to the ext_pillar configuration. This must be passed as a single section from the ext_pillar configuration (see CLI examples below). For more complicated `ext_pillar` configurations, it can be helpful to use the Python shell to load YAML configuration into a dictionary, and figure out

```
>>> import yaml
>>> ext_pillar = yaml.safe_load("""
... ext_pillar:
...   - git:
...     - issue38440 https://github.com/terminalmage/git_pillar:
...       - env: base
... """)
>>> ext_pillar
{'ext_pillar': [{'git': [{'mybranch https://github.com/myuser/myrepo': [{'env
 ↪': 'base'}]}]}]}
>>> ext_pillar['ext_pillar'][0]
{'git': [{'mybranch https://github.com/myuser/myrepo': [{'env': 'base'}]}]}
```

In the above example, the value to pass would be `{'git': [{'mybranch https://github.com/myuser/myrepo': [{'env': 'base'}]}]}`. Note that this would need to be quoted when passing on the CLI (as in the CLI examples below).

**pillar** [None] If specified, allows for a dictionary of pillar data to be made available to pillar and ext_pillar rendering. These pillar variables will also override any variables of the same name in pillar or ext_pillar.

New in version 2015.5.0.

CLI Examples:

```
salt '*' pillar.ext '{libvirt: _}'
salt '*' pillar.ext "{'git': ['master https://github.com/myuser/myrepo']}"
salt '*' pillar.ext "{'git': [{'mybranch https://github.com/myuser/myrepo': [{'env
 ↪': 'base'}]}]}"
```

salt.modules.pillar.**fetch**(*key*, *default=<type `exceptions.KeyError'>*, *merge=False*, *delimiter=':'*, *saltenv=None*)

New in version 0.14.

Attempt to retrieve the named value from pillar, if the named value is not available return the passed default. The default return is an empty string except __opts__['pillar_raise_on_missing'] is set to True, in which case a KeyError will be raised.

If the merge parameter is set to `True`, the default will be recursively merged into the returned pillar data.

The value can also represent a value in a nested dict using a ":" delimiter for the dict. This means that if a dict in pillar looks like this:

```
{'pkg': {'apache': 'httpd'}}
```

To retrieve the value associated with the apache key in the pkg dict this key can be passed:

```
pkg:apache
```

**merge** Specify whether or not the retrieved values should be recursively merged into the passed default.

New in version 2014.7.0.

**delimiter** Specify an alternate delimiter to use when traversing a nested dict. This is useful for when the desired key contains a colon. See CLI example below for usage.

New in version 2014.7.0.

**saltenv** If specified, this function will query the master to generate fresh pillar data on the fly, specifically from the requested pillar environment. Note that this can produce different pillar data than executing this function without an environment, as its normal behavior is just to return a value from minion's pillar data in memory (which can be sourced from more than one pillar environment).

Using this argument will not affect the pillar data in memory. It will however be slightly slower and use more resources on the master due to the need for the master to generate and send the minion fresh pillar data. This tradeoff in performance however allows for the use case where pillar data is desired only from a single environment.

New in version Nitrogen.

CLI Example:

```
salt '*' pillar.get pkg:apache
salt '*' pillar.get abc::def|ghi delimiter='|'
```

salt.modules.pillar.**file_exists**(*path*, *saltenv=None*)

New in version 2016.3.0.

This is a master-only function. Calling from the minion is not supported.

Use the given path and search relative to the pillar environments to see if a file exists at that path.

If the `saltenv` argument is given, restrict search to that environment only.

Will only work with `pillar_roots`, not external pillars.

Returns True if the file is found, and False otherwise.
**path** The path to the file in question. Will be treated as a relative path
**saltenv** Optional argument to restrict the search to a specific saltenv
CLI Example:

```
salt '*' pillar.file_exists foo/bar.sls
```

salt.modules.pillar.**get**(*key*, *default=<type `exceptions.KeyError'>*, *merge=False*, *delimiter=':'*, *saltenv=None*)

New in version 0.14.

Attempt to retrieve the named value from pillar, if the named value is not available return the passed default. The default return is an empty string except __opts__['pillar_raise_on_missing'] is set to True, in which case a KeyError will be raised.

If the merge parameter is set to `True`, the default will be recursively merged into the returned pillar data.

The value can also represent a value in a nested dict using a ":" delimiter for the dict. This means that if a dict in pillar looks like this:

```
{'pkg': {'apache': 'httpd'}}
```

To retrieve the value associated with the apache key in the pkg dict this key can be passed:

```
pkg:apache
```

**merge** Specify whether or not the retrieved values should be recursively merged into the passed default.

New in version 2014.7.0.

**delimiter** Specify an alternate delimiter to use when traversing a nested dict. This is useful for when the desired key contains a colon. See CLI example below for usage.

New in version 2014.7.0.

**saltenv** If specified, this function will query the master to generate fresh pillar data on the fly, specifically from the requested pillar environment. Note that this can produce different pillar data than executing this function without an environment, as its normal behavior is just to return a value from minion's pillar data in memory (which can be sourced from more than one pillar environment).

Using this argument will not affect the pillar data in memory. It will however be slightly slower and use more resources on the master due to the need for the master to generate and send the minion fresh pillar data. This tradeoff in performance however allows for the use case where pillar data is desired only from a single environment.

New in version Nitrogen.

CLI Example:

```
salt '*' pillar.get pkg:apache
salt '*' pillar.get abc::def|ghi delimiter='|'
```

salt.modules.pillar.**item**(**args*, ***kwargs*)

New in version 0.16.2.

Return one or more pillar entries from the *in-memory pillar data*.

**delimiter** Delimiter used to traverse nested dictionaries.

---

**Note**: This is different from `pillar.get` in that no default value can be specified. `pillar.get` should probably still be used in most cases to retrieve nested pillar values, as it is a bit more flexible. One reason to use this function instead of `pillar.get` however is when it is desirable to retrieve the values of more than one key, since `pillar.get` can only retrieve one key at a time.

---

New in version 2015.8.0.

CLI Examples:

```
salt '*' pillar.item foo
salt '*' pillar.item foo:bar
salt '*' pillar.item foo bar baz
```

salt.modules.pillar.**items**(**args*, ***kwargs*)

Calls the master for a fresh pillar and generates the pillar data on the fly

Contrast with `raw()` which returns the pillar data that is currently loaded into the minion.

**pillar** if specified, allows for a dictionary of pillar data to be made available to pillar and ext_pillar rendering. these pillar variables will also override any variables of the same name in pillar or ext_pillar.

New in version 2015.5.0.

**saltenv** Pass a specific pillar environment from which to compile pillar data. If unspecified, the minion's `environment` option is used, and if that also is not specified then all configured pillar environments will be merged into a single pillar dictionary and returned.

New in version Nitrogen.

CLI Example:

```
salt '*' pillar.items
```

salt.modules.pillar.**keys**(*key*, *delimiter=':'*)

New in version 2015.8.0.

Attempt to retrieve a list of keys from the named value from the pillar.

The value can also represent a value in a nested dict using a ":" delimiter for the dict, similar to how pillar.get works.

**delimiter** Specify an alternate delimiter to use when traversing a nested dict

CLI Example:

```
salt '*' pillar.keys web:sites
```

salt.modules.pillar.**ls**(**args*)

New in version 2015.8.0.

Calls the master for a fresh pillar, generates the pillar data on the fly (same as *items()*), but only shows the available main keys.

CLI Examples:

```
salt '*' pillar.ls
```

salt.modules.pillar.**obfuscate**(**args*)

New in version 2015.8.0.

Same as *items()*, but replace pillar values with a simple type indication.

This is useful to avoid displaying sensitive information on console or flooding the console with long output, such as certificates. For many debug or control purposes, the stakes lie more in dispatching than in actual values.

In case the value is itself a collection type, obfuscation occurs within the value. For mapping types, keys are not obfuscated. Here are some examples:

- `'secret password'` becomes `'<str>'`
- `['secret',1]` becomes `['<str>','<int>']`
- `{'login': 'somelogin','pwd': 'secret'}` becomes `{'login': '<str>','pwd': '<str>'}`

CLI Examples:

```
salt '*' pillar.obfuscate
```

salt.modules.pillar.**raw**(*key=None*)

Return the raw pillar data that is currently loaded into the minion.

Contrast with *items()* which calls the master to fetch the most up-to-date Pillar.

CLI Example:

```
salt '*' pillar.raw
```

With the optional key argument, you can select a subtree of the pillar raw data.:

```
salt '*' pillar.raw key='roles'
```

### 13.6.224 salt.modules.pip

Install Python packages with pip to either the system or a virtualenv

#### Windows Support

New in version 2014.7.4.

Salt now uses a portable python. As a result the entire pip module is now functional on the salt installation itself. You can pip install dependencies for your custom modules. You can even upgrade salt itself using pip. For this to work properly, you must specify the Current Working Directory (`cwd`) and the Pip Binary (`bin_env`) salt should use. The variable `pip_bin` can be either a virtualenv path or the path to the pip binary itself.

For example, the following command will list all software installed using pip to your current salt environment:

```
salt <minion> pip.list cwd='C:\salt\bin\Scripts' bin_env='C:\salt\bin\Scripts\pip.exe'
```

Specifying the `cwd` and `bin_env` options ensures you're modifying the salt environment. If these are omitted, it will default to the local installation of python. If python is not installed locally it will fail saying it couldn't find pip.

### State File Support

This functionality works in states as well. If you need to pip install colorama with a state, for example, the following will work:

```
install_colorama:
  pip.installed:
    - name: colorama
    - cwd: 'C:\salt\bin\scripts'
    - bin_env: 'C:\salt\bin\scripts\pip.exe'
    - upgrade: True
```

### Upgrading Salt using Pip

You can now update salt using pip to any version from the 2014.7 branch forward. Previous version require recompiling some of the dependencies which is painful in windows.

To do this you just use pip with git to update to the version you want and then restart the service. Here is a sample state file that upgrades salt to the head of the 2015.5 branch:

```
install_salt:
  pip.installed:
    - cwd: 'C:\salt\bin\scripts'
    - bin_env: 'C:\salt\bin\scripts\pip.exe'
    - editable: git+https://github.com/saltstack/salt@2015.5#egg=salt
    - upgrade: True

restart_service:
  service.running:
    - name: salt-minion
    - enable: True
    - watch:
      - pip: install_salt
```

---

**Note**: If you're having problems, you might try doubling the back slashes. For example, cwd: `C:\salt\bin\scripts'. Sometimes python thinks the single back slash is an escape character.

---

`salt.modules.pip.`**`freeze`**(*bin_env=None*, *user=None*, *cwd=None*, *use_vt=False*)

Return a list of installed packages either globally or in the specified virtualenv

**bin_env** path to pip bin or path to virtualenv. If doing an uninstall from the system python and want to use a specific pip bin (pip-2.7, pip-2.6, etc..) just specify the pip bin you want. If uninstalling from a virtualenv, just use the path to the virtualenv (/home/code/path/to/virtualenv/)

**user** The user under which to run pip

**cwd** Current working directory to run pip from

CLI Example:

```
salt '*' pip.freeze /home/code/path/to/virtualenv/
```

salt.modules.pip.**install**(*pkgs=None*, *requirements=None*, *env=None*, *bin_env=None*, *use_wheel=False*, *no_use_wheel=False*, *log=None*, *proxy=None*, *timeout=None*, *editable=None*, *find_links=None*, *index_url=None*, *extra_index_url=None*, *no_index=False*, *mirrors=None*, *build=None*, *target=None*, *download=None*, *download_cache=None*, *source=None*, *upgrade=False*, *force_reinstall=False*, *ignore_installed=False*, *exists_action=None*, *no_deps=False*, *no_install=False*, *no_download=False*, *global_options=None*, *install_options=None*, *user=None*, *no_chown=False*, *cwd=None*, *activate=False*, *pre_releases=False*, *cert=None*, *allow_all_external=False*, *allow_external=None*, *allow_unverified=None*, *process_dependency_links=False*, *__env__=None*, *saltenv='base'*, *env_vars=None*, *use_vt=False*, *trusted_host=None*)

Install packages with pip

Install packages individually or from a pip requirements file. Install packages globally or to a virtualenv.

**pkgs** Comma separated list of packages to install

**requirements** Path to requirements

**bin_env** Path to pip bin or path to virtualenv. If doing a system install, and want to use a specific pip bin (pip-2.7, pip-2.6, etc..) just specify the pip bin you want.

> **Note:** If installing into a virtualenv, just use the path to the virtualenv (e.g. `/home/code/path/to/virtualenv/`)

**env** Deprecated, use bin_env now

**use_wheel** Prefer wheel archives (requires pip>=1.4)

**no_use_wheel** Force to not use wheel archives (requires pip>=1.4)

**log** Log file where a complete (maximum verbosity) record will be kept

**proxy** Specify a proxy in the form `user:passwd@proxy.server:port`. Note that the `user:password@` is optional and required only if you are behind an authenticated proxy. If you provide `user@proxy.server:port` then you will be prompted for a password.

**timeout** Set the socket timeout (default 15 seconds)

**editable** install something editable (e.g. `git+https://github.com/worldcompany/djangoembed.git#egg=dja`

**find_links** URL to search for packages

**index_url** Base URL of Python Package Index

**extra_index_url** Extra URLs of package indexes to use in addition to `index_url`

**no_index** Ignore package index

**mirrors** Specific mirror URL(s) to query (automatically adds --use-mirrors)

> **Warning:** This option has been deprecated and removed in pip version 7.0.0. Please use `index_url` and/or `extra_index_url` instead.

**build** Unpack packages into `build` dir

**target** Install packages into `target` dir

**download** Download packages into `download` instead of installing them

**download_cache** Cache downloaded packages in `download_cache` dir

**source** Check out `editable` packages into `source` dir

**upgrade** Upgrade all packages to the newest available version

**force_reinstall** When upgrading, reinstall all packages even if they are already up-to-date.

**ignore_installed** Ignore the installed packages (reinstalling instead)

**exists_action** Default action when a path already exists: (s)witch, (i)gnore, (w)ipe, (b)ackup

**no_deps** Ignore package dependencies

**no_install** Download and unpack all packages, but don't actually install them
**no_download** Don't download any packages, just install the ones already downloaded (completes an install run with `--no-install`)
**install_options** Extra arguments to be supplied to the setup.py install command (e.g. like `--install-option='--install-scripts=/usr/local/bin'`). Use multiple --install-option options to pass multiple options to setup.py install. If you are using an option with a directory path, be sure to use absolute path.
**global_options** Extra global options to be supplied to the setup.py call before the install command.
**user** The user under which to run pip
**no_chown** When user is given, do not attempt to copy and chown a requirements file
**cwd** Current working directory to run pip from
**activate** Activates the virtual environment, if given via bin_env, before running install.

Deprecated since version 2014.7.2: If *bin_env* is given, pip will already be sourced from that virtualenv, making *activate* effectively a noop.

**pre_releases** Include pre-releases in the available versions
**cert** Provide a path to an alternate CA bundle
**allow_all_external** Allow the installation of all externally hosted files
**allow_external** Allow the installation of externally hosted files (comma separated list)
**allow_unverified** Allow the installation of insecure and unverifiable files (comma separated list)
**process_dependency_links** Enable the processing of dependency links
**env_vars** Set environment variables that some builds will depend on. For example, a Python C-module may have a Makefile that needs INCLUDE_PATH set to pick up a header file while compiling. This must be in the form of a dictionary or a mapping.

Example:

```
salt '*' pip.install django_app env_vars="{'CUSTOM_PATH': '/opt/django_app'}"
```

**trusted_host** Mark this host as trusted, even though it does not have valid or any HTTPS.
**use_vt** Use VT terminal emulation (see output while installing)
CLI Example:

```
salt '*' pip.install <package name>,<package2 name>
salt '*' pip.install requirements=/path/to/requirements.txt
salt '*' pip.install <package name> bin_env=/path/to/virtualenv
salt '*' pip.install <package name> bin_env=/path/to/pip_bin
```

Complicated CLI example:

```
salt '*' pip.install markdown,django                    editable=git+https://github.
↪com/worldcompany/djangoembed.git#egg=djangoembed upgrade=True no_deps=True
```

`salt.modules.pip.`**`list`**(*prefix=None*, *bin_env=None*, *user=None*, *cwd=None*)
Filter list of installed apps from `freeze` and check to see if `prefix` exists in the list of packages installed.

CLI Example:

```
salt '*' pip.list salt
```

`salt.modules.pip.`**`list_upgrades`**(*bin_env=None*, *user=None*, *cwd=None*)
Check whether or not an upgrade is available for all packages

CLI Example:

```
salt '*' pip.list_upgrades
```

salt.modules.pip.**uninstall**(*pkgs=None*, *requirements=None*, *bin_env=None*, *log=None*, *proxy=None*, *timeout=None*, *user=None*, *no_chown=False*, *cwd=None*, *__env__=None*, *saltenv='base'*, *use_vt=False*)

Uninstall packages with pip

Uninstall packages individually or from a pip requirements file. Uninstall packages globally or from a virtualenv.

**pkgs** comma separated list of packages to install

**requirements** path to requirements.

**bin_env** path to pip bin or path to virtualenv. If doing an uninstall from the system python and want to use a specific pip bin (pip-2.7, pip-2.6, etc..) just specify the pip bin you want. If uninstalling from a virtualenv, just use the path to the virtualenv (/home/code/path/to/virtualenv/)

**log** Log file where a complete (maximum verbosity) record will be kept

**proxy** Specify a proxy in the form user:passwd@proxy.server:port. Note that the user:password@ is optional and required only if you are behind an authenticated proxy. If you provide user@proxy.server:port then you will be prompted for a password.

**timeout** Set the socket timeout (default 15 seconds)

**user** The user under which to run pip

**no_chown** When user is given, do not attempt to copy and chown a requirements file (needed if the requirements file refers to other files via relative paths, as the copy-and-chown procedure does not account for such files)

**cwd** Current working directory to run pip from

**use_vt** Use VT terminal emulation (see output while installing)

CLI Example:

```
salt '*' pip.uninstall <package name>,<package2 name>
salt '*' pip.uninstall requirements=/path/to/requirements.txt
salt '*' pip.uninstall <package name> bin_env=/path/to/virtualenv
salt '*' pip.uninstall <package name> bin_env=/path/to/pip_bin
```

salt.modules.pip.**upgrade**(*bin_env=None*, *user=None*, *cwd=None*, *use_vt=False*)

New in version 2015.5.0.

Upgrades outdated pip packages

Returns a dict containing the changes.

**{`<package>': {`old': `<old-version>', `new': `<new-version>'}}**

CLI Example:

```
salt '*' pip.upgrade
```

salt.modules.pip.**upgrade_available**(*pkg*, *bin_env=None*, *user=None*, *cwd=None*)

New in version 2015.5.0.

Check whether or not an upgrade is available for a given package

CLI Example:

```
salt '*' pip.upgrade_available <package name>
```

salt.modules.pip.**version**(*bin_env=None*)

New in version 0.17.0.

Returns the version of pip. Use `bin_env` to specify the path to a virtualenv and get the version of pip in that virtualenv.

If unable to detect the pip version, returns `None`.

CLI Example:

```
salt '*' pip.version
```

### 13.6.225 salt.modules.pkg_resource

Resources needed by pkg providers

salt.modules.pkg_resource.**add_pkg**(*pkgs*, *name*, *pkgver*)

Add a package to a dict of installed packages.

CLI Example:

```
salt '*' pkg_resource.add_pkg '{}' bind 9
```

salt.modules.pkg_resource.**check_extra_requirements**(*pkgname*, *pkgver*)

Check if the installed package already has the given requirements. This function will return the result of `pkg.check_extra_requirements` if this function exists for the minion, otherwise it will return True.

CLI Example:

```
salt '*' pkg_resource.check_extra_requirements <pkgname> <extra_requirements>
```

salt.modules.pkg_resource.**pack_sources**(*sources*, *normalize=True*)

Accepts list of dicts (or a string representing a list of dicts) and packs the key/value pairs into a single dict.

`'[{"foo": "salt://foo.rpm"},{"bar": "salt://bar.rpm"}]'` would become `{"foo": "salt://foo.rpm","bar": "salt://bar.rpm"}`

**normalize** [True] Normalize the package name by removing the architecture, if the architecture of the package is different from the architecture of the operating system. The ability to disable this behavior is useful for poorly-created packages which include the architecture as an actual part of the name, such as kernel modules which match a specific kernel version.

New in version 2015.8.0.

CLI Example:

```
salt '*' pkg_resource.pack_sources '[{"foo": "salt://foo.rpm"}, {"bar": "salt://
↪bar.rpm"}]'
```

salt.modules.pkg_resource.**parse_targets**(*name=None*, *pkgs=None*, *sources=None*, *saltenv='base'*, *normalize=True*, ***kwargs*)

Parses the input to pkg.install and returns back the package(s) to be installed. Returns a list of packages, as well as a string noting whether the packages are to come from a repository or a binary package.

CLI Example:

```
salt '*' pkg_resource.parse_targets
```

salt.modules.pkg_resource.**sort_pkglist**(*pkgs*)

Accepts a dict obtained from pkg.list_pkgs() and sorts in place the list of versions for any packages that have multiple versions installed, so that two package lists can be compared to one another.

CLI Example:

```
salt '*' pkg_resource.sort_pkglist '["3.45", "2.13"]'
```

salt.modules.pkg_resource.**stringify**(*pkgs*)

Takes a dict of package name/version information and joins each list of installed versions into a string.

CLI Example:

```
salt '*' pkg_resource.stringify 'vim: 7.127'
```

salt.modules.pkg_resource.**version**(**names*, ***kwargs*)

Common interface for obtaining the version of installed packages.

CLI Example:

```
salt '*' pkg_resource.version vim
salt '*' pkg_resource.version foo bar baz
salt '*' pkg_resource.version 'python*'
```

salt.modules.pkg_resource.**version_clean**(*verstr*)

Clean the version string removing extra data. This function will simply try to call `pkg.version_clean`.

CLI Example:

```
salt '*' pkg_resource.version_clean <version_string>
```

### 13.6.226 salt.modules.pkgin

Package support for pkgin based systems, inspired from freebsdpkg module

---

**Important:** If you feel that Salt should be using this module to manage packages on a minion, and it is using a different module (or gives an error similar to *`pkg.install' is not available*), see *here*.

---

salt.modules.pkgin.**available_version**(**names*, ***kwargs*)

This function is an alias of `latest_version`.

Return the latest version of the named package available for upgrade or installation.

If the latest version of a given package is already installed, an empty string will be returned for that package.

CLI Example:

```
salt '*' pkg.latest_version <package name>
salt '*' pkg.latest_version <package1> <package2> ...
```

salt.modules.pkgin.**file_dict**(**packages*)

List the files that belong to a package.

CLI Examples:

```
salt '*' pkg.file_dict nginx
salt '*' pkg.file_dict nginx varnish
```

salt.modules.pkgin.**file_list**(*package*)

List the files that belong to a package.

CLI Examples:

```
salt '*' pkg.file_list nginx
```

salt.modules.pkgin.**install**(*name=None*, *refresh=False*, *fromrepo=None*, *pkgs=None*, *sources=None*, ***kwargs*)

Install the passed package

**name** The name of the package to be installed.

**refresh** Whether or not to refresh the package database before installing.
**fromrepo** Specify a package repository to install from.
Multiple Package Installation Options:
**pkgs** A list of packages to install from a software repository. Must be passed as a python list.

CLI Example:

```
salt '*' pkg.install pkgs='["foo","bar"]'
```

**sources** A list of packages to install. Must be passed as a list of dicts, with the keys being package names, and the values being the source URI or local path to the package.

CLI Example:

```
salt '*' pkg.install sources='[{"foo": "salt://foo.deb"},{"bar": "salt://bar.
↪deb"}]'
```

Return a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

CLI Example:

```
salt '*' pkg.install <package name>
```

salt.modules.pkgin.**latest_version**(**names*, ***kwargs*)
Return the latest version of the named package available for upgrade or installation.

If the latest version of a given package is already installed, an empty string will be returned for that package.

CLI Example:

```
salt '*' pkg.latest_version <package name>
salt '*' pkg.latest_version <package1> <package2> ...
```

salt.modules.pkgin.**list_pkgs**(*versions_as_list=False*, ***kwargs*)
List the packages currently installed as a dict:

```
{'<package_name>': '<version>'}
```

CLI Example:

```
salt '*' pkg.list_pkgs
```

salt.modules.pkgin.**purge**(*name=None*, *pkgs=None*, ***kwargs*)
Package purges are not supported, this function is identical to `remove()`.
**name** The name of the package to be deleted.
Multiple Package Options:
**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.
New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.purge <package name>
salt '*' pkg.purge <package1>,<package2>,<package3>
salt '*' pkg.purge pkgs='["foo", "bar"]'
```

salt.modules.pkgin.**refresh_db**()
Use pkg update to get latest pkg_summary

CLI Example:

```
salt '*' pkg.refresh_db
```

salt.modules.pkgin.**remove**(*name=None*, *pkgs=None*, ***kwargs*)
**name** The name of the package to be deleted.
Multiple Package Options:
**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.
New in version 0.16.0.

Returns a list containing the removed packages.

CLI Example:

```
salt '*' pkg.remove <package name>
salt '*' pkg.remove <package1>,<package2>,<package3>
salt '*' pkg.remove pkgs='["foo", "bar"]'
```

salt.modules.pkgin.**search**(*pkg_name*)
Searches for an exact match using pkgin ^package$

CLI Example:

```
salt '*' pkg.search 'mysql-server'
```

salt.modules.pkgin.**upgrade**()
Run pkg upgrade, if pkgin used. Otherwise do nothing

Return a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

CLI Example:

```
salt '*' pkg.upgrade
```

salt.modules.pkgin.**version**(**names*, ***kwargs*)
Returns a string representing the package version or an empty string if not installed. If more than one package name is specified, a dict of name/version pairs is returned.

CLI Example:

```
salt '*' pkg.version <package name>
salt '*' pkg.version <package1> <package2> <package3> ...
```

### 13.6.227 salt.modules.pkgng

Support for `pkgng`, the new package manager for FreeBSD

**Important:** If you feel that Salt should be using this module to manage packages on a minion, and it is using a different module (or gives an error similar to *`pkg.install' is not available*), see *here*.

**Warning**: This module has been completely rewritten. Up to and including version 0.17.x, it was available as the `pkgng` module, (`pkgng.install`, `pkgng.delete`, etc.), but moving forward this module will no longer be available as `pkgng`, as it will behave like a normal Salt `pkg` provider. The documentation below should not be considered to apply to this module in versions <= 0.17.x. If your minion is running a 0.17.x release or older, then the documentation for this module can be viewed using the `sys.doc` function:

```
salt bsdminion sys.doc pkgng
```

This module provides an interface to `pkg(8)`. It acts as the default package provider for FreeBSD 10 and newer. For FreeBSD hosts which have been upgraded to use pkgng, you will need to override the `pkg` provider by setting the *`providers`* parameter in your Minion config file, in order to use this module to manage packages, like so:

```
providers:
  pkg: pkgng
```

`salt.modules.pkgng.`**`audit`**(*jail=None*, *chroot=None*)

Audits installed packages against known vulnerabilities

CLI Example:

```
salt '*' pkg.audit
```

**jail** Audit packages within the specified jail

CLI Example:

```
salt '*' pkg.audit jail=<jail name or id>
```

**chroot** Audit packages within the specified chroot (ignored if `jail` is specified)

CLI Example:

```
salt '*' pkg.audit chroot=/path/to/chroot
```

`salt.modules.pkgng.`**`autoremove`**(*jail=None*, *chroot=None*, *dryrun=False*)

Delete packages which were automatically installed as dependencies and are not required anymore.
**dryrun** Dry-run mode. The list of changes to packages is always printed, but no changes are actually made.
CLI Example:

```
salt '*' pkg.autoremove
salt '*' pkg.autoremove jail=<jail name or id>
salt '*' pkg.autoremove dryrun=True
salt '*' pkg.autoremove jail=<jail name or id> dryrun=True
```

`salt.modules.pkgng.`**`backup`**(*file_name*, *jail=None*, *chroot=None*)

Export installed packages into yaml+mtree file

CLI Example:

```
salt '*' pkg.backup /tmp/pkg
```

**jail** Backup packages from the specified jail. Note that this will run the command within the jail, and so the path to the backup file will be relative to the root of the jail

CLI Example:

```
salt '*' pkg.backup /tmp/pkg jail=<jail name or id>
```

**chroot** Backup packages from the specified chroot (ignored if `jail` is specified). Note that this will run the command within the chroot, and so the path to the backup file will be relative to the root of the chroot.

CLI Example:

```
salt '*' pkg.backup /tmp/pkg chroot=/path/to/chroot
```

`salt.modules.pkgng.`**`check`**(*jail=None, chroot=None, depends=False, recompute=False, checksum=False*)

Sanity checks installed packages

**jail** Perform the sanity check in the specified jail

CLI Example:

```
salt '*' pkg.check jail=<jail name or id>
```

**chroot** Perform the sanity check in the specified chroot (ignored if `jail` is specified)

CLI Example:

```
salt '*' pkg.check chroot=/path/to/chroot
```

Of the below, at least one must be set to `True`.

**depends** Check for and install missing dependencies.

CLI Example:

```
salt '*' pkg.check recompute=True
```

**recompute** Recompute sizes and checksums of installed packages.

CLI Example:

```
salt '*' pkg.check depends=True
```

**checksum** Find invalid checksums for installed packages.

CLI Example:

```
salt '*' pkg.check checksum=True
```

`salt.modules.pkgng.`**`clean`**(*jail=None, chroot=None*)

Cleans the local cache of fetched remote packages

CLI Example:

```
salt '*' pkg.clean
salt '*' pkg.clean jail=<jail name or id>
salt '*' pkg.clean chroot=/path/to/chroot
```

`salt.modules.pkgng.`**`fetch`**(*name, jail=None, chroot=None, fetch_all=False, quiet=False, fromrepo=None, glob=True, regex=False, pcre=False, local=False, depends=False*)

Fetches remote packages

CLI Example:

```
salt '*' pkg.fetch <package name>
```

**jail** Fetch package in the specified jail

CLI Example:

```
salt '*' pkg.fetch <package name> jail=<jail name or id>
```

**chroot** Fetch package in the specified chroot (ignored if `jail` is specified)

CLI Example:

```
salt '*' pkg.fetch <package name> chroot=/path/to/chroot
```

**fetch_all** Fetch all packages.

CLI Example:

```
salt '*' pkg.fetch <package name> fetch_all=True
```

**quiet** Quiet mode. Show less output.

CLI Example:

```
salt '*' pkg.fetch <package name> quiet=True
```

**fromrepo** Fetches packages from the given repo if multiple repo support is enabled. See `pkg.conf(5)`.

CLI Example:

```
salt '*' pkg.fetch <package name> fromrepo=repo
```

**glob** Treat pkg_name as a shell glob pattern.

CLI Example:

```
salt '*' pkg.fetch <package name> glob=True
```

**regex** Treat pkg_name as a regular expression.

CLI Example:

```
salt '*' pkg.fetch <regular expression> regex=True
```

**pcre** Treat pkg_name is an extended regular expression.

CLI Example:

```
salt '*' pkg.fetch <extended regular expression> pcre=True
```

**local** Skip updating the repository catalogs with pkg-update(8). Use the local cache only.

CLI Example:

```
salt '*' pkg.fetch <package name> local=True
```

**depends** Fetch the package and its dependencies as well.

CLI Example:

```
salt '*' pkg.fetch <package name> depends=True
```

`salt.modules.pkgng.`**`install`**(*name=None*, *fromrepo=None*, *pkgs=None*, *sources=None*, *jail=None*, *chroot=None*, *orphan=False*, *force=False*, *glob=False*, *local=False*, *dryrun=False*, *quiet=False*, *reinstall_requires=False*, *regex=False*, *pcre=False*, ***kwargs*)

Install package(s) from a repository

**name** The name of the package to install

CLI Example:

```
salt '*' pkg.install <package name>
```

**jail** Install the package into the specified jail

**chroot** Install the package into the specified chroot (ignored if `jail` is specified)

**orphan** Mark the installed package as orphan. Will be automatically removed if no other packages depend on them. For more information please refer to `pkg-autoremove(8)`.

CLI Example:

```
salt '*' pkg.install <package name> orphan=True
```

**force** Force the reinstallation of the package if already installed.

CLI Example:

```
salt '*' pkg.install <package name> force=True
```

**glob** Treat the package names as shell glob patterns.

CLI Example:

```
salt '*' pkg.install <package name> glob=True
```

**local** Do not update the repository catalogs with `pkg-update(8)`. A value of `True` here is equivalent to using the `-U` flag with `pkg install`.

CLI Example:

```
salt '*' pkg.install <package name> local=True
```

**dryrun** Dru-run mode. The list of changes to packages is always printed, but no changes are actually made.

CLI Example:

```
salt '*' pkg.install <package name> dryrun=True
```

**quiet** Force quiet output, except when dryrun is used, where pkg install will always show packages to be installed, upgraded or deleted.

CLI Example:

```
salt '*' pkg.install <package name> quiet=True
```

**reinstall_requires** When used with force, reinstalls any packages that require the given package.

CLI Example:

```
salt '*' pkg.install <package name> reinstall_requires=True force=True
```

Changed in version 2014.7.0: `require` kwarg renamed to `reinstall_requires`

**fromrepo** In multi-repo mode, override the pkg.conf ordering and only attempt to download packages from the named repository.

CLI Example:

```
salt '*' pkg.install <package name> fromrepo=repo
```

**regex** Treat the package names as a regular expression

CLI Example:

```
salt '*' pkg.install <regular expression> regex=True
```

**pcre** Treat the package names as extended regular expressions.

CLI Example:

```
salt '*' pkg.install <extended regular expression> pcre=True
```

salt.modules.pkgng.**latest_version**(**names*, ***kwargs*)

Return the latest version of the named package available for upgrade or installation. If more than one package name is specified, a dict of name/version pairs is returned.

If the latest version of a given package is already installed, an empty string will be returned for that package.

CLI Example:

```
salt '*' pkg.latest_version <package name>
salt '*' pkg.latest_version <package name> jail=<jail name or id>
salt '*' pkg.latest_version <package name> chroot=/path/to/chroot
```

salt.modules.pkgng.**list_pkgs**(*versions_as_list=False*, *jail=None*, *chroot=None*, *with_origin=False*, ***kwargs*)

List the packages currently installed as a dict:

```
{'<package_name>': '<version>'}
```

**jail** List the packages in the specified jail

**chroot** List the packages in the specified chroot (ignored if `jail` is specified)

**with_origin** [False] Return a nested dictionary containing both the origin name and version for each installed package.

New in version 2014.1.0.

CLI Example:

```
salt '*' pkg.list_pkgs
salt '*' pkg.list_pkgs jail=<jail name or id>
salt '*' pkg.list_pkgs chroot=/path/to/chroot
```

salt.modules.pkgng.**parse_config**(*file_name='/usr/local/etc/pkg.conf'*)

Return dict of uncommented global variables.

CLI Example:

```
salt '*' pkg.parse_config
```

`NOTE:` not working properly right now

salt.modules.pkgng.**refresh_db**(*jail=None*, *chroot=None*, *force=False*)

Refresh PACKAGESITE contents

---

**Note:** This function can accessed using `pkg.update` in addition to `pkg.refresh_db`, to more closely match the CLI usage of `pkg(8)`.

---

CLI Example:

```
salt '*' pkg.refresh_db
```

**jail** Refresh the pkg database within the specified jail

**chroot** Refresh the pkg database within the specified chroot (ignored if `jail` is specified)

**force** Force a full download of the repository catalog without regard to the respective ages of the local and remote copies of the catalog.

CLI Example:

```
salt '*' pkg.refresh_db force=True
```

salt.modules.pkgng.**remove**(*name=None*, *pkgs=None*, *jail=None*, *chroot=None*, *all_installed=False*, *force=False*, *glob=False*, *dryrun=False*, *recurse=False*, *regex=False*, *pcre=False*, ***kwargs*)

Remove a package from the database and system

---

**Note**: This function can accessed using `pkg.delete` in addition to `pkg.remove`, to more closely match the CLI usage of `pkg(8)`.

---

**name** The package to remove

CLI Example:

```
salt '*' pkg.remove <package name>
```

**jail** Delete the package from the specified jail
**chroot** Delete the package from the specified chroot (ignored if `jail` is specified)
**all_installed** Deletes all installed packages from the system and empties the database. USE WITH CAUTION!

CLI Example:

```
salt '*' pkg.remove all all_installed=True force=True
```

**force** Forces packages to be removed despite leaving unresolved dependencies.

CLI Example:

```
salt '*' pkg.remove <package name> force=True
```

**glob** Treat the package names as shell glob patterns.

CLI Example:

```
salt '*' pkg.remove <package name> glob=True
```

**dryrun** Dry run mode. The list of packages to delete is always printed, but no packages are actually deleted.

CLI Example:

```
salt '*' pkg.remove <package name> dryrun=True
```

**recurse** Delete all packages that require the listed package as well.

CLI Example:

```
salt '*' pkg.remove <package name> recurse=True
```

**regex** Treat the package names as regular expressions.

CLI Example:

```
salt '*' pkg.remove <regular expression> regex=True
```

**pcre** Treat the package names as extended regular expressions.

CLI Example:

```
salt '*' pkg.remove <extended regular expression> pcre=True
```

salt.modules.pkgng.**restore**(*file_name*, *jail=None*, *chroot=None*)

Reads archive created by pkg backup -d and recreates the database.

CLI Example:

```
salt '*' pkg.restore /tmp/pkg
```

**jail** Restore database to the specified jail. Note that this will run the command within the jail, and so the path to the file from which the pkg database will be restored is relative to the root of the jail.

CLI Example:

```
salt '*' pkg.restore /tmp/pkg jail=<jail name or id>
```

**chroot** Restore database to the specified chroot (ignored if `jail` is specified). Note that this will run the command within the chroot, and so the path to the file from which the pkg database will be restored is relative to the root of the chroot.

CLI Example:

```
salt '*' pkg.restore /tmp/pkg chroot=/path/to/chroot
```

`salt.modules.pkgng.`**`search`**(*name*, *jail=None*, *chroot=None*, *exact=False*, *glob=False*, *regex=False*, *pcre=False*, *comment=False*, *desc=False*, *full=False*, *depends=False*, *size=False*, *quiet=False*, *origin=False*, *prefix=False*)

Searches in remote package repositories

CLI Example:

```
salt '*' pkg.search pattern
```

**jail** Perform the search using the `pkg.conf(5)` from the specified jail

CLI Example:

```
salt '*' pkg.search pattern jail=<jail name or id>
```

**chroot** Perform the search using the `pkg.conf(5)` from the specified chroot (ignored if `jail` is specified)

CLI Example:

```
salt '*' pkg.search pattern chroot=/path/to/chroot
```

**exact** Treat pattern as exact pattern.

CLI Example:

```
salt '*' pkg.search pattern exact=True
```

**glob** Treat pattern as a shell glob pattern.

CLI Example:

```
salt '*' pkg.search pattern glob=True
```

**regex** Treat pattern as a regular expression.

CLI Example:

```
salt '*' pkg.search pattern regex=True
```

**pcre** Treat pattern as an extended regular expression.

CLI Example:

```
salt '*' pkg.search pattern pcre=True
```

**comment** Search for pattern in the package comment one-line description.

CLI Example:

```
salt '*' pkg.search pattern comment=True
```

**desc** Search for pattern in the package description.

CLI Example:

```
salt '*' pkg.search pattern desc=True
```

**full** Displays full information about the matching packages.

CLI Example:

```
salt '*' pkg.search pattern full=True
```

**depends** Displays the dependencies of pattern.

CLI Example:

```
salt '*' pkg.search pattern depends=True
```

**size** Displays the size of the package

CLI Example:

```
salt '*' pkg.search pattern size=True
```

**quiet** Be quiet. Prints only the requested information without displaying many hints.

CLI Example:

```
salt '*' pkg.search pattern quiet=True
```

**origin** Displays pattern origin.

CLI Example:

```
salt '*' pkg.search pattern origin=True
```

**prefix** Displays the installation prefix for each package matching pattern.

CLI Example:

```
salt '*' pkg.search pattern prefix=True
```

`salt.modules.pkgng.`**`stats`**(*local=False, remote=False, jail=None, chroot=None*)

Return pkgng stats.

CLI Example:

```
salt '*' pkg.stats
```

**local** Display stats only for the local package database.

CLI Example:

```
salt '*' pkg.stats local=True
```

**remote** Display stats only for the remote package database(s).

CLI Example:

```
salt '*' pkg.stats remote=True
```

**jail** Retrieve stats from the specified jail.

CLI Example:

```
salt '*' pkg.stats jail=<jail name or id>
salt '*' pkg.stats jail=<jail name or id> local=True
salt '*' pkg.stats jail=<jail name or id> remote=True
```

**chroot** Retrieve stats from the specified chroot (ignored if `jail` is specified).

CLI Example:

```
salt '*' pkg.stats chroot=/path/to/chroot
salt '*' pkg.stats chroot=/path/to/chroot local=True
salt '*' pkg.stats chroot=/path/to/chroot remote=True
```

`salt.modules.pkgng.`**`update_package_site`**(*new_url*)

Updates remote package repo URL, PACKAGESITE var to be exact.

Must use `http://`, `ftp://`, or `https://` protocol

CLI Example:

```
salt '*' pkg.update_package_site http://127.0.0.1/
```

`salt.modules.pkgng.`**`updating`**(*name*, *jail=None*, *chroot=None*, *filedate=None*, *filename=None*)

` Displays UPDATING entries of software packages

CLI Example:

```
salt '*' pkg.updating foo
```

**jail** Perform the action in the specified jail

CLI Example:

```
salt '*' pkg.updating foo jail=<jail name or id>
```

**chroot** Perform the action in the specified chroot (ignored if `jail` is specified)

CLI Example:

```
salt '*' pkg.updating foo chroot=/path/to/chroot
```

**filedate** Only entries newer than date are shown. Use a YYYYMMDD date format.

CLI Example:

```
salt '*' pkg.updating foo filedate=20130101
```

**filename** Defines an alternative location of the UPDATING file.

CLI Example:

```
salt '*' pkg.updating foo filename=/tmp/UPDATING
```

`salt.modules.pkgng.`**`upgrade`**(**names*, ***kwargs*)

Upgrade named or all packages (run a `pkg upgrade`). If <package name> is omitted, the operation is executed on all packages.

CLI Example:

```
salt '*' pkg.upgrade <package name>
```

**jail** Audit packages within the specified jail

CLI Example:

```
salt '*' pkg.upgrade <package name> jail=<jail name or id>
```

**chroot** Audit packages within the specified chroot (ignored if `jail` is specified)

CLI Example:

```
salt '*' pkg.upgrade <package name> chroot=/path/to/chroot
```

Any of the below options can also be used with `jail` or `chroot`.

**force** Force reinstalling/upgrading the whole set of packages.

CLI Example:

```
salt '*' pkg.upgrade <package name> force=True
```

**local** Do not update the repository catalogs with `pkg-update(8)`. A value of `True` here is equivalent to using the `-U` flag with `pkg upgrade`.

CLI Example:

```
salt '*' pkg.upgrade <package name> local=True
```

**dryrun** Dry-run mode: show what packages have updates available, but do not perform any upgrades. Repository catalogs will be updated as usual unless the local option is also given.

CLI Example:

```
salt '*' pkg.upgrade <package name> dryrun=True
```

`salt.modules.pkgng.`**`version`**`(`*names*, ***kwargs*`)`

Returns a string representing the package version or an empty string if not installed. If more than one package name is specified, a dict of name/version pairs is returned.

---

**Note**: This function can accessed using `pkg.info` in addition to `pkg.version`, to more closely match the CLI usage of `pkg(8)`.

---

**jail** Get package version information for the specified jail

**chroot** Get package version information for the specified chroot (ignored if `jail` is specified)

**with_origin** [False] Return a nested dictionary containing both the origin name and version for each specified package.

New in version 2014.1.0.

CLI Example:

```
salt '*' pkg.version <package name>
salt '*' pkg.version <package name> jail=<jail name or id>
salt '*' pkg.version <package1> <package2> <package3> ...
```

`salt.modules.pkgng.`**`version_cmp`**`(`*pkg1*, *pkg2*, *ignore_epoch=False*`)`

Do a cmp-style comparison on two packages. Return -1 if pkg1 < pkg2, 0 if pkg1 == pkg2, and 1 if pkg1 > pkg2. Return None if there was a problem making the comparison.

CLI Example:

```
salt '*' pkg.version_cmp '2.1.11' '2.1.12'
```

salt.modules.pkgng.**which**(*path*, *jail=None*, *chroot=None*, *origin=False*, *quiet=False*)

Displays which package installed a specific file

CLI Example:

```
salt '*' pkg.which <file name>
```

**jail** Perform the check in the specified jail

CLI Example:

```
salt '*' pkg.which <file name> jail=<jail name or id>
```

**chroot** Perform the check in the specified chroot (ignored if `jail` is specified)

CLI Example:

```
salt '*' pkg.which <file name> chroot=/path/to/chroot
```

**origin** Shows the origin of the package instead of name-version.

CLI Example:

```
salt '*' pkg.which <file name> origin=True
```

**quiet** Quiet output.

CLI Example:

```
salt '*' pkg.which <file name> quiet=True
```

### 13.6.228 salt.modules.pkgutil

Pkgutil support for Solaris

---

**Important:** If you feel that Salt should be using this module to manage packages on a minion, and it is using a different module (or gives an error similar to *`pkg.install' is not available*), see *here*.

---

salt.modules.pkgutil.**install**(*name=None*, *refresh=False*, *version=None*, *pkgs=None*, ***kwargs*)

Install packages using the pkgutil tool.

CLI Example:

```
salt '*' pkg.install <package_name>
salt '*' pkg.install SMClgcc346
```

Multiple Package Installation Options:

**pkgs** A list of packages to install from OpenCSW. Must be passed as a python list.

CLI Example:

```
salt '*' pkg.install pkgs='["foo", "bar"]'
salt '*' pkg.install pkgs='["foo", {"bar": "1.2.3"}]'
```

Returns a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

salt.modules.pkgutil.**latest_version**(**names*, ***kwargs*)

Return the latest version of the named package available for upgrade or installation. If more than one package name is specified, a dict of name/version pairs is returned.

If the latest version of a given package is already installed, an empty string will be returned for that package.

CLI Example:

```
salt '*' pkgutil.latest_version CSWpython
salt '*' pkgutil.latest_version <package1> <package2> <package3> ...
```

salt.modules.pkgutil.**list_pkgs**(*versions_as_list=False*, ***kwargs*)

List the packages currently installed as a dict:

```
{'<package_name>': '<version>'}
```

CLI Example:

```
salt '*' pkg.list_pkgs
salt '*' pkg.list_pkgs versions_as_list=True
```

salt.modules.pkgutil.**list_upgrades**(*refresh=True*, ***kwargs*)

List all available package upgrades on this system

CLI Example:

```
salt '*' pkgutil.list_upgrades
```

salt.modules.pkgutil.**purge**(*name=None*, *pkgs=None*, ***kwargs*)

Package purges are not supported, this function is identical to `remove()`.

**name** The name of the package to be deleted.

Multiple Package Options:

**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.purge <package name>
salt '*' pkg.purge <package1>,<package2>,<package3>
salt '*' pkg.purge pkgs='["foo", "bar"]'
```

salt.modules.pkgutil.**refresh_db**()

Updates the pkgutil repo database (pkgutil -U)

CLI Example:

```
salt '*' pkgutil.refresh_db
```

salt.modules.pkgutil.**remove**(*name=None*, *pkgs=None*, ***kwargs*)

Remove a package and all its dependencies which are not in use by other packages.

**name** The name of the package to be deleted.

Multiple Package Options:

**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.remove <package name>
salt '*' pkg.remove <package1>,<package2>,<package3>
salt '*' pkg.remove pkgs='["foo", "bar"]'
```

`salt.modules.pkgutil.`**`upgrade`**(*refresh=True*)

Upgrade all of the packages to the latest available version.

Returns a dict containing the changes:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

CLI Example:

```
salt '*' pkgutil.upgrade
```

`salt.modules.pkgutil.`**`upgrade_available`**(*name*)

Check if there is an upgrade available for a certain package

CLI Example:

```
salt '*' pkgutil.upgrade_available CSWpython
```

`salt.modules.pkgutil.`**`version`**(**names*, ***kwargs*)

Returns a version if the package is installed, else returns an empty string

CLI Example:

```
salt '*' pkgutil.version CSWpython
```

### 13.6.229 salt.modules.portage_config

Configure `portage(5)`

`salt.modules.portage_config.`**`append_to_package_conf`**(*conf*, *atom=''*, *flags=None*, *string=''*, *overwrite=False*)

Append a string or a list of flags for a given package or DEPEND atom to a given configuration file.

CLI Example:

```
salt '*' portage_config.append_to_package_conf use string="app-admin/salt ldap -
↪libvirt"
salt '*' portage_config.append_to_package_conf use atom="> = app-admin/salt-0.14.1
↪" flags="['ldap', '-libvirt']"
```

`salt.modules.portage_config.`**`append_use_flags`**(*atom*, *uses=None*, *overwrite=False*)

Append a list of use flags for a given package or DEPEND atom

CLI Example:

```
salt '*' portage_config.append_use_flags "app-admin/salt[ldap, -libvirt]"
salt '*' portage_config.append_use_flags ">=app-admin/salt-0.14.1" "['ldap', '-
↪libvirt']"
```

salt.modules.portage_config.**enforce_nice_config**()

Enforce a nice tree structure for /etc/portage/package.* configuration files.

See also:

***salt.modules.ebuild.ex_mod_init()*** for information on automatically running this when pkg is used.

CLI Example:

```
salt '*' portage_config.enforce_nice_config
```

salt.modules.portage_config.**filter_flags**(*use*, *use_expand_hidden*, *usemasked*, *useforced*)

New in version 2015.8.0.

Filter function to remove hidden or otherwise not normally visible USE flags from a list.

@type use: list @param use: the USE flag list to be filtered. @type use_expand_hidden: list @param use_expand_hidden: list of flags hidden. @type usemasked: list @param usemasked: list of masked USE flags. @type useforced: list @param useforced: the forced USE flags. @rtype: list @return the filtered USE flags.

salt.modules.portage_config.**get_all_cpv_use**(*cp*)

New in version 2015.8.0.

Uses portage to determine final USE flags and settings for an emerge.

@type cp: string @param cp: eg cat/pkg @rtype: lists @return use, use_expand_hidden, usemask, useforce

salt.modules.portage_config.**get_cleared_flags**(*cp*)

New in version 2015.8.0.

Uses portage for compare use flags which is used for installing package and use flags which now exist int /etc/portage/package.use/

@type cp: string @param cp: eg cat/pkg @rtype: tuple @rparam: tuple with two lists - list of used flags and list of flags which will be used

salt.modules.portage_config.**get_flags_from_package_conf**(*conf*, *atom*)

Get flags for a given package or DEPEND atom. Warning: This only works if the configuration files tree is in the correct format (the one enforced by enforce_nice_config)

CLI Example:

```
salt '*' portage_config.get_flags_from_package_conf license salt
```

salt.modules.portage_config.**get_installed_use**(*cp*, *use='USE'*)

New in version 2015.8.0.

Gets the installed USE flags from the VARDB.

@type: cp: string @param cp: cat/pkg @type use: string @param use: 1 of ["USE", ``PKGUSE''] @rtype list @returns [] or the list of IUSE flags

salt.modules.portage_config.**get_iuse**(*cp*)

New in version 2015.8.0.

Gets the current IUSE flags from the tree.

@type: cpv: string @param cpv: cat/pkg @rtype list @returns [] or the list of IUSE flags

salt.modules.portage_config.**get_missing_flags**(*conf*, *atom*, *flags*)
Find out which of the given flags are currently not set. CLI Example:

```
salt '*' portage_config.get_missing_flags use salt "['ldap', '-libvirt', 'openssl
↪']"
```

salt.modules.portage_config.**has_flag**(*conf*, *atom*, *flag*)
Verify if the given package or DEPEND atom has the given flag. Warning: This only works if the configuration files tree is in the correct format (the one enforced by enforce_nice_config)

CLI Example:

```
salt '*' portage_config.has_flag license salt Apache-2.0
```

salt.modules.portage_config.**has_use**(*atom*, *use*)
Verify if the given package or DEPEND atom has the given use flag. Warning: This only works if the configuration files tree is in the correct format (the one enforced by enforce_nice_config)

CLI Example:

```
salt '*' portage_config.has_use salt libvirt
```

salt.modules.portage_config.**is_changed_uses**(*cp*)
New in version 2015.8.0.

Uses portage for determine if the use flags of installed package is compatible with use flags in portage configs.

@type cp: string @param cp: eg cat/pkg

salt.modules.portage_config.**is_present**(*conf*, *atom*)
Tell if a given package or DEPEND atom is present in the configuration files tree. Warning: This only works if the configuration files tree is in the correct format (the one enforced by enforce_nice_config)

CLI Example:

```
salt '*' portage_config.is_present unmask salt
```

### 13.6.230 salt.modules.postfix

Support for Postfix

This module is currently little more than a config file viewer and editor. It is able to read the master.cf file (which is one style) and files in the style of main.cf (which is a different style, that is used in multiple postfix configuration files).

The design of this module is such that when files are edited, a minimum of changes are made to them. Each file should look as if it has been edited by hand; order, comments and whitespace are all preserved.

salt.modules.postfix.**delete**(*queue_id*)
Delete message(s) from the mail queue

CLI Example:

```
salt '*' postfix.delete 5C33CA0DEA

salt '*' postfix.delete ALL
```

salt.modules.postfix.**hold**(*queue_id*)
Put message(s) on hold from the mail queue

CLI Example:

```
salt '*' postfix.hold 5C33CA0DEA

salt '*' postfix.hold ALL
```

salt.modules.postfix.**requeue**(*queue_id*)
Requeue message(s) in the mail queue

CLI Example:

```
salt '*' postfix.requeue 5C33CA0DEA

salt '*' postfix.requeue ALL
```

salt.modules.postfix.**set_main**(*key*, *value*, *path='/etc/postfix/main.cf'*)
Set a single config value in the main.cf file. If the value does not already exist, it will be appended to the end.

CLI Example:
salt <minion> postfix.set_main mailq_path /usr/bin/mailq

salt.modules.postfix.**set_master**(*service*, *conn_type*, *private='y'*, *unpriv='y'*, *chroot='y'*, *wakeup='n'*, *maxproc='100'*, *command=''*, *write_conf=True*, *path='/etc/postfix/master.cf'*)
Set a single config value in the master.cf file. If the value does not already exist, it will be appended to the end.

Because of shell parsing issues, `-` cannot be set as a value, as is normal in the master.cf file; either `y', `n' or a number should be used when calling this function from the command line. If the value used matches the default, it will internally be converted to a `-`. Calling this function from the Python API is not affected by this limitation

The settings and their default values, in order, are: service (required), conn_type (required), private (y), unpriv (y), chroot (y), wakeup (n), maxproc (100), command (required).

By default, this function will write out the changes to the master.cf file, and then returns the full contents of the file. By setting the `write_conf` option to `False`, it will skip writing the file.

CLI Example:
salt <minion> postfix.set_master smtp inet n y n n 100 smtpd

salt.modules.postfix.**show_main**(*path='/etc/postfix/main.cf'*)
Return a dict of active config values. This does not include comments, spacing or order. Bear in mind that order is functionally important in the main.cf file, since keys can be referred to as variables. This means that the data returned from this function should not be used for direct modification of the main.cf file; other functions are available for that.

CLI Examples:
salt <minion> postfix.show_main salt <minion> postfix.show_main path=/path/to/main.cf

salt.modules.postfix.**show_master**(*path='/etc/postfix/master.cf'*)
Return a dict of active config values. This does not include comments, spacing or order.

The data returned from this function should not be used for direct modification of the main.cf file; other functions are available for that.

CLI Examples:
salt <minion> postfix.show_master salt <minion> postfix.show_master path=/path/to/master.cf

salt.modules.postfix.**show_queue**()
Show contents of the mail queue

CLI Example:

```
salt '*' postfix.show_queue
```

salt.modules.postfix.**unhold**(*queue_id*)
Set held message(s) in the mail queue to unheld

CLI Example:

```
salt '*' postfix.unhold 5C33CA0DEA

salt '*' postfix.unhold ALL
```

### 13.6.231 salt.modules.postgres

Module to provide Postgres compatibility to salt.

**configuration** In order to connect to Postgres, certain configuration is required in /etc/salt/minion on the relevant minions. Some sample configs might look like:

```
postgres.host: 'localhost'
postgres.port: '5432'
postgres.user: 'postgres' -> db user
postgres.pass: ''
postgres.maintenance_db: 'postgres'
```

The default for the maintenance_db is `postgres' and in most cases it can be left at the default setting. This data can also be passed into pillar. Options passed into opts will overwrite options passed into pillar

**note** This module uses MD5 hashing which may not be compliant with certain security audits.

salt.modules.postgres.**available_extensions**(*user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)
List available postgresql extensions

CLI Example:

```
salt '*' postgres.available_extensions
```

salt.modules.postgres.**create_extension**(*name*, *if_not_exists=None*, *schema=None*, *ext_version=None*, *from_version=None*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)
Install a postgresql extension

CLI Example:

```
salt '*' postgres.create_extension 'adminpack'
```

salt.modules.postgres.**create_metadata**(*name*, *ext_version=None*, *schema=None*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)
Get lifecycle information about an extension

CLI Example:

```
salt '*' postgres.create_metadata adminpack
```

salt.modules.postgres.**datadir_exists**(*name*)

New in version 2016.3.0.

Checks if postgres data directory has been initialized

CLI Example:

```
salt '*' postgres.datadir_exists '/var/lib/pgsql/data'
```

**name** Name of the directory to check

salt.modules.postgres.**datadir_init**(*name*, *auth='password'*, *user=None*, *password=None*, *encoding='UTF8'*, *locale=None*, *runas=None*)

New in version 2016.3.0.

Initializes a postgres data directory

CLI Example:

```
salt '*' postgres.datadir_init '/var/lib/pgsql/data'
```

**name** The name of the directory to initialize
**auth** The default authentication method for local connections
**password** The password to set for the postgres user
**user** The database superuser name
**encoding** The default encoding for new databases
**locale** The default locale for new databases
**runas** The system user the operation should be performed on behalf of

salt.modules.postgres.**db_alter**(*name*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *tablespace=None*, *owner=None*, *owner_recurse=False*, *runas=None*)

Change tablespace or/and owner of database.

CLI Example:

```
salt '*' postgres.db_alter dbname owner=otheruser
```

salt.modules.postgres.**db_create**(*name*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *tablespace=None*, *encoding=None*, *lc_collate=None*, *lc_ctype=None*, *owner=None*, *template=None*, *runas=None*)

Adds a databases to the Postgres server.

CLI Example:

```
salt '*' postgres.db_create 'dbname'

salt '*' postgres.db_create 'dbname' template=template_postgis
```

salt.modules.postgres.**db_exists**(*name*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)

Checks if a database exists on the Postgres server.

CLI Example:

```
salt '*' postgres.db_exists 'dbname'
```

salt.modules.postgres.**db_list**(*user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)

Return dictionary with information about databases of a Postgres server.

CLI Example:

```
salt '*' postgres.db_list
```

salt.modules.postgres.**db_remove**(*name*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)

Removes a databases from the Postgres server.

CLI Example:

```
salt '*' postgres.db_remove 'dbname'
```

salt.modules.postgres.**drop_extension**(*name*, *if_exists=None*, *restrict=None*, *cascade=None*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)

Drop an installed postgresql extension

CLI Example:

```
salt '*' postgres.drop_extension 'adminpack'
```

salt.modules.postgres.**get_available_extension**(*name*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)

Get info about an available postgresql extension

CLI Example:

```
salt '*' postgres.get_available_extension plpgsql
```

salt.modules.postgres.**get_installed_extension**(*name*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)

Get info about an installed postgresql extension

CLI Example:

```
salt '*' postgres.get_installed_extension plpgsql
```

salt.modules.postgres.**group_create**(*groupname*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *createdb=None*, *createuser=None*, *createroles=None*, *encrypted=None*, *login=None*, *inherit=None*, *superuser=None*, *replication=None*, *rolepassword=None*, *groups=None*, *runas=None*)

Creates a Postgres group. A group is postgres is similar to a user, but cannot login.

CLI Example:

```
salt '*' postgres.group_create 'groupname' user='user' \
       host='hostname' port='port' password='password' \
       rolepassword='rolepassword'
```

salt.modules.postgres.**group_remove**(*groupname*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)

Removes a group from the Postgres server.

CLI Example:

```
salt '*' postgres.group_remove 'groupname'
```

salt.modules.postgres.**group_update**(*groupname*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *createdb=None*, *createroles=None*, *createuser=None*, *encrypted=None*, *inherit=None*, *login=None*, *superuser=None*, *replication=None*, *rolepassword=None*, *groups=None*, *runas=None*)

Updates a postgres group

CLI Examples:

```
salt '*' postgres.group_update 'username' user='user' \
        host='hostname' port='port' password='password' \
        rolepassword='rolepassword'
```

salt.modules.postgres.**has_privileges**(*name*, *object_name*, *object_type*, *privileges=None*, *grant_option=None*, *prepend='public'*, *maintenance_db=None*, *user=None*, *host=None*, *port=None*, *password=None*, *runas=None*)

New in version 2016.3.0.

Check if a role has the specified privileges on an object

CLI Example:

```
salt '*' postgres.has_privileges user_name table_name table \
SELECT,INSERT maintenance_db=db_name
```

**name** Name of the role whose privileges should be checked on object_type
**object_name** Name of the object on which the check is to be performed
**object_type** The object type, which can be one of the following:

- table
- sequence
- schema
- tablespace
- language
- database
- group

**privileges** Comma separated list of privileges to check, from the list below:

- INSERT
- CREATE
- TRUNCATE
- CONNECT
- TRIGGER
- SELECT
- USAGE
- TEMPORARY
- UPDATE
- EXECUTE
- REFERENCES
- DELETE
- ALL

**grant_option** If grant_option is set to True, the grant option check is performed
**prepend** Table and Sequence object types live under a schema so this should be provided if the object is not under the default *public* schema
**maintenance_db** The database to connect to
**user** database username if different from config or default
**password** user password if any password for a specified user
**host** Database host if different from config or default
**port** Database port if different from config or default
**runas** System user all operations should be performed on behalf of

salt.modules.postgres.**installed_extensions**(*user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)

List installed postgresql extensions

CLI Example:

```
salt '*' postgres.installed_extensions
```

salt.modules.postgres.**is_available_extension**(*name*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)

Test if a specific extension is available

CLI Example:

```
salt '*' postgres.is_available_extension
```

salt.modules.postgres.**is_installed_extension**(*name*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)

Test if a specific extension is installed

CLI Example:

```
salt '*' postgres.is_installed_extension
```

salt.modules.postgres.**language_create**(*name*, *maintenance_db*, *user=None*, *host=None*, *port=None*, *password=None*, *runas=None*)

New in version 2016.3.0.

Installs a language into a database

CLI Example:

```
salt '*' postgres.language_create plpgsql dbname
```

**name** Language to install
**maintenance_db** The database to install the language in
**user** database username if different from config or default
**password** user password if any password for a specified user
**host** Database host if different from config or default
**port** Database port if different from config or default
**runas** System user all operations should be performed on behalf of

salt.modules.postgres.**language_exists**(*name*, *maintenance_db*, *user=None*, *host=None*, *port=None*, *password=None*, *runas=None*)

New in version 2016.3.0.

Checks if language exists in a database.

CLI Example:

```
salt '*' postgres.language_exists plpgsql dbname
```

**name** Language to check for
**maintenance_db** The database to check in
**user** database username if different from config or default
**password** user password if any password for a specified user
**host** Database host if different from config or default
**port** Database port if different from config or default
**runas** System user all operations should be performed on behalf of

salt.modules.postgres.**language_list**(*maintenance_db*, *user=None*, *host=None*, *port=None*, *password=None*, *runas=None*)

New in version 2016.3.0.

Return a list of languages in a database.

CLI Example:

```
salt '*' postgres.language_list dbname
```

**maintenance_db** The database to check
**user** database username if different from config or default
**password** user password if any password for a specified user
**host** Database host if different from config or default
**port** Database port if different from config or default
**runas** System user all operations should be performed on behalf of

salt.modules.postgres.**language_remove**(*name*, *maintenance_db*, *user=None*, *host=None*, *port=None*, *password=None*, *runas=None*)

New in version 2016.3.0.

Removes a language from a database

CLI Example:

```
salt '*' postgres.language_remove plpgsql dbname
```

**name** Language to remove
**maintenance_db** The database to install the language in
**user** database username if different from config or default
**password** user password if any password for a specified user
**host** Database host if different from config or default
**port** Database port if different from config or default
**runas** System user all operations should be performed on behalf of

salt.modules.postgres.**owner_to**(*dbname*, *ownername*, *user=None*, *host=None*, *port=None*, *password=None*, *runas=None*)

Set the owner of all schemas, functions, tables, views and sequences to the given username.

CLI Example:

```
salt '*' postgres.owner_to 'dbname' 'username'
```

salt.modules.postgres.**privileges_grant**(*name*, *object_name*, *object_type*, *privileges=None*, *grant_option=None*, *prepend='public'*, *maintenance_db=None*, *user=None*, *host=None*, *port=None*, *password=None*, *runas=None*)

New in version 2016.3.0.

Grant privileges on a postgres object

CLI Example:

```
salt '*' postgres.privileges_grant user_name table_name table \
SELECT,UPDATE maintenance_db=db_name
```

**name** Name of the role to which privileges should be granted
**object_name** Name of the object on which the grant is to be performed
**object_type** The object type, which can be one of the following:

- table
- sequence
- schema
- tablespace
- language
- database
- group

**privileges** Comma separated list of privileges to grant, from the list below:

- INSERT
- CREATE
- TRUNCATE
- CONNECT
- TRIGGER
- SELECT
- USAGE
- TEMPORARY
- UPDATE
- EXECUTE
- REFERENCES
- DELETE
- ALL

**grant_option** If grant_option is set to True, the recipient of the privilege can in turn grant it to others
**prepend** Table and Sequence object types live under a schema so this should be provided if the object is not under the default *public* schema
**maintenance_db** The database to connect to
**user** database username if different from config or default
**password** user password if any password for a specified user
**host** Database host if different from config or default
**port** Database port if different from config or default
**runas** System user all operations should be performed on behalf of

salt.modules.postgres.**privileges_list**(*name*, *object_type*, *prepend='public'*, *maintenance_db=None*, *user=None*, *host=None*, *port=None*, *password=None*, *runas=None*)

New in version 2016.3.0.

Return a list of privileges for the specified object.

CLI Example:

```
salt '*' postgres.privileges_list table_name table maintenance_db=db_name
```

**name** Name of the object for which the permissions should be returned
**object_type** The object type, which can be one of the following:

- table
- sequence
- schema

- tablespace
- language
- database
- group

**prepend** Table and Sequence object types live under a schema so this should be provided if the object is not under the default *public* schema
**maintenance_db** The database to connect to
**user** database username if different from config or default
**password** user password if any password for a specified user
**host** Database host if different from config or default
**port** Database port if different from config or default
**runas** System user all operations should be performed on behalf of

salt.modules.postgres.**privileges_revoke**(*name*, *object_name*, *object_type*, *privileges=None*, *prepend='public'*, *maintenance_db=None*, *user=None*, *host=None*, *port=None*, *password=None*, *runas=None*)

New in version 2016.3.0.

Revoke privileges on a postgres object

CLI Example:

```
salt '*' postgres.privileges_revoke user_name table_name table \
SELECT,UPDATE maintenance_db=db_name
```

**name** Name of the role whose privileges should be revoked
**object_name** Name of the object on which the revoke is to be performed
**object_type** The object type, which can be one of the following:

- table
- sequence
- schema
- tablespace
- language
- database
- group

**privileges** Comma separated list of privileges to revoke, from the list below:

- INSERT
- CREATE
- TRUNCATE
- CONNECT
- TRIGGER
- SELECT
- USAGE
- TEMPORARY
- UPDATE
- EXECUTE
- REFERENCES
- DELETE
- ALL

**maintenance_db** The database to connect to
**user** database username if different from config or default
**password** user password if any password for a specified user
**host** Database host if different from config or default
**port** Database port if different from config or default
**runas** System user all operations should be performed on behalf of

salt.modules.postgres.**psql_query**(*query*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)

Run an SQL-Query and return the results as a list. This command only supports SELECT statements. This limitation can be worked around with a query like this:

WITH updated AS (UPDATE pg_authid SET rolconnlimit = 2000 WHERE rolname = `rolename' RETURNING rolconnlimit) SELECT * FROM updated;
**query** The query string.
**user** Database username, if different from config or default.
**host** Database host, if different from config or default.
**port** Database port, if different from the config or default.
**maintenance_db** The database to run the query against.
**password** User password, if different from the config or default.
**runas** User to run the command as.
CLI Example:

```
salt '*' postgres.psql_query 'select * from pg_stat_activity'
```

salt.modules.postgres.**role_get**(*name*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*, *return_password=False*)

Return a dict with information about users of a Postgres server.

Set return_password to True to get password hash in the result.

CLI Example:

```
salt '*' postgres.role_get postgres
```

salt.modules.postgres.**schema_create**(*dbname*, *name*, *owner=None*, *user=None*, *db_user=None*, *db_password=None*, *db_host=None*, *db_port=None*)

Creates a Postgres schema.

CLI Example:

```
salt '*' postgres.schema_create dbname name owner='owner' \
        user='user' \
        db_user='user' db_password='password'
        db_host='hostname' db_port='port'
```

salt.modules.postgres.**schema_exists**(*dbname*, *name*, *db_user=None*, *db_password=None*, *db_host=None*, *db_port=None*)

Checks if a schema exists on the Postgres server.

CLI Example:

```
salt '*' postgres.schema_exists dbname schemaname
```

**dbname** Database name we query on
**name** Schema name we look for
**db_user** database username if different from config or default
**db_password** user password if any password for a specified user
**db_host** Database host if different from config or default
**db_port** Database port if different from config or default

salt.modules.postgres.**schema_get**(*dbname*, *name*, *db_user=None*, *db_password=None*, *db_host=None*, *db_port=None*)

Return a dict with information about schemas in a database.

CLI Example:

```
salt '*' postgres.schema_get dbname name
```

**dbname** Database name we query on
**name** Schema name we look for
**db_user** database username if different from config or default
**db_password** user password if any password for a specified user
**db_host** Database host if different from config or default
**db_port** Database port if different from config or default

salt.modules.postgres.**schema_list**(*dbname*, *db_user=None*, *db_password=None*, *db_host=None*, *db_port=None*)

Return a dict with information about schemas in a Postgres database.

CLI Example:

```
salt '*' postgres.schema_list dbname
```

**dbname** Database name we query on
**db_user** database username if different from config or default
**db_password** user password if any password for a specified user
**db_host** Database host if different from config or default
**db_port** Database port if different from config or default

salt.modules.postgres.**schema_remove**(*dbname*, *name*, *user=None*, *db_user=None*, *db_password=None*, *db_host=None*, *db_port=None*)

Removes a schema from the Postgres server.

CLI Example:

```
salt '*' postgres.schema_remove dbname schemaname
```

**dbname** Database name we work on
**schemaname** The schema's name we'll remove
**user** System user all operations should be performed on behalf of
**db_user** database username if different from config or default
**db_password** user password if any password for a specified user
**db_host** Database host if different from config or default
**db_port** Database port if different from config or default

salt.modules.postgres.**tablespace_alter**(*name*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *new_name=None*, *new_owner=None*, *set_option=None*, *reset_option=None*, *runas=None*)

Change tablespace name, owner, or options.

CLI Example:

```
salt '*' postgres.tablespace_alter tsname new_owner=otheruser
salt '*' postgres.tablespace_alter index_space new_name=fast_raid
salt '*' postgres.tablespace_alter test set_option="{'seq_page_cost': '1.1'}"
salt '*' postgres.tablespace_alter tsname reset_option=seq_page_cost
```

New in version 2015.8.0.

salt.modules.postgres.**tablespace_create**(*name*, *location*, *options=None*, *owner=None*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)

Adds a tablespace to the Postgres server.

CLI Example:

```
salt '*' postgres.tablespace_create tablespacename '/path/datadir'
```

New in version 2015.8.0.

salt.modules.postgres.**tablespace_exists**(*name*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)

Checks if a tablespace exists on the Postgres server.

CLI Example:

```
salt '*' postgres.tablespace_exists 'dbname'
```

New in version 2015.8.0.

salt.modules.postgres.**tablespace_list**(*user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)

Return dictionary with information about tablespaces of a Postgres server.

CLI Example:

```
salt '*' postgres.tablespace_list
```

New in version 2015.8.0.

salt.modules.postgres.**tablespace_remove**(*name*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)

Removes a tablespace from the Postgres server.

CLI Example:

```
salt '*' postgres.tablespace_remove tsname
```

New in version 2015.8.0.

salt.modules.postgres.**user_create**(*username*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *createdb=None*, *createuser=None*, *createroles=None*, *inherit=None*, *login=None*, *connlimit=None*, *encrypted=None*, *superuser=None*, *replication=None*, *rolepassword=None*, *groups=None*, *runas=None*)

Creates a Postgres user.

CLI Examples:

```
salt '*' postgres.user_create 'username' user='user' \
       host='hostname' port='port' password='password' \
       rolepassword='rolepassword'
```

salt.modules.postgres.**user_exists**(*name*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)

Checks if a user exists on the Postgres server.

CLI Example:

```
salt '*' postgres.user_exists 'username'
```

salt.modules.postgres.**user_list**(*user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*, *return_password=False*)

Return a dict with information about users of a Postgres server.

Set return_password to True to get password hash in the result.

CLI Example:

```
salt '*' postgres.user_list
```

salt.modules.postgres.**user_remove**(*username*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)

Removes a user from the Postgres server.

CLI Example:

```
salt '*' postgres.user_remove 'username'
```

salt.modules.postgres.**user_update**(*username*, *user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *createdb=None*, *createuser=None*, *createroles=None*, *encrypted=None*, *superuser=None*, *inherit=None*, *login=None*, *connlimit=None*, *replication=None*, *rolepassword=None*, *groups=None*, *runas=None*)

Updates a Postgres user.

CLI Examples:

```
salt '*' postgres.user_update 'username' user='user' \
       host='hostname' port='port' password='password' \
       rolepassword='rolepassword'
```

salt.modules.postgres.**version**(*user=None*, *host=None*, *port=None*, *maintenance_db=None*, *password=None*, *runas=None*)

Return the version of a Postgres server.

CLI Example:

```
salt '*' postgres.version
```

### 13.6.232 salt.modules.poudriere

Support for poudriere

salt.modules.poudriere.**bulk_build**(*jail*, *pkg_file*, *keep=False*)

Run bulk build on poudriere server.

Return number of pkg builds, failures, and errors, on error dump to CLI

CLI Example:

```
salt -N buildbox_group poudriere.bulk_build 90amd64 /root/pkg_list
```

salt.modules.poudriere.**create_jail**(*name*, *arch*, *version=`9.0-RELEASE'*)

Creates a new poudriere jail if one does not exist

*NOTE* creating a new jail will take some time the master is not hanging

CLI Example:

```
salt '*' poudriere.create_jail 90amd64 amd64
```

salt.modules.poudriere.**create_ports_tree**()

Not working need to run portfetch non interactive

salt.modules.poudriere.**delete_jail**(*name*)
Deletes poudriere jail with *name*

CLI Example:

```
salt '*' poudriere.delete_jail 90amd64
```

salt.modules.poudriere.**is_jail**(*name*)
Return True if jail exists False if not

CLI Example:

```
salt '*' poudriere.is_jail <jail name>
```

salt.modules.poudriere.**list_jails**()
Return a list of current jails managed by poudriere

CLI Example:

```
salt '*' poudriere.list_jails
```

salt.modules.poudriere.**list_ports**()
Return a list of current port trees managed by poudriere

CLI Example:

```
salt '*' poudriere.list_ports
```

salt.modules.poudriere.**make_pkgng_aware**(*jname*)
Make jail `jname` pkgng aware

CLI Example:

```
salt '*' poudriere.make_pkgng_aware <jail name>
```

salt.modules.poudriere.**parse_config**(*config_file=None*)
Returns a dict of poudriere main configuration definitions

CLI Example:

```
salt '*' poudriere.parse_config
```

salt.modules.poudriere.**update_jail**(*name*)
Run freebsd-update on *name* poudriere jail

CLI Example:

```
salt '*' poudriere.update_jail freebsd:10:x86:64
```

salt.modules.poudriere.**update_ports_tree**(*ports_tree*)
Updates the ports tree, either the default or the *ports_tree* specified

CLI Example:

```
salt '*' poudriere.update_ports_tree staging
```

salt.modules.poudriere.**version**()
Return poudriere version

CLI Example:

```
salt '*' poudriere.version
```

### 13.6.233 salt.modules.powerpath

powerpath support.

Assumes RedHat

salt.modules.powerpath.**add_license**(*key*)
Add a license

salt.modules.powerpath.**has_powerpath**()

salt.modules.powerpath.**list_licenses**()
returns a list of applied powerpath license keys

salt.modules.powerpath.**remove_license**(*key*)
Remove a license

### 13.6.234 salt.modules.proxy module

This module allows you to manage proxy settings

```
salt '*' network.get_http_proxy
```

salt.modules.proxy.**get_ftp_proxy**(*network_service='Ethernet'*)
Returns the current ftp proxy settings
**network_service** The network service to apply the changes to, this only necessary on OSX
CLI Example:

```
salt '*' proxy.get_ftp_proxy Ethernet
```

salt.modules.proxy.**get_http_proxy**(*network_service='Ethernet'*)
Returns the current http proxy settings
**network_service** The network service to apply the changes to, this only necessary on OSX
CLI Example:

```
salt '*' proxy.get_http_proxy Ethernet
```

salt.modules.proxy.**get_https_proxy**(*network_service='Ethernet'*)
Returns the current https proxy settings
**network_service** The network service to apply the changes to, this only necessary on OSX
CLI Example:

```
salt '*' proxy.get_https_proxy Ethernet
```

salt.modules.proxy.**get_proxy_bypass**(*network_service='Ethernet'*)
Returns the current domains that can bypass the proxy
**network_service** The network service to get the bypass domains from, this is only necessary on OSX
CLI Example:

```
salt '*' proxy.get_proxy_bypass
```

salt.modules.proxy.**get_proxy_win**()
Gets all of the proxy settings in one call, only available on Windows

CLI Example:

```
salt '*' proxy.get_proxy_win
```

salt.modules.proxy.**set_ftp_proxy**(*server*, *port*, *user=None*, *password=None*, *network_service='Ethernet'*, *bypass_hosts=None*)

Sets the ftp proxy settings

**server** The proxy server to use

**port** The port used by the proxy server

**user** The username to use for the proxy server if required

**password** The password to use if required by the server

**network_service** The network service to apply the changes to, this only necessary on OSX

**bypass_hosts** The hosts that are allowed to by pass the proxy. Only used on Windows for other OS's use set_proxy_bypass to edit the bypass hosts.

CLI Example:

```
salt '*' proxy.set_ftp_proxy example.com 1080 user=proxy_user password=proxy_pass
 ↪network_service=Ethernet
```

salt.modules.proxy.**set_http_proxy**(*server*, *port*, *user=None*, *password=None*, *network_service='Ethernet'*, *bypass_hosts=None*)

Sets the http proxy settings. Note: On Windows this will override any other proxy settings you have, the preferred method of updating proxies on windows is using set_proxy.

**server** The proxy server to use

**port** The port used by the proxy server

**user** The username to use for the proxy server if required

**password** The password to use if required by the server

**network_service** The network service to apply the changes to, this only necessary on OSX

**bypass_hosts** The hosts that are allowed to by pass the proxy. Only used on Windows for other OS's use set_proxy_bypass to edit the bypass hosts.

CLI Example:

```
salt '*' proxy.set_http_proxy example.com 1080 user=proxy_user password=proxy_
 ↪pass network_service=Ethernet
```

salt.modules.proxy.**set_https_proxy**(*server*, *port*, *user=None*, *password=None*, *network_service='Ethernet'*, *bypass_hosts=None*)

Sets the https proxy settings. Note: On Windows this will override any other proxy settings you have, the preferred method of updating proxies on windows is using set_proxy.

**server** The proxy server to use

**port** The port used by the proxy server

**user** The username to use for the proxy server if required

**password** The password to use if required by the server

**network_service** The network service to apply the changes to, this only necessary on OSX

**bypass_hosts** The hosts that are allowed to by pass the proxy. Only used on Windows for other OS's use set_proxy_bypass to edit the bypass hosts.

CLI Example:

```
salt '*' proxy.set_https_proxy example.com 1080 user=proxy_user password=proxy_
 ↪pass network_service=Ethernet
```

salt.modules.proxy.**set_proxy_bypass**(*domains*, *network_service='Ethernet'*)

Sets the domains that can bypass the proxy

**domains** An array of domains allowed to bypass the proxy

**network_service** The network service to apply the changes to, this only necessary on OSX

CLI Example:

```
salt '*' proxy.set_proxy_bypass "['127.0.0.1', 'localhost']"
```

salt.modules.proxy.**set_proxy_win**(*server*, *port*, *types=None*, *bypass_hosts=None*)

Sets the http proxy settings, only works with Windows.

**server** The proxy server to use

**password** The password to use if required by the server

**types** The types of proxy connections should be setup with this server. Valid types are http and https.

**bypass_hosts** The hosts that are allowed to by pass the proxy.

CLI Example:

```
salt '*' proxy.set_http_proxy example.com 1080 types="['http', 'https']"
```

### 13.6.235 salt.modules.ps

A salt interface to psutil, a system and process library. See http://code.google.com/p/psutil.

**depends**

- psutil Python module, version 0.3.0 or later
- python-utmp package (optional)

salt.modules.ps.**boot_time**(*time_format=None*)

Return the boot time in number of seconds since the epoch began.

CLI Example:

**time_format** Optionally specify a strftime format string. Use `time_format='%c'` to get a nicely-formatted locale specific date and time (i.e. `Fri May 2 19:08:32 2014`).

New in version 2014.1.4.

```
salt '*' ps.boot_time
```

salt.modules.ps.**cpu_percent**(*interval=0.1*, *per_cpu=False*)

Return the percent of time the CPU is busy.

**interval** the number of seconds to sample CPU usage over

**per_cpu** if True return an array of CPU percent busy for each CPU, otherwise aggregate all percents into one number

CLI Example:

```
salt '*' ps.cpu_percent
```

salt.modules.ps.**cpu_times**(*per_cpu=False*)

Return the percent of time the CPU spends in each state, e.g. user, system, idle, nice, iowait, irq, softirq.

**per_cpu** if True return an array of percents for each CPU, otherwise aggregate all percents into one number

CLI Example:

```
salt '*' ps.cpu_times
```

salt.modules.ps.**disk_io_counters**(*device=None*)

Return disk I/O statistics.

CLI Example:

```
salt '*' ps.disk_io_counters

salt '*' ps.disk_io_counters device=sda1
```

salt.modules.ps.**disk_partition_usage**(*all=False*)

Return a list of disk partitions plus the mount point, filesystem and usage statistics.

CLI Example:

```
salt '*' ps.disk_partition_usage
```

salt.modules.ps.**disk_partitions**(*all=False*)

Return a list of disk partitions and their device, mount point, and filesystem type.

**all** if set to False, only return local, physical partitions (hard disk, USB, CD/DVD partitions). If True, return all filesystems.

CLI Example:

```
salt '*' ps.disk_partitions
```

salt.modules.ps.**disk_usage**(*path*)

Given a path, return a dict listing the total available space as well as the free space, and used space.

CLI Example:

```
salt '*' ps.disk_usage /home
```

salt.modules.ps.**get_pid_list**()

Return a list of process ids (PIDs) for all running processes.

CLI Example:

```
salt '*' ps.get_pid_list
```

salt.modules.ps.**get_users**()

Return logged-in users.

CLI Example:

```
salt '*' ps.get_users
```

salt.modules.ps.**kill_pid**(*pid*, *signal=15*)

Kill a process by PID.

```
salt 'minion' ps.kill_pid pid [signal=signal_number]
```

**pid** PID of process to kill.

**signal** Signal to send to the process. See manpage entry for kill for possible values. Default: 15 (SIGTERM).

**Example**:

Send SIGKILL to process with PID 2000:

```
salt 'minion' ps.kill_pid 2000 signal=9
```

salt.modules.ps.**network_io_counters**(*interface=None*)

Return network I/O statistics.

CLI Example:

```
salt '*' ps.network_io_counters

salt '*' ps.network_io_counters interface=eth0
```

salt.modules.ps.**num_cpus**()
Return the number of CPUs.

CLI Example:

```
salt '*' ps.num_cpus
```

salt.modules.ps.**pgrep**(*pattern*, *user=None*, *full=False*)
Return the pids for processes matching a pattern.

If full is true, the full command line is searched for a match, otherwise only the name of the command is searched.

```
salt '*' ps.pgrep pattern [user=username] [full=(true|false)]
```

**pattern** Pattern to search for in the process list.
**user** Limit matches to the given username. Default: All users.
**full** A boolean value indicating whether only the name of the command or the full command line should be matched against the pattern.

**Examples**:

Find all httpd processes on all `www' minions:

```
salt 'www.*' ps.pgrep httpd
```

Find all bash processes owned by user `tom':

```
salt '*' ps.pgrep bash user=tom
```

salt.modules.ps.**pkill**(*pattern*, *user=None*, *signal=15*, *full=False*)
Kill processes matching a pattern.

```
salt '*' ps.pkill pattern [user=username] [signal=signal_number] \
        [full=(true|false)]
```

**pattern** Pattern to search for in the process list.
**user** Limit matches to the given username. Default: All users.
**signal** Signal to send to the process(es). See manpage entry for kill for possible values. Default: 15 (SIGTERM).
**full** A boolean value indicating whether only the name of the command or the full command line should be matched against the pattern.

**Examples**:

Send SIGHUP to all httpd processes on all `www' minions:

```
salt 'www.*' ps.pkill httpd signal=1
```

Send SIGKILL to all bash processes owned by user `tom':

```
salt '*' ps.pkill bash signal=9 user=tom
```

salt.modules.ps.**proc_info**(*pid*, *attrs=None*)
Return a dictionary of information for a process id (PID).

CLI Example:

```
salt '*' ps.proc_info 2322
salt '*' ps.proc_info 2322 attrs='["pid", "name"]'
```

**pid** PID of process to query.

**attrs** Optional list of desired process attributes. The list of possible attributes can be found here: http://pythonhosted.org/psutil/#psutil.Process

salt.modules.ps.**swap_memory**()

New in version 2014.7.0.

Return a dict that describes swap memory statistics.

---

**Note:** This function is only available in psutil version 0.6.0 and above.

---

CLI Example:

```
salt '*' ps.swap_memory
```

salt.modules.ps.**top**(*num_processes=5*, *interval=3*)

Return a list of top CPU consuming processes during the interval. num_processes = return the top N CPU consuming processes interval = the number of seconds to sample CPU usage over

CLI Examples:

```
salt '*' ps.top

salt '*' ps.top 5 10
```

salt.modules.ps.**total_physical_memory**()

Return the total number of bytes of physical memory.

CLI Example:

```
salt '*' ps.total_physical_memory
```

salt.modules.ps.**virtual_memory**()

New in version 2014.7.0.

Return a dict that describes statistics about system memory usage.

---

**Note:** This function is only available in psutil version 0.6.0 and above.

---

CLI Example:

```
salt '*' ps.virtual_memory
```

### 13.6.236 salt.modules.publish

Publish a command from a minion to a target

salt.modules.publish.**full_data**(*tgt*, *fun*, *arg=None*, *expr_form='glob'*, *returner=''*, *timeout=5*)

Return the full data about the publication, this is invoked in the same way as the publish function

CLI Example:

```
salt system.example.com publish.full_data '*' cmd.run 'ls -la /tmp'
```

**Attention**

If you need to pass a value to a function argument and that value contains an equal sign, you **must** include the argument name. For example:

```
salt '*' publish.full_data test.kwarg arg='cheese=spam'
```

salt.modules.publish.**publish**(*tgt*, *fun*, *arg=None*, *expr_form='glob'*, *returner=''*, *timeout=5*, *via_master=None*)

Publish a command from the minion out to other minions.

Publications need to be enabled on the Salt master and the minion needs to have permission to publish the command. The Salt master will also prevent a recursive publication loop, this means that a minion cannot command another minion to command another minion as that would create an infinite command loop.

The expr_form argument is used to pass a target other than a glob into the execution, the available options are:

- glob
- pcre
- grain
- grain_pcre
- pillar
- pillar_pcre
- ipcidr
- range
- compound

Note that for pillar matches must be exact, both in the pillar matcher and the compound matcher. No globbing is supported.

The arguments sent to the minion publish function are separated with commas. This means that for a minion executing a command with multiple args it will look like this:

```
salt system.example.com publish.publish '*' user.add 'foo,1020,1020'
salt system.example.com publish.publish 'os:Fedora' network.interfaces '' grain
```

CLI Example:

```
salt system.example.com publish.publish '*' cmd.run 'ls -la /tmp'
```

**Attention**

If you need to pass a value to a function argument and that value contains an equal sign, you **must** include the argument name. For example:

```
salt '*' publish.publish test.kwarg arg='cheese=spam'
```

Multiple keyword arguments should be passed as a list.

```
salt '*' publish.publish test.kwarg arg="['cheese=spam','spam=cheese']"
```

When running via salt-call, the *via_master* flag may be set to specific which master the publication should be sent to. Only one master may be specified. If unset, the publication will be sent only to the first master in minion configuration.

salt.modules.publish.**runner**(*fun*, *arg=None*, *timeout=5*)
Execute a runner on the master and return the data from the runner function

CLI Example:

```
salt publish.runner manage.down
```

### 13.6.237 salt.modules.puppet

Execute puppet routines

salt.modules.puppet.**disable**(*message=None*)
New in version 2014.7.0.

Disable the puppet agent
**message** New in version 2015.5.2.

Disable message to send to puppet
CLI Example:

```
salt '*' puppet.disable
salt '*' puppet.disable 'Disabled, contact XYZ before enabling'
```

salt.modules.puppet.**enable**()
New in version 2014.7.0.

Enable the puppet agent

CLI Example:

```
salt '*' puppet.enable
```

salt.modules.puppet.**fact**(*name*, *puppet=False*)
Run facter for a specific fact

CLI Example:

```
salt '*' puppet.fact kernel
```

salt.modules.puppet.**facts**(*puppet=False*)
Run facter and return the results

CLI Example:

```
salt '*' puppet.facts
```

salt.modules.puppet.**noop**(**args*, ***kwargs*)
Execute a puppet noop run and return a dict with the stderr, stdout, return code, etc. Usage is the same as for puppet.run.

CLI Example:

```
salt '*' puppet.noop
salt '*' puppet.noop tags=basefiles::edit,apache::server
salt '*' puppet.noop debug
salt '*' puppet.noop apply /a/b/manifest.pp modulepath=/a/b/modules
 ↪tags=basefiles::edit,apache::server
```

salt.modules.puppet.**plugin_sync**()
Runs a plugin synch between the puppet master and agent

CLI Example: .. code-block:: bash
salt `*' puppet.plugin_sync

salt.modules.puppet.**run**(**args*, ***kwargs*)
Execute a puppet run and return a dict with the stderr, stdout, return code, etc. The first positional argument given is checked as a subcommand. Following positional arguments should be ordered with arguments required by the subcommand first, followed by non-keyword arguments. Tags are specified by a tag keyword and comma separated list of values. -- http://docs.puppetlabs.com/puppet/latest/reference/lang_tags.html

CLI Examples:

```
salt '*' puppet.run
salt '*' puppet.run tags=basefiles::edit,apache::server
salt '*' puppet.run agent onetime no-daemonize no-usecacheonfailure no-splayX
 ↪ignorecache
salt '*' puppet.run debug
salt '*' puppet.run apply /a/b/manifest.pp modulepath=/a/b/modules tags=basefiles:
 ↪:edit,apache::server
```

salt.modules.puppet.**status**()
New in version 2014.7.0.

Display puppet agent status

CLI Example:

```
salt '*' puppet.status
```

salt.modules.puppet.**summary**()
New in version 2014.7.0.

Show a summary of the last puppet agent run

CLI Example:

```
salt '*' puppet.summary
```

### 13.6.238 salt.modules.pushbullet module

Module for sending messages to Pushbullet (https://www.pushbullet.com)

New in version 2015.8.0.

Requires an `api_key` in `/etc/salt/minion`:

For example:

```
pushbullet:
  device: "Chrome"
  title: "Example push message"
  body: "Message body."
```

salt.modules.pushbullet.**push_note**(*device=None*, *title=None*, *body=None*)
Pushing a text note.
**Parameters**

- **device** -- Pushbullet target device

- **title** -- Note title
- **body** -- Note body

**Returns** Boolean if message was sent successfully.

CLI Example:

```
salt "*" pushbullet.push_note device="Chrome" title="Example title" body="Example
↪body."
```

### 13.6.239 salt.modules.pushover_notify

Module for sending messages to Pushover (https://www.pushover.net)

New in version 2016.3.0.

**configuration** This module can be used by either passing an api key and version directly or by specifying both in a configuration profile in the salt master/minion config.

For example:

```
pushover:
  token: abAHuZyCLtdH8P4zhmFZmgUHUsv1ei8
```

`salt.modules.pushover_notify.`**`post_message`**(*user=None*, *device=None*, *message=None*, *title=None*, *priority=None*, *expire=None*, *retry=None*, *sound=None*, *api_version=1*, *token=None*)

Send a message to a Pushover user or group.

**Parameters**

- **user** -- The user or group to send to, must be key of user or group not email address.
- **message** -- The message to send to the PushOver user or group.
- **title** -- Specify who the message is from.
- **priority** -- The priority of the message, defaults to 0.
- **expire** -- The message should expire after N number of seconds.
- **retry** -- The number of times the message should be retried.
- **sound** -- The sound to associate with the message.
- **api_version** -- The PushOver API version, if not specified in the configuration.
- **token** -- The PushOver token, if not specified in the configuration.

**Returns** Boolean if message was sent successfully.

CLI Example:

```
salt '*' pushover.post_message user='xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx' title=
↪'Message from Salt' message='Build is done'

salt '*' pushover.post_message user='xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx' title=
↪'Message from Salt' message='Build is done' priority='2' expire='720' retry='5'
```

### 13.6.240 salt.modules.pw_group

Manage groups on FreeBSD

**Important**: If you feel that Salt should be using this module to manage groups on a minion, and it is using a different module (or gives an error similar to *`group.info' is not available*), see *here*.

salt.modules.pw_group.**add**(*name*, *gid=None*, ***kwargs*)
Add the specified group

CLI Example:

```
salt '*' group.add foo 3456
```

salt.modules.pw_group.**adduser**(*name*, *username*)
Add a user in the group.

CLI Example:

```
salt '*' group.adduser foo bar
```

Verifies if a valid username `bar' as a member of an existing group `foo', if not then adds it.

salt.modules.pw_group.**chgid**(*name*, *gid*)
Change the gid for a named group

CLI Example:

```
salt '*' group.chgid foo 4376
```

salt.modules.pw_group.**delete**(*name*)
Remove the named group

CLI Example:

```
salt '*' group.delete foo
```

salt.modules.pw_group.**deluser**(*name*, *username*)
Remove a user from the group.

CLI Example:

```
salt '*' group.deluser foo bar
```

Removes a member user `bar' from a group `foo'. If group is not present then returns True.

salt.modules.pw_group.**getent**(*refresh=False*)
Return info on all groups

CLI Example:

```
salt '*' group.getent
```

salt.modules.pw_group.**info**(*name*)
Return information about a group

CLI Example:

```
salt '*' group.info foo
```

salt.modules.pw_group.**members**(*name*, *members_list*)
Replaces members of the group with a provided list.

New in version 2015.5.4.

CLI Example:

salt `*' group.members foo `user1,user2,user3,...'

**Replaces a membership list for a local group `foo'.** foo:x:1234:user1,user2,user3,...

### 13.6.241 salt.modules.pw_user

Manage users with the useradd command

---

**Important:** If you feel that Salt should be using this module to manage users on a minion, and it is using a different module (or gives an error similar to *`user.info' is not available*), see *here*.

---

`salt.modules.pw_user.`**`add`**(*name*, *uid=None*, *gid=None*, *groups=None*, *home=None*, *shell=None*, *unique=True*, *fullname=''*, *roomnumber=''*, *workphone=''*, *homephone=''*, *createhome=True*, *loginclass=None*, ***kwargs*)

Add a user to the minion

CLI Example:

```
salt '*' user.add name <uid> <gid> <groups> <home> <shell>
```

`salt.modules.pw_user.`**`chfullname`**(*name*, *fullname*)

Change the user's Full Name

CLI Example:

```
salt '*' user.chfullname foo "Foo Bar"
```

`salt.modules.pw_user.`**`chgid`**(*name*, *gid*)

Change the default group of the user

CLI Example:

```
salt '*' user.chgid foo 4376
```

`salt.modules.pw_user.`**`chgroups`**(*name*, *groups*, *append=False*)

Change the groups to which a user belongs

**name** Username to modify

**groups** List of groups to set for the user. Can be passed as a comma-separated list or a Python list.

**append** [False] Set to `True` to append these groups to the user's existing list of groups. Otherwise, the specified groups will replace any existing groups for the user.

CLI Example:

```
salt '*' user.chgroups foo wheel,root True
```

`salt.modules.pw_user.`**`chhome`**(*name*, *home*, *persist=False*)

Set a new home directory for an existing user

**name** Username to modify

**home** New home directory to set

**persist** [False] Set to `True` to prevent configuration files in the new home directory from being overwritten by the files from the skeleton directory.

CLI Example:

```
salt '*' user.chhome foo /home/users/foo True
```

salt.modules.pw_user.**chhomephone**(*name*, *homephone*)
Change the user's Home Phone

CLI Example:

```
salt '*' user.chhomephone foo "7735551234"
```

salt.modules.pw_user.**chloginclass**(*name*, *loginclass*, *root=None*)
Change the default login class of the user

New in version 2016.3.5.

CLI Example:

```
salt '*' user.chloginclass foo staff
```

salt.modules.pw_user.**chroomnumber**(*name*, *roomnumber*)
Change the user's Room Number

CLI Example:

```
salt '*' user.chroomnumber foo 123
```

salt.modules.pw_user.**chshell**(*name*, *shell*)
Change the default shell of the user

CLI Example:

```
salt '*' user.chshell foo /bin/zsh
```

salt.modules.pw_user.**chuid**(*name*, *uid*)
Change the uid for a named user

CLI Example:

```
salt '*' user.chuid foo 4376
```

salt.modules.pw_user.**chworkphone**(*name*, *workphone*)
Change the user's Work Phone

CLI Example:

```
salt '*' user.chworkphone foo "7735550123"
```

salt.modules.pw_user.**delete**(*name*, *remove=False*, *force=False*)
Remove a user from the minion

CLI Example:

```
salt '*' user.delete name remove=True force=True
```

salt.modules.pw_user.**get_loginclass**(*name*)
Get the login class of the user

New in version 2016.3.0.

CLI Example:

```
salt '*' user.get_loginclass foo
```

salt.modules.pw_user.**getent**(*refresh=False*)
Return the list of all info for all users

CLI Example:

```
salt '*' user.getent
```

salt.modules.pw_user.**info**(*name*)
Return user information

CLI Example:

```
salt '*' user.info root
```

salt.modules.pw_user.**list_groups**(*name*)
Return a list of groups the named user belongs to

CLI Example:

```
salt '*' user.list_groups foo
```

salt.modules.pw_user.**list_users**()
Return a list of all users

CLI Example:

```
salt '*' user.list_users
```

salt.modules.pw_user.**rename**(*name*, *new_name*)
Change the username for a named user

CLI Example:

```
salt '*' user.rename name new_name
```

### 13.6.242 salt.modules.pyenv

Manage python installations with pyenv.

New in version v2014.04.

salt.modules.pyenv.**default**(*python=None*, *runas=None*)
Returns or sets the currently defined default python.

**python=None** The version to set as the default. Should match one of the versions listed by *pyenv.versions*. Leave blank to return the current default.

CLI Example:

```
salt '*' pyenv.default
salt '*' pyenv.default 2.0.0-p0
```

salt.modules.pyenv.**do**(*cmdline=None*, *runas=None*)
Execute a python command with pyenv's shims from the user or the system.

CLI Example:

```
salt '*' pyenv.do 'gem list bundler'
salt '*' pyenv.do 'gem list bundler' deploy
```

salt.modules.pyenv.**do_with_python**(*python*, *cmdline*, *runas=None*)
Execute a python command with pyenv's shims using a specific python version.

CLI Example:

```
salt '*' pyenv.do_with_python 2.0.0-p0 'gem list bundler'
salt '*' pyenv.do_with_python 2.0.0-p0 'gem list bundler' deploy
```

salt.modules.pyenv.**install**(*runas=None*, *path=None*)
Install pyenv systemwide

CLI Example:

```
salt '*' pyenv.install
```

salt.modules.pyenv.**install_python**(*python*, *runas=None*)
Install a python implementation.
**python** The version of python to install, should match one of the versions listed by pyenv.list
CLI Example:

```
salt '*' pyenv.install_python 2.0.0-p0
```

salt.modules.pyenv.**is_installed**(*runas=None*)
Check if pyenv is installed.

CLI Example:

```
salt '*' pyenv.is_installed
```

salt.modules.pyenv.**list**(*runas=None*)
List the installable versions of python.

CLI Example:

```
salt '*' pyenv.list
```

salt.modules.pyenv.**rehash**(*runas=None*)
Run pyenv rehash to update the installed shims.

CLI Example:

```
salt '*' pyenv.rehash
```

salt.modules.pyenv.**uninstall_python**(*python*, *runas=None*)
Uninstall a python implementation.
**python** The version of python to uninstall. Should match one of the versions listed by *pyenv.versions*
CLI Example:

```
salt '*' pyenv.uninstall_python 2.0.0-p0
```

salt.modules.pyenv.**update**(*runas=None*, *path=None*)
Updates the current versions of pyenv and python-Build

CLI Example:

```
salt '*' pyenv.update
```

salt.modules.pyenv.**versions**(*runas=None*)
List the installed versions of python.

CLI Example:

```
salt '*' pyenv.versions
```

### 13.6.243 salt.modules.qemu_img

#### Qemu-img Command Wrapper

The qemu img command is wrapped for specific functions

**depends** qemu-img

salt.modules.qemu_img.**convert**(*orig, dest, fmt*)
Convert an existing disk image to another format using qemu-img

CLI Example:

```
salt '*' qemu_img.convert /path/to/original.img /path/to/new.img qcow2
```

salt.modules.qemu_img.**make_image**(*location, size, fmt*)
Create a blank virtual machine image file of the specified size in megabytes. The image can be created in any format supported by qemu

CLI Example:

```
salt '*' qemu_img.make_image /tmp/image.qcow 2048 qcow2
salt '*' qemu_img.make_image /tmp/image.raw 10240 raw
```

### 13.6.244 salt.modules.qemu_nbd

Qemu Command Wrapper

The qemu system comes with powerful tools, such as qemu-img and qemu-nbd which are used here to build up kvm images.

salt.modules.qemu_nbd.**clear**(*mnt*)
Pass in the mnt dict returned from nbd_mount to unmount and disconnect the image from nbd. If all of the partitions are unmounted return an empty dict, otherwise return a dict containing the still mounted partitions

CLI Example:

```
salt '*' qemu_nbd.clear '{"/mnt/foo": "/dev/nbd0p1"}'
```

salt.modules.qemu_nbd.**connect**(*image*)
Activate nbd for an image file.

CLI Example:

```
salt '*' qemu_nbd.connect /tmp/image.raw
```

salt.modules.qemu_nbd.**init**(*image*, *root=None*)
Mount the named image via qemu-nbd and return the mounted roots

CLI Example:

```
salt '*' qemu_nbd.init /srv/image.qcow2
```

salt.modules.qemu_nbd.**mount**(*nbd*, *root=None*)
Pass in the nbd connection device location, mount all partitions and return a dict of mount points

CLI Example:

```
salt '*' qemu_nbd.mount /dev/nbd0
```

### 13.6.245 salt.modules.quota

Module for managing quotas on POSIX-like systems.

salt.modules.quota.**get_mode**(*device*)
Report whether the quota system for this device is on or off

CLI Example:

```
salt '*' quota.get_mode
```

salt.modules.quota.**off**(*device*)
Turns off the quota system

CLI Example:

```
salt '*' quota.off
```

salt.modules.quota.**on**(*device*)
Turns on the quota system

CLI Example:

```
salt '*' quota.on
```

salt.modules.quota.**report**(*mount*)
Report on quotas for a specific volume

CLI Example:

```
salt '*' quota.report /media/data
```

salt.modules.quota.**set**(*device*, ***kwargs*)
Calls out to setquota, for a specific user or group

CLI Example:

```
salt '*' quota.set /media/data user=larry block-soft-limit=1048576
salt '*' quota.set /media/data group=painters file-hard-limit=1000
```

salt.modules.quota.**stats**()
Runs the quotastats command, and returns the parsed output

CLI Example:

```
salt '*' quota.stats
```

salt.modules.quota.**warn**()
Runs the warnquota command, to send warning emails to users who are over their quota limit.

CLI Example:

```
salt '*' quota.warn
```

### 13.6.246 salt.modules.rabbitmq

Module to provide RabbitMQ compatibility to Salt. Todo: A lot, need to add cluster support, logging, and minion configuration data.

salt.modules.rabbitmq.**add_user**(*name*, *password=None*, *runas=None*)
Add a rabbitMQ user via rabbitmqctl user_add <user> <password>

CLI Example:

```
salt '*' rabbitmq.add_user rabbit_user password
```

salt.modules.rabbitmq.**add_vhost**(*vhost*, *runas=None*)
Adds a vhost via rabbitmqctl add_vhost.

CLI Example:

```
salt '*' rabbitmq add_vhost '<vhost_name>'
```

salt.modules.rabbitmq.**change_password**(*name*, *password*, *runas=None*)
Changes a user's password.

CLI Example:

```
salt '*' rabbitmq.change_password rabbit_user password
```

salt.modules.rabbitmq.**check_password**(*name*, *password*, *runas=None*)
New in version 2016.3.0.

Checks if a user's password is valid.

CLI Example:

```
salt '*' rabbitmq.check_password rabbit_user password
```

salt.modules.rabbitmq.**clear_password**(*name*, *runas=None*)
Removes a user's password.

CLI Example:

```
salt '*' rabbitmq.clear_password rabbit_user
```

salt.modules.rabbitmq.**cluster_status**(*runas=None*)
return rabbitmq cluster_status

CLI Example:

```
salt '*' rabbitmq.cluster_status
```

salt.modules.rabbitmq.**delete_policy**(*vhost*, *name*, *runas=None*)
Delete a policy based on rabbitmqctl clear_policy.

Reference: http://www.rabbitmq.com/ha.html

CLI Example:

```
salt '*' rabbitmq.delete_policy / HA'
```

salt.modules.rabbitmq.**delete_user**(*name*, *runas=None*)
Deletes a user via rabbitmqctl delete_user.

CLI Example:

```
salt '*' rabbitmq.delete_user rabbit_user
```

salt.modules.rabbitmq.**delete_vhost**(*vhost*, *runas=None*)
Deletes a vhost rabbitmqctl delete_vhost.

CLI Example:

```
salt '*' rabbitmq.delete_vhost '<vhost_name>'
```

salt.modules.rabbitmq.**disable_plugin**(*name*, *runas=None*)
Disable a RabbitMQ plugin via the rabbitmq-plugins command.

CLI Example:

```
salt '*' rabbitmq.disable_plugin foo
```

salt.modules.rabbitmq.**enable_plugin**(*name*, *runas=None*)
Enable a RabbitMQ plugin via the rabbitmq-plugins command.

CLI Example:

```
salt '*' rabbitmq.enable_plugin foo
```

salt.modules.rabbitmq.**force_reset**(*runas=None*)
Forcefully Return a RabbitMQ node to its virgin state

CLI Example:

```
salt '*' rabbitmq.force_reset
```

salt.modules.rabbitmq.**join_cluster**(*host*, *user='rabbit'*, *ram_node=None*, *runas=None*)
Join a rabbit cluster

CLI Example:

```
salt '*' rabbitmq.join_cluster 'rabbit.example.com' 'rabbit'
```

salt.modules.rabbitmq.**list_permissions**(*vhost*, *runas=None*)
Lists permissions for vhost via rabbitmqctl list_permissions

CLI Example:

```
salt '*' rabbitmq.list_permissions '/myvhost'
```

salt.modules.rabbitmq.**list_policies**(*vhost='/'*, *runas=None*)
Return a dictionary of policies nested by vhost and name based on the data returned from rabbitmqctl list_policies.

Reference: http://www.rabbitmq.com/ha.html

CLI Example:

```
salt '*' rabbitmq.list_policies'
```

salt.modules.rabbitmq.**list_queues**(*runas=None*, **args*)
Returns queue details of the / virtual host

CLI Example:

```
salt '*' rabbitmq.list_queues messages consumers
```

salt.modules.rabbitmq.**list_queues_vhost**(*vhost*, *runas=None*, **args*)
Returns queue details of specified virtual host. This command will consider first parameter as the vhost name and rest will be treated as queueinfoitem. For getting details on vhost `/`, use *`list_queues`* instead).

CLI Example:

```
salt '*' rabbitmq.list_queues messages consumers
```

salt.modules.rabbitmq.**list_user_permissions**(*name*, *runas=None*)
List permissions for a user via rabbitmqctl list_user_permissions

CLI Example:

```
salt '*' rabbitmq.list_user_permissions 'user'.
```

salt.modules.rabbitmq.**list_users**(*runas=None*)
Return a list of users based off of rabbitmqctl user_list.

CLI Example:

```
salt '*' rabbitmq.list_users
```

salt.modules.rabbitmq.**list_vhosts**(*runas=None*)
Return a list of vhost based on rabbitmqctl list_vhosts.

CLI Example:

```
salt '*' rabbitmq.list_vhosts
```

salt.modules.rabbitmq.**plugin_is_enabled**(*name*, *runas=None*)
Return whether the plugin is enabled.

CLI Example:

```
salt '*' rabbitmq.plugin_is_enabled foo
```

salt.modules.rabbitmq.**policy_exists**(*vhost*, *name*, *runas=None*)
Return whether the policy exists based on rabbitmqctl list_policies.

Reference: http://www.rabbitmq.com/ha.html

CLI Example:

```
salt '*' rabbitmq.policy_exists / HA
```

salt.modules.rabbitmq.**reset**(*runas=None*)
Return a RabbitMQ node to its virgin state

CLI Example:

```
salt '*' rabbitmq.reset
```

salt.modules.rabbitmq.**set_permissions**(*vhost*, *user*, *conf='.*'*, *write='.*'*, *read='.*'*, *runas=None*)
Sets permissions for vhost via rabbitmqctl set_permissions

CLI Example:

```
salt '*' rabbitmq.set_permissions 'myvhost' 'myuser'
```

salt.modules.rabbitmq.**set_policy**(*vhost*, *name*, *pattern*, *definition*, *priority=None*, *runas=None*)
Set a policy based on rabbitmqctl set_policy.

Reference: http://www.rabbitmq.com/ha.html

CLI Example:

```
salt '*' rabbitmq.set_policy / HA '.*' '{"ha-mode":"all"}'
```

salt.modules.rabbitmq.**set_user_tags**(*name*, *tags*, *runas=None*)
Add user tags via rabbitmqctl set_user_tags

CLI Example:

```
salt '*' rabbitmq.set_user_tags 'myadmin' 'administrator'
```

salt.modules.rabbitmq.**start_app**(*runas=None*)
Start the RabbitMQ application.

CLI Example:

```
salt '*' rabbitmq.start_app
```

salt.modules.rabbitmq.**status**(*runas=None*)
return rabbitmq status

CLI Example:

```
salt '*' rabbitmq.status
```

salt.modules.rabbitmq.**stop_app**(*runas=None*)
Stops the RabbitMQ application, leaving the Erlang node running.

CLI Example:

```
salt '*' rabbitmq.stop_app
```

salt.modules.rabbitmq.**user_exists**(*name*, *runas=None*)
Return whether the user exists based on rabbitmqctl list_users.

CLI Example:

```
salt '*' rabbitmq.user_exists rabbit_user
```

salt.modules.rabbitmq.**vhost_exists**(*name*, *runas=None*)
Return whether the vhost exists based on rabbitmqctl list_vhosts.

CLI Example:

```
salt '*' rabbitmq.vhost_exists rabbit_host
```

### 13.6.247 salt.modules.raet_publish

Publish a command from a minion to a target

salt.modules.raet_publish.**full_data**(*tgt*, *fun*, *arg=None*, *expr_form='glob'*, *returner=''*, *timeout=5*)

Return the full data about the publication, this is invoked in the same way as the publish function

CLI Example:

```
salt system.example.com publish.full_data '*' cmd.run 'ls -la /tmp'
```

---

**Attention**

If you need to pass a value to a function argument and that value contains an equal sign, you **must** include the argument name. For example:

```
salt '*' publish.full_data test.kwarg arg='cheese=spam'
```

---

salt.modules.raet_publish.**publish**(*tgt*, *fun*, *arg=None*, *expr_form='glob'*, *returner=''*, *timeout=5*)

Publish a command from the minion out to other minions.

Publications need to be enabled on the Salt master and the minion needs to have permission to publish the command. The Salt master will also prevent a recursive publication loop, this means that a minion cannot command another minion to command another minion as that would create an infinite command loop.

The expr_form argument is used to pass a target other than a glob into the execution, the available options are:

- glob
- pcre
- grain
- grain_pcre
- pillar
- pillar_pcre
- ipcidr
- range
- compound

The arguments sent to the minion publish function are separated with commas. This means that for a minion executing a command with multiple args it will look like this:

```
salt system.example.com publish.publish '*' user.add 'foo,1020,1020'
salt system.example.com publish.publish 'os:Fedora' network.interfaces '' grain
```

CLI Example:

```
salt system.example.com publish.publish '*' cmd.run 'ls -la /tmp'
```

---

**Attention**

If you need to pass a value to a function argument and that value contains an equal sign, you **must** include the argument name. For example:

```
salt '*' publish.publish test.kwarg arg='cheese=spam'
```

---

salt.modules.raet_publish.**runner**(*fun*, *arg=None*, *timeout=5*)
Execute a runner on the master and return the data from the runner function

CLI Example:

```
salt publish.runner manage.down
```

### 13.6.248 salt.modules.rallydev

Support for RallyDev

New in version 2015.8.0.

Requires a `username` and a `password` in `/etc/salt/minion`:

salt.modules.rallydev.**list_items**(*name*)
List items of a particular type

CLI Examples:

```
salt myminion rallydev.list_<item name>s
salt myminion rallydev.list_users
salt myminion rallydev.list_artifacts
```

salt.modules.rallydev.**list_users**()
List the users

CLI Example:

```
salt myminion rallydev.list_users
```

salt.modules.rallydev.**query_item**(*name*, *query_string*, *order='Rank'*)
Query a type of record for one or more items. Requires a valid query string. See https://rally1.rallydev.com/slm/doc/webservice/introduction.jsp for information on query syntax.

CLI Example:

```
salt myminion rallydev.query_<item name> <query string> [<order>]
salt myminion rallydev.query_task '(Name contains github)'
salt myminion rallydev.query_task '(Name contains reactor)' Rank
```

salt.modules.rallydev.**query_user**(*query_string*, *order='UserName'*)
Update a user

CLI Example:

```
salt myminion rallydev.query_user '(Name contains Jo)'
```

salt.modules.rallydev.**show_artifact**(*id_*)
Show an artifact

CLI Example:

```
salt myminion rallydev.show_artifact <artifact id>
```

salt.modules.rallydev.**show_item**(*name*, *id_*)
Show an item

CLI Example:

```
salt myminion rallydev.show_<item name> <item id>
```

salt.modules.rallydev.**show_user**(*id_*)
Show a user

CLI Example:

```
salt myminion rallydev.show_user <user id>
```

salt.modules.rallydev.**update_item**(*name*, *id_*, *field=None*, *value=None*, *postdata=None*)
Update an item. Either a field and a value, or a chunk of POST data, may be used, but not both.

CLI Example:

```
salt myminion rallydev.update_<item name> <item id> field=<field> value=<value>
salt myminion rallydev.update_<item name> <item id> postdata=<post data>
```

salt.modules.rallydev.**update_user**(*id_*, *field*, *value*)
Update a user

CLI Example:

```
salt myminion rallydev.update_user <user id> <field> <new value>
```

### 13.6.249 salt.modules.random_org

Module for retrieving random information from Random.org

New in version 2015.5.0.

**configuration** This module can be used by either passing an api key and version directly or by specifying both in a configuration profile in the salt master/minion config.

For example:

```
random_org:
  api_key: 7be1402d-5719-5bd3-a306-3def9f135da5
  api_version: 1
```

salt.modules.random_org.**generateBlobs**(*api_key=None*, *api_version=None*, ***kwargs*)
List all Slack users.

**Parameters**

- **api_key** -- The Random.org api key.
- **api_version** -- The Random.org api version.
- **format** -- Specifies the format in which the blobs will be returned. Values allowed are base64 and hex.

**Returns** The user list.

CLI Example:

```
salt '*' get_integers number=5 min=1 max=6

salt '*' get_integers number=5 min=1 max=6
```

salt.modules.random_org.**generateDecimalFractions**(*api_key=None*, *api_version=None*, ***kwargs*)

Generates true random decimal fractions

**Parameters**

- **api_key** -- The Random.org api key.
- **api_version** -- The Random.org api version.
- **number** -- How many random decimal fractions you need. Must be within the [1,1e4] range.
- **decimalPlaces** -- The number of decimal places to use. Must be within the [1,20] range.
- **replacement** -- Specifies whether the random numbers should be picked with replacement. The default (true) will cause the numbers to be picked with replacement, i.e., the resulting numbers may contain duplicate values (like a series of dice rolls). If you want the numbers picked to be unique (like raffle tickets drawn from a container), set this value to false.

**Returns** A list of decimal fraction

CLI Example:

```
salt '*' random_org.generateDecimalFractions number=10 decimalPlaces=4

salt '*' random_org.generateDecimalFractions number=10 decimalPlaces=4
 ↪replacement=True
```

salt.modules.random_org.**generateGaussians**(*api_key=None*, *api_version=None*, ***kwargs*)

This method generates true random numbers from a Gaussian distribution (also known as a normal distribution).

**Parameters**

- **api_key** -- The Random.org api key.
- **api_version** -- The Random.org api version.
- **number** -- How many random numbers you need. Must be within the [1,1e4] range.
- **mean** -- The distribution's mean. Must be within the [-1e6,1e6] range.
- **standardDeviation** -- The distribution's standard deviation. Must be within the [-1e6,1e6] range.
- **significantDigits** -- The number of significant digits to use. Must be within the [2,20] range.

**Returns** The user list.

CLI Example:

```
salt '*' random_org.generateGaussians number=10 mean=0.0 standardDeviation=1.0
 ↪significantDigits=8
```

salt.modules.random_org.**generateIntegers**(*api_key=None*, *api_version=None*, ***kwargs*)

Generate random integers

**Parameters**

- **api_key** -- The Random.org api key.
- **api_version** -- The Random.org api version.

- **number** -- The number of integers to generate
- **minimum** -- The lower boundary for the range from which the random numbers will be picked. Must be within the [-1e9,1e9] range.
- **maximum** -- The upper boundary for the range from which the random numbers will be picked. Must be within the [-1e9,1e9] range.
- **replacement** -- Specifies whether the random numbers should be picked with replacement. The default (true) will cause the numbers to be picked with replacement, i.e., the resulting numbers may contain duplicate values (like a series of dice rolls). If you want the numbers picked to be unique (like raffle tickets drawn from a container), set this value to false.
- **base** -- Specifies the base that will be used to display the numbers. Values allowed are 2, 8, 10 and 16. This affects the JSON types and formatting of the resulting data as discussed below.

**Returns** A list of integers.

CLI Example:

```
salt '*' random_org.generateIntegers number=5 minimum=1 maximum=6

salt '*' random_org.generateIntegers number=5 minimum=2 maximum=255 base=2
```

salt.modules.random_org.**generateStrings**(*api_key=None*, *api_version=None*, ***kwargs*)

Generate random strings.

**Parameters**

- **api_key** -- The Random.org api key.
- **api_version** -- The Random.org api version.
- **number** -- The number of strings to generate.
- **length** -- The length of each string. Must be within the [1,20] range. All strings will be of the same length
- **characters** -- A string that contains the set of characters that are allowed to occur in the random strings. The maximum number of characters is 80.
- **replacement** -- Specifies whether the random strings should be picked with replacement. The default (true) will cause the strings to be picked with replacement, i.e., the resulting list of strings may contain duplicates (like a series of dice rolls). If you want the strings to be unique (like raffle tickets drawn from a container), set this value to false.

**Returns** A list of strings.

CLI Example:

```
salt '*' random_org.generateStrings number=5 length=8 characters=
↪'abcdefghijklmnopqrstuvwxyz'

salt '*' random_org.generateStrings number=10 length=16 characters
↪'abcdefghijklmnopqrstuvwxyz'
```

salt.modules.random_org.**generateUUIDs**(*api_key=None*, *api_version=None*, ***kwargs*)

Generate a list of random UUIDs

**Parameters**

- **api_key** -- The Random.org api key.
- **api_version** -- The Random.org api version.

- **number** -- How many random UUIDs you need. Must be within the [1,1e3] range.

**Returns** A list of UUIDs

CLI Example:

```
salt '*' random_org.generateUUIDs number=5
```

salt.modules.random_org.**getUsage**(*api_key=None*, *api_version=None*)

Show current usages statistics

**Parameters**

- **api_key** -- The Random.org api key.
- **api_version** -- The Random.org api version.

**Returns** The current usage statistics.

CLI Example:

```
salt '*' random_org.getUsage

salt '*' random_org.getUsage api_key=peWcBiMOS9HrZG15peWcBiMOS9HrZG15 api_
↪version=1
```

### 13.6.250 salt.modules.rbenv

Manage ruby installations with rbenv. rbenv is supported on Linux and Mac OS X. rbenv doesn't work on Windows (and isn't really necessary on Windows as there is no system Ruby on Windows). On Windows, the RubyInstaller and/or Pik are both good alternatives to work with multiple versions of Ruby on the same box.

http://misheska.com/blog/2013/06/15/using-rbenv-to-manage-multiple-versions-of-ruby/

New in version 0.16.0.

salt.modules.rbenv.**default**(*ruby=None*, *runas=None*)

Returns or sets the currently defined default ruby

**ruby** The version to set as the default. Should match one of the versions listed by *rbenv.versions*. Leave blank to return the current default.

CLI Example:

```
salt '*' rbenv.default
salt '*' rbenv.default 2.0.0-p0
```

salt.modules.rbenv.**do**(*cmdline*, *runas=None*, *env=None*)

Execute a ruby command with rbenv's shims from the user or the system

CLI Example:

```
salt '*' rbenv.do 'gem list bundler'
salt '*' rbenv.do 'gem list bundler' deploy
```

salt.modules.rbenv.**do_with_ruby**(*ruby*, *cmdline*, *runas=None*)

Execute a ruby command with rbenv's shims using a specific ruby version

CLI Example:

```
salt '*' rbenv.do_with_ruby 2.0.0-p0 'gem list bundler'
salt '*' rbenv.do_with_ruby 2.0.0-p0 'gem list bundler' runas=deploy
```

salt.modules.rbenv.**install**(*runas=None*, *path=None*)

Install rbenv systemwide

CLI Example:

```
salt '*' rbenv.install
```

salt.modules.rbenv.**install_ruby**(*ruby*, *runas=None*)

Install a ruby implementation.

**ruby** The version of Ruby to install, should match one of the versions listed by *rbenv.list*

**runas** The user under which to run rbenv. If not specified, then rbenv will be run as the user under which Salt is running.

Additional environment variables can be configured in pillar / grains / master:

```
rbenv:
  build_env: 'CONFIGURE_OPTS="--no-tcmalloc" CFLAGS="-fno-tree-dce"'
```

CLI Example:

```
salt '*' rbenv.install_ruby 2.0.0-p0
```

salt.modules.rbenv.**is_installed**(*runas=None*)

Check if rbenv is installed

CLI Example:

```
salt '*' rbenv.is_installed
```

salt.modules.rbenv.**list**(*runas=None*)

List the installable versions of ruby

**runas** The user under which to run rbenv. If not specified, then rbenv will be run as the user under which Salt is running.

CLI Example:

```
salt '*' rbenv.list
```

salt.modules.rbenv.**rehash**(*runas=None*)

Run `rbenv rehash` to update the installed shims

**runas** The user under which to run rbenv. If not specified, then rbenv will be run as the user under which Salt is running.

CLI Example:

```
salt '*' rbenv.rehash
```

salt.modules.rbenv.**uninstall_ruby**(*ruby*, *runas=None*)

Uninstall a ruby implementation.

**ruby** The version of ruby to uninstall. Should match one of the versions listed by *rbenv.versions*.

**runas** The user under which to run rbenv. If not specified, then rbenv will be run as the user under which Salt is running.

CLI Example:

```
salt '*' rbenv.uninstall_ruby 2.0.0-p0
```

salt.modules.rbenv.**update**(*runas=None*, *path=None*)

Updates the current versions of rbenv and ruby-build

**runas** The user under which to run rbenv. If not specified, then rbenv will be run as the user under which Salt is running.

CLI Example:

```
salt '*' rbenv.update
```

salt.modules.rbenv.**versions**(*runas=None*)
List the installed versions of ruby

CLI Example:

```
salt '*' rbenv.versions
```

### 13.6.251 salt.modules.rdp

Manage RDP Service on Windows servers

salt.modules.rdp.**disable**()
Disable RDP the service on the server

CLI Example:

```
salt '*' rdp.disable
```

salt.modules.rdp.**enable**()
Enable RDP the service on the server

CLI Example:

```
salt '*' rdp.enable
```

salt.modules.rdp.**status**()
Show if rdp is enabled on the server

CLI Example:

```
salt '*' rdp.status
```

### 13.6.252 salt.modules.redis

Module to provide redis functionality to Salt

New in version 2014.7.0.

**configuration** This module requires the redis python module and uses the following defaults which may be overridden in the minion configuration:

```
redis.host: 'localhost'
redis.port: 6379
redis.db: 0
redis.password: None
```

salt.modules.redismod.**bgrewriteaof**(*host=None*, *port=None*, *db=None*, *password=None*)
Asynchronously rewrite the append-only file

CLI Example:

```
salt '*' redis.bgrewriteaof
```

salt.modules.redismod.**bgsave**(*host=None*, *port=None*, *db=None*, *password=None*)
Asynchronously save the dataset to disk

CLI Example:

```
salt '*' redis.bgsave
```

salt.modules.redismod.**config_get**(*pattern='*'*, *host=None*, *port=None*, *db=None*, *password=None*)
Get redis server configuration values

CLI Example:

```
salt '*' redis.config_get
salt '*' redis.config_get port
```

salt.modules.redismod.**config_set**(*name*, *value*, *host=None*, *port=None*, *db=None*, *password=None*)
Set redis server configuration values

CLI Example:

```
salt '*' redis.config_set masterauth luv_kittens
```

salt.modules.redismod.**dbsize**(*host=None*, *port=None*, *db=None*, *password=None*)
Return the number of keys in the selected database

CLI Example:

```
salt '*' redis.dbsize
```

salt.modules.redismod.**delete**(**keys*, ***connection_args*)
Deletes the keys from redis, returns number of keys deleted

CLI Example:

```
salt '*' redis.delete foo
```

salt.modules.redismod.**exists**(*key*, *host=None*, *port=None*, *db=None*, *password=None*)
Return true if the key exists in redis

CLI Example:

```
salt '*' redis.exists foo
```

salt.modules.redismod.**expire**(*key*, *seconds*, *host=None*, *port=None*, *db=None*, *password=None*)
Set a keys time to live in seconds

CLI Example:

```
salt '*' redis.expire foo 300
```

salt.modules.redismod.**expireat**(*key*, *timestamp*, *host=None*, *port=None*, *db=None*, *password=None*)
Set a keys expire at given UNIX time

CLI Example:

```
salt '*' redis.expireat foo 1400000000
```

salt.modules.redismod.**flushall**(*host=None*, *port=None*, *db=None*, *password=None*)
Remove all keys from all databases

CLI Example:

```
salt '*' redis.flushall
```

salt.modules.redismod.**flushdb**(*host=None*, *port=None*, *db=None*, *password=None*)
Remove all keys from the selected database

CLI Example:

```
salt '*' redis.flushdb
```

salt.modules.redismod.**get_key**(*key*, *host=None*, *port=None*, *db=None*, *password=None*)
Get redis key value

CLI Example:

```
salt '*' redis.get_key foo
```

salt.modules.redismod.**get_master_ip**(*host=None*, *port=None*, *password=None*)
Get host information about slave

CLI Example:

```
salt '*' redis.get_master_ip
```

salt.modules.redismod.**hget**(*key*, *field*, *host=None*, *port=None*, *db=None*, *password=None*)
Get specific field value from a redis hash, returns dict

CLI Example:

```
salt '*' redis.hget foo_hash bar_field
```

salt.modules.redismod.**hgetall**(*key*, *host=None*, *port=None*, *db=None*, *password=None*)
Get all fields and values from a redis hash, returns dict

CLI Example:

```
salt '*' redis.hgetall foo_hash
```

salt.modules.redismod.**info**(*host=None*, *port=None*, *db=None*, *password=None*)
Get information and statistics about the server

CLI Example:

```
salt '*' redis.info
```

salt.modules.redismod.**key_type**(*key*, *host=None*, *port=None*, *db=None*, *password=None*)
Get redis key type

CLI Example:

```
salt '*' redis.type foo
```

salt.modules.redismod.**keys**(*pattern='**', *host=None*, *port=None*, *db=None*, *password=None*)
Get redis keys, supports glob style patterns

CLI Example:

```
salt '*' redis.keys
salt '*' redis.keys test*
```

salt.modules.redismod.**lastsave**(*host=None*, *port=None*, *db=None*, *password=None*)
Get the UNIX time in seconds of the last successful save to disk

CLI Example:

```
salt '*' redis.lastsave
```

salt.modules.redismod.**llen**(*key*, *host=None*, *port=None*, *db=None*, *password=None*)
Get the length of a list in Redis

CLI Example:

```
salt '*' redis.llen foo_list
```

salt.modules.redismod.**lrange**(*key*, *start*, *stop*, *host=None*, *port=None*, *db=None*, *password=None*)
Get a range of values from a list in Redis

CLI Example:

```
salt '*' redis.lrange foo_list 0 10
```

salt.modules.redismod.**ping**(*host=None*, *port=None*, *db=None*, *password=None*)
Ping the server, returns False on connection errors

CLI Example:

```
salt '*' redis.ping
```

salt.modules.redismod.**save**(*host=None*, *port=None*, *db=None*, *password=None*)
Synchronously save the dataset to disk

CLI Example:

```
salt '*' redis.save
```

salt.modules.redismod.**sentinel_get_master_ip**(*master*, *host=None*, *port=None*, *password=None*)
Get ip for sentinel master

CLI Example:

```
salt '*' redis.sentinel_get_master_ip 'mymaster'
```

salt.modules.redismod.**set_key**(*key*, *value*, *host=None*, *port=None*, *db=None*, *password=None*)
Set redis key value

CLI Example:

```
salt '*' redis.set_key foo bar
```

salt.modules.redismod.**shutdown**(*host=None*, *port=None*, *db=None*, *password=None*)
Synchronously save the dataset to disk and then shut down the server

CLI Example:

```
salt '*' redis.shutdown
```

salt.modules.redismod.**slaveof**(*master_host=None*, *master_port=None*, *host=None*, *port=None*, *db=None*, *password=None*)

Make the server a slave of another instance, or promote it as master

CLI Example:

```
# Become slave of redis-n01.example.com:6379
salt '*' redis.slaveof redis-n01.example.com 6379
salt '*' redis.slaveof redis-n01.example.com
# Become master
salt '*' redis.slaveof
```

salt.modules.redismod.**smembers**(*key*, *host=None*, *port=None*, *db=None*, *password=None*)

Get members in a Redis set

CLI Example:

```
salt '*' redis.smembers foo_set
```

salt.modules.redismod.**time**(*host=None*, *port=None*, *db=None*, *password=None*)

Return the current server UNIX time in seconds

CLI Example:

```
salt '*' redis.time
```

salt.modules.redismod.**zcard**(*key*, *host=None*, *port=None*, *db=None*, *password=None*)

Get the length of a sorted set in Redis

CLI Example:

```
salt '*' redis.zcard foo_sorted
```

salt.modules.redismod.**zrange**(*key*, *start*, *stop*, *host=None*, *port=None*, *db=None*, *password=None*)

Get a range of values from a sorted set in Redis by index

CLI Example:

```
salt '*' redis.zrange foo_sorted 0 10
```

### 13.6.253 salt.modules.reg

#### Manage the Windows registry

The read_key and set_key functions will be updated in Carbon to reflect proper registry usage. The registry has three main components. Hives, Keys, and Values.

#### Hives

Hives are the main sections of the registry and all begin with the word HKEY. - HKEY_LOCAL_MACHINE - HKEY_CURRENT_USER - HKEY_USER

### Keys

Keys are the folders in the registry. Keys can have many nested subkeys. Keys can have a value assigned to them under the (Default)

### Values or Entries

Values/Entries are name/data pairs. There can be many values in a key. The (Default) value corresponds to the Key, the rest are their own value pairs.

**depends**

- winreg Python module

**class** salt.modules.reg.**Registry**
Delay `_winreg' usage until this module is used

salt.modules.reg.**broadcast_change**()
Refresh the windows environment. :return:

salt.modules.reg.**create_key**(*hkey*, *path*, *key=None*, *value=None*, *reflection=True*, *use_32bit_registry=False*)

---

**Important**: The name of this function is misleading and will be changed to reflect proper usage in the Carbon release of Salt. The path option will be removed and the key will be the actual key. See the following issue:

https://github.com/saltstack/salt/issues/25618

In order to not break existing state files this function will call the set_value function if key is passed. Key will be passed as the value name. If key is not passed, this function will return the default value for the key.

In the Carbon release path will be removed and key will be the path. You will not pass value.

---

Create a registry key

CLI Example:

```
salt '*' reg.create_key HKEY_CURRENT_USER 'SOFTWARE\Salt' 'version' '0.97'
```

salt.modules.reg.**delete_key**(*hkey*, *path*, *key=None*, *reflection=True*, *force=False*, *use_32bit_registry=False*)

---

**Important**: The name of this function is misleading and will be changed to reflect proper usage in the Carbon release of Salt. The path option will be removed and the key will be the actual key. See the following issue:

https://github.com/saltstack/salt/issues/25618

In order to not break existing state files this function will call the delete_value function if a key is passed. Key will be passed as the value name. If key is not passed, this function will return the default value for the key.

In the Carbon release path will be removed and key will be the path. reflection will also be removed.

---

Delete a registry key

CLI Example:

```
salt '*' reg.delete_key HKEY_CURRENT_USER 'SOFTWARE\Salt'
```

**Parameters**

- **hkey** (*str*) -- (will be changed to hive) The name of the hive. Can be one of the following
  - HKEY_LOCAL_MACHINE or HKLM
  - HKEY_CURRENT_USER or HKCU
  - HKEY_USER or HKU
- **path** (*str*) -- (will be changed to key) The key (looks like a path) to remove.
- **key** (*str*) -- (used incorrectly) Will be removed in Carbon
- **reflection** (*bool*) -- A boolean value indicating that the value should also be removed from the Wow6432Node portion of the registry. Only applies to 64 bit Windows. This setting is ignored for 32 bit Windows.

  Only applies to delete value. If the key parameter is passed, this function calls delete_value instead. Will be changed in Carbon.
- **force** (*bool*) -- A boolean value indicating that all subkeys should be removed as well. If this is set to False (default) and there are subkeys, the delete_key function will fail.

**Returns** Returns True if successful, False if not. If force=True, the results of delete_key_recursive are returned.

**Return type** bool

`salt.modules.reg.`**`delete_key_recursive`**(*hive*, *key*, *use_32bit_registry=False*)

New in version 2015.5.4.

Delete a registry key to include all subkeys.

**Parameters**

- **hive** -- The name of the hive. Can be one of the following
  - HKEY_LOCAL_MACHINE or HKLM
  - HKEY_CURRENT_USER or HKCU
  - HKEY_USER or HKU
- **key** -- The key to remove (looks like a path)

**Returns** A dictionary listing the keys that deleted successfully as well as those that failed to delete.

**Return type** dict

The following example will remove `salt` and all its subkeys from the `SOFTWARE` key in `HKEY_LOCAL_MACHINE`:

CLI Example:

```
salt '*' reg.delete_key_recursive HKLM SOFTWARE\salt
```

`salt.modules.reg.`**`delete_value`**(*hive*, *key*, *vname=None*, *reflection=True*, *use_32bit_registry=False*)

Delete a registry value entry or the default value for a key.

**Parameters**

- **hive** (*str*) -- The name of the hive. Can be one of the following
  - HKEY_LOCAL_MACHINE or HKLM

- HKEY_CURRENT_USER or HKCU
- HKEY_USER or HKU

- **key** (*str*) -- The key (looks like a path) to the value name.
- **vname** (*str*) -- The value name. These are the individual name/data pairs under the key. If not passed, the key (Default) value will be deleted.
- **reflection** (*bool*) -- A boolean value indicating that the value should also be set in the Wow6432Node portion of the registry. Only applies to 64 bit Windows. This setting is ignored for 32 bit Windows.

Deprecated since version 2015.8.2: Use `use_32bit_registry` instead. The parameter seems to have no effect since Windows 7 / Windows 2008R2 removed support for reflection. This parameter will be removed in Carbon.

**Returns** Returns True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' reg.delete_value HKEY_CURRENT_USER 'SOFTWARE\Salt' 'version'
```

`salt.modules.reg.`**`list_keys`**(*hive*, *key=None*, *use_32bit_registry=False*)

Enumerates the subkeys in a registry key or hive.

**Parameters**

- **hive** (*str*) -- The name of the hive. Can be one of the following
  - HKEY_LOCAL_MACHINE or HKLM
  - HKEY_CURRENT_USER or HKCU
  - HKEY_USER or HKU
- **key** (*str*) -- The key (looks like a path) to the value name. If a key is not passed, the keys under the hive will be returned.
- **use_32bit_registry** (*bool*) -- Accesses the 32bit portion of the registry on 64 bit installations. On 32bit machines this is ignored.

**Returns** A list of keys/subkeys under the hive or key.

**Return type** *list*

CLI Example:

```
salt '*' reg.list_keys HKLM 'SOFTWARE'
```

`salt.modules.reg.`**`read_key`**(*hkey*, *path*, *key=None*, *use_32bit_registry=False*)

---

**Important**: The name of this function is misleading and will be changed to reflect proper usage in the Carbon release of Salt. The path option will be removed and the key will be the actual key. See the following issue:

https://github.com/saltstack/salt/issues/25618

In order to not break existing state files this function will call the read_value function if a key is passed. Key will be passed as the value name. If key is not passed, this function will return the default value for the key.

In the Carbon release this function will be removed in favor of read_value.

---

Read registry key value

Returns the first unnamed value (Default) as a string. Returns none if first unnamed value is empty. Returns False if key not found.

CLI Example:

```
salt '*' reg.read_key HKEY_LOCAL_MACHINE 'SOFTWARE\Salt' 'version'
```

salt.modules.reg.**read_value**(*hive*, *key*, *vname=None*, *use_32bit_registry=False*)

Reads a registry value entry or the default value for a key.

**Parameters**

- **hive** (*str*) -- The name of the hive. Can be one of the following
  - HKEY_LOCAL_MACHINE or HKLM
  - HKEY_CURRENT_USER or HKCU
  - HKEY_USER or HKU
- **key** (*str*) -- The key (looks like a path) to the value name.
- **vname** (*str*) -- The value name. These are the individual name/data pairs under the key. If not passed, the key (Default) value will be returned
- **use_32bit_registry** (*bool*) -- Accesses the 32bit portion of the registry on 64 bit installations. On 32bit machines this is ignored.

**Returns** A dictionary containing the passed settings as well as the value_data if successful. If unsuccessful, sets success to False

**Return type** dict

If vname is not passed:

- Returns the first unnamed value (Default) as a string.
- Returns none if first unnamed value is empty.
- Returns False if key not found.

CLI Example:

```
salt '*' reg.read_value HKEY_LOCAL_MACHINE 'SOFTWARE\Salt' 'version'
```

salt.modules.reg.**set_key**(*hkey*, *path*, *value*, *key=None*, *vtype='REG_DWORD'*, *reflection=True*, *use_32bit_registry=False*)

---

**Important**: The name of this function is misleading and will be changed to reflect proper usage in the Carbon release of Salt. The path option will be removed and the key will be the actual key. See the following issue:

https://github.com/saltstack/salt/issues/25618

In order to not break existing state files this function will call the set_value function if a key is passed. Key will be passed as the value name. If key is not passed, this function will return the default value for the key.

In the Carbon release this function will be removed in favor of set_value.

---

Set a registry key

vtype: http://docs.python.org/2/library/_winreg.html#value-types

CLI Example:

```
salt '*' reg.set_key HKEY_CURRENT_USER 'SOFTWARE\Salt' 'version' '0.97' REG_DWORD
```

salt.modules.reg.**set_value**(*hive*, *key*, *vname=None*, *vdata=None*, *vtype='REG_SZ'*, *reflection=True*, *use_32bit_registry=False*)

Sets a registry value entry or the default value for a key.

**Parameters**

- **hive** (*str*) -- The name of the hive. Can be one of the following
  - HKEY_LOCAL_MACHINE or HKLM
  - HKEY_CURRENT_USER or HKCU
  - HKEY_USER or HKU
- **key** (*str*) -- The key (looks like a path) to the value name.
- **vname** (*str*) -- The value name. These are the individual name/data pairs under the key. If not passed, the key (Default) value will be set.
- **vdata** (*str*) -- The value data to be set.
- **vtype** (*str*) -- The value type. Can be one of the following:
  - REG_BINARY
  - REG_DWORD
  - REG_EXPAND_SZ
  - REG_MULTI_SZ
  - REG_SZ
- **reflection** (*bool*) -- A boolean value indicating that the value should also be set in the Wow6432Node portion of the registry. Only applies to 64 bit Windows. This setting is ignored for 32 bit Windows.

Deprecated since version 2015.8.2: Use `use_32bit_registry` instead. The parameter seems to have no effect since Windows 7 / Windows 2008R2 removed support for reflection. The parameter will be removed in Carbon.

**Returns** Returns True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' reg.set_value HKEY_LOCAL_MACHINE 'SOFTWARE\Salt' 'version' '2015.5.2'
```

### 13.6.254 salt.modules.rest_package

Package support for the REST example

salt.modules.rest_package.**install**(*name=None, refresh=False, fromrepo=None, pkgs=None, sources=None, **kwargs*)

salt.modules.rest_package.**installed**(*name, version=None, refresh=False, fromrepo=None, skip_verify=False, pkgs=None, sources=None, **kwargs*)

salt.modules.rest_package.**list_pkgs**(*versions_as_list=False, **kwargs*)

salt.modules.rest_package.**remove**(*name=None, pkgs=None, **kwargs*)

salt.modules.rest_package.**upgrade**(*refresh=True, skip_verify=True, **kwargs*)

salt.modules.rest_package.**version**(**names, **kwargs*)

Returns a string representing the package version or an empty string if not installed. If more than one package name is specified, a dict of name/version pairs is returned.

CLI Example:

```
salt '*' pkg.version <package name>
salt '*' pkg.version <package1> <package2> <package3> ...
```

### 13.6.255 salt.modules.rest_service

Provide the service module for the proxy-minion REST sample

salt.modules.rest_service.**enabled**(*name*, *sig=None*)
Only the `redbull' service is `enabled' in the test

New in version 2015.8.1.

salt.modules.rest_service.**get_all**()
Return a list of all available services

New in version 2015.8.0.

CLI Example:

```
salt '*' service.get_all
```

salt.modules.rest_service.**list**()
Return a list of all available services.

CLI Example:

```
salt '*' service.list
```

salt.modules.rest_service.**restart**(*name*, *sig=None*)
Restart the specified service with rest_sample

New in version 2015.8.0.

CLI Example:

```
salt '*' service.restart <service name>
```

salt.modules.rest_service.**running**(*name*, *sig=None*)
Return whether this service is running.

New in version 2015.8.0.

salt.modules.rest_service.**start**(*name*, *sig=None*)
Start the specified service on the rest_sample

New in version 2015.8.0.

CLI Example:

```
salt '*' service.start <service name>
```

salt.modules.rest_service.**status**(*name*, *sig=None*)
Return the status for a service via rest_sample, returns a bool whether the service is running.

New in version 2015.8.0.

CLI Example:

```
salt '*' service.status <service name>
```

salt.modules.rest_service.**stop**(*name*, *sig=None*)
Stop the specified service on the rest_sample

New in version 2015.8.0.

CLI Example:

```
salt '*' service.stop <service name>
```

### 13.6.256 salt.modules.restartcheck module

checkrestart functionality for Debian and Red Hat Based systems

Identifies services (processes) that are linked against deleted files (for example after downloading an updated binary of a shared library).

Based on checkrestart script from debian-goodies (written by Matt Zimmerman for the Debian GNU/Linux distribution, https://packages.debian.org/debian-goodies) and psdel by Sam Morris.

**codeauthor** Jiri Kotlin <jiri.kotlin@ultimum.io>

`salt.modules.restartcheck.`**`restartcheck`**(*ignorelist=None*, *blacklist=None*, *excludepid=None*, *verbose=True*)

Analyzes files openeded by running processes and seeks for packages which need to be restarted.

**Args**: ignorelist: string or list of packages to be ignored blacklist: string or list of file paths to be ignored excludepid: string or list of process IDs to be ignored verbose: boolean, enables extensive output

**Returns**: True if no packages for restart found. False on failure. String with checkrestart output if some package seems to need to be restarted.

New in version 2015.8.3.

CLI Example: .. code-block:: bash
salt `*' restartcheck.restartcheck

### 13.6.257 salt.modules.ret

Module to integrate with the returner system and retrieve data sent to a salt returner

`salt.modules.ret.`**`get_fun`**(*returner*, *fun*)

Return info about last time fun was called on each minion

CLI Example:

```
salt '*' ret.get_fun mysql network.interfaces
```

`salt.modules.ret.`**`get_jid`**(*returner*, *jid*)

Return the information for a specified job id

CLI Example:

```
salt '*' ret.get_jid redis 20421104181954700505
```

`salt.modules.ret.`**`get_jids`**(*returner*)

Return a list of all job ids

CLI Example:

```
salt '*' ret.get_jids mysql
```

`salt.modules.ret.`**`get_minions`**(*returner*)

Return a list of all minions

CLI Example:

```
salt '*' ret.get_minions mysql
```

### 13.6.258 salt.modules.rh_ip

The networking module for RHEL/Fedora based distros

salt.modules.rh_ip.**apply_network_settings**(***settings*)
Apply global network configuration.

CLI Example:

```
salt '*' ip.apply_network_settings
```

salt.modules.rh_ip.**build_bond**(*iface*, ***settings*)
Create a bond script in /etc/modprobe.d with the passed settings and load the bonding kernel module.

CLI Example:

```
salt '*' ip.build_bond bond0 mode=balance-alb
```

salt.modules.rh_ip.**build_interface**(*iface*, *iface_type*, *enabled*, ***settings*)
Build an interface script for a network interface.

CLI Example:

```
salt '*' ip.build_interface eth0 eth <settings>
```

salt.modules.rh_ip.**build_network_settings**(***settings*)
Build the global network script.

CLI Example:

```
salt '*' ip.build_network_settings <settings>
```

salt.modules.rh_ip.**build_routes**(*iface*, ***settings*)
Build a route script for a network interface.

CLI Example:

```
salt '*' ip.build_routes eth0 <settings>
```

salt.modules.rh_ip.**down**(*iface*, *iface_type*)
Shutdown a network interface

CLI Example:

```
salt '*' ip.down eth0
```

salt.modules.rh_ip.**get_bond**(*iface*)
Return the content of a bond script

CLI Example:

```
salt '*' ip.get_bond bond0
```

salt.modules.rh_ip.**get_interface**(*iface*)
Return the contents of an interface script

CLI Example:

```
salt '*' ip.get_interface eth0
```

salt.modules.rh_ip.**get_network_settings**()
Return the contents of the global network script.

CLI Example:

```
salt '*' ip.get_network_settings
```

salt.modules.rh_ip.**get_routes**(*iface*)
Return the contents of the interface routes script.

CLI Example:

```
salt '*' ip.get_routes eth0
```

salt.modules.rh_ip.**up**(*iface*, *iface_type*)
Start up a network interface

CLI Example:

```
salt '*' ip.up eth0
```

### 13.6.259 salt.modules.rh_service

Service support for RHEL-based systems, including support for both upstart and sysvinit

---

**Important**: If you feel that Salt should be using this module to manage services on a minion, and it is using a different module (or gives an error similar to *`service.start' is not available*), see *here*.

---

salt.modules.rh_service.**available**(*name*, *limit=''*)
Return True if the named service is available. Use the `limit` param to restrict results to services of that type.

CLI Examples:

```
salt '*' service.available sshd
salt '*' service.available sshd limit=upstart
salt '*' service.available sshd limit=sysvinit
```

salt.modules.rh_service.**delete**(*name*, ***kwargs*)
Delete the named service

New in version 2016.3.

CLI Example:

```
salt '*' service.delete <service name>
```

salt.modules.rh_service.**disable**(*name*, ***kwargs*)
Disable the named service to start at boot

CLI Example:

```
salt '*' service.disable <service name>
```

salt.modules.rh_service.**disabled**(*name*)
Check to see if the named service is disabled to start on boot

CLI Example:

```
salt '*' service.disabled <service name>
```

salt.modules.rh_service.**enable**(*name*, ***kwargs*)
Enable the named service to start at boot

CLI Example:

```
salt '*' service.enable <service name>
```

salt.modules.rh_service.**enabled**(*name*, ***kwargs*)
Check to see if the named service is enabled to start on boot

CLI Example:

```
salt '*' service.enabled <service name>
```

salt.modules.rh_service.**get_all**(*limit=''*)
Return all installed services. Use the `limit` param to restrict results to services of that type.

CLI Example:

```
salt '*' service.get_all
salt '*' service.get_all limit=upstart
salt '*' service.get_all limit=sysvinit
```

salt.modules.rh_service.**get_disabled**(*limit=''*)
Return the disabled services. Use the `limit` param to restrict results to services of that type.

CLI Example:

```
salt '*' service.get_disabled
salt '*' service.get_disabled limit=upstart
salt '*' service.get_disabled limit=sysvinit
```

salt.modules.rh_service.**get_enabled**(*limit=''*)
Return the enabled services. Use the `limit` param to restrict results to services of that type.

CLI Examples:

```
salt '*' service.get_enabled
salt '*' service.get_enabled limit=upstart
salt '*' service.get_enabled limit=sysvinit
```

salt.modules.rh_service.**missing**(*name*, *limit=''*)
The inverse of service.available. Return True if the named service is not available. Use the `limit` param to restrict results to services of that type.

CLI Examples:

```
salt '*' service.missing sshd
salt '*' service.missing sshd limit=upstart
salt '*' service.missing sshd limit=sysvinit
```

salt.modules.rh_service.**reload**(*name*)
Reload the named service

CLI Example:

```
salt '*' service.reload <service name>
```

salt.modules.rh_service.**restart**(*name*)
Restart the named service

CLI Example:

```
salt '*' service.restart <service name>
```

salt.modules.rh_service.**start**(*name*)
Start the specified service

CLI Example:

```
salt '*' service.start <service name>
```

salt.modules.rh_service.**status**(*name*, *sig=None*)
Return the status for a service, returns a bool whether the service is running.

CLI Example:

```
salt '*' service.status <service name>
```

salt.modules.rh_service.**stop**(*name*)
Stop the specified service

CLI Example:

```
salt '*' service.stop <service name>
```

### 13.6.260 salt.modules.riak

Riak Salt Module

salt.modules.riak.**cluster_commit**()
Commit Cluster Changes

Changed in version 2015.8.0.

CLI Example:

```
salt '*' riak.cluster_commit
```

salt.modules.riak.**cluster_join**(*username*, *hostname*)
Join a Riak cluster

Changed in version 2015.8.0.

CLI Example:

```
salt '*' riak.cluster_join <user> <host>
```

username - The riak username to join the cluster hostname - The riak hostname you are connecting to

salt.modules.riak.**cluster_leave**(*username*, *hostname*)
Leave a Riak cluster

New in version 2015.8.0.

CLI Example:

```
salt '*' riak.cluster_leave <username> <host>
```

username - The riak username to join the cluster hostname - The riak hostname you are connecting to

salt.modules.riak.**cluster_plan**()
Review Cluster Plan

Changed in version 2015.8.0.

CLI Example:

```
salt '*' riak.cluster_plan
```

salt.modules.riak.**member_status**()
Get cluster member status

Changed in version 2015.8.0.

CLI Example:

```
salt '*' riak.member_status
```

salt.modules.riak.**services**()
List available services on a node

New in version 2015.8.0.

CLI Example:

```
salt '*' riak.services
```

salt.modules.riak.**start**()
Start Riak

CLI Example:

```
salt '*' riak.start
```

salt.modules.riak.**status**()
Current node status

New in version 2015.8.0.

CLI Example:

```
salt '*' riak.status
```

salt.modules.riak.**stop**()
Stop Riak

Changed in version 2015.8.0.

CLI Example:

```
salt '*' riak.stop
```

salt.modules.riak.**test**()
Runs a test of a few standard Riak operations

New in version 2015.8.0.

CLI Example:

```
salt '*' riak.test
```

### 13.6.261 salt.modules.rpm

Support for rpm

salt.modules.rpm.**bin_pkg_info**(*path*, *saltenv='base'*)

New in version 2015.8.0.

Parses RPM metadata and returns a dictionary of information about the package (name, version, etc.).

**path** Path to the file. Can either be an absolute path to a file on the minion, or a salt fileserver URL (e.g. `salt://path/to/file.rpm`). If a salt fileserver URL is passed, the file will be cached to the minion so that it can be examined.

**saltenv** [base] Salt fileserver envrionment from which to retrieve the package. Ignored if `path` is a local file path on the minion.

CLI Example:

```
salt '*' lowpkg.bin_pkg_info /root/salt-2015.5.1-2.el7.noarch.rpm
salt '*' lowpkg.bin_pkg_info salt://salt-2015.5.1-2.el7.noarch.rpm
```

salt.modules.rpm.**checksum**(**paths*)

Return if the signature of a RPM file is valid.

CLI Example:

```
salt '*' lowpkg.checksum /path/to/package1.rpm
salt '*' lowpkg.checksum /path/to/package1.rpm /path/to/package2.rpm
```

salt.modules.rpm.**diff**(*package*, *path*)

Return a formatted diff between current file and original in a package. NOTE: this function includes all files (configuration and not), but does not work on binary content.

**Parameters**

- **package** -- The name of the package
- **path** -- Full path to the installed file

**Returns** Difference or empty string. For binary files only a notification.

CLI example:

```
salt '*' lowpkg.diff apache2 /etc/apache2/httpd.conf
```

salt.modules.rpm.**file_dict**(**packages*)

List the files that belong to a package, sorted by group. Not specifying any packages will return a list of _every_ file on the system's rpm database (not generally recommended).

CLI Examples:

```
salt '*' lowpkg.file_dict httpd
salt '*' lowpkg.file_dict httpd postfix
salt '*' lowpkg.file_dict
```

salt.modules.rpm.**file_list**(**packages*)

List the files that belong to a package. Not specifying any packages will return a list of _every_ file on the system's rpm database (not generally recommended).

CLI Examples:

```
salt '*' lowpkg.file_list httpd
salt '*' lowpkg.file_list httpd postfix
salt '*' lowpkg.file_list
```

salt.modules.rpm.**info**(**packages*, ***attr*)

Return a detailed package(s) summary information. If no packages specified, all packages will be returned.

**Parameters**

- **packages** --
- **attr** -- Comma-separated package attributes. If no `attr' is specified, all available attributes returned.

  **Valid attributes are**: version, vendor, release, build_date, build_date_time_t, install_date, install_date_time_t, build_host, group, source_rpm, arch, epoch, size, license, signature, packager, url, summary, description.

**Returns**

CLI example:

```
salt '*' lowpkg.info apache2 bash
salt '*' lowpkg.info apache2 bash attr=version
salt '*' lowpkg.info apache2 bash attr=version,build_date_iso,size
```

salt.modules.rpm.**list_pkgs**(**packages*)

List the packages currently installed in a dict:

```
{'<package_name>': '<version>'}
```

CLI Example:

```
salt '*' lowpkg.list_pkgs
```

salt.modules.rpm.**modified**(**packages*, ***flags*)

List the modified files that belong to a package. Not specifying any packages will return a list of _all_ modified files on the system's RPM database.

New in version 2015.5.0.

CLI examples:

```
salt '*' lowpkg.modified httpd
salt '*' lowpkg.modified httpd postfix
salt '*' lowpkg.modified
```

salt.modules.rpm.**owner**(**paths*)

Return the name of the package that owns the file. Multiple file paths can be passed. If a single path is passed, a string will be returned, and if multiple paths are passed, a dictionary of file/package name pairs will be returned.

If the file is not owned by a package, or is not present on the minion, then an empty string will be returned for that path.

CLI Examples:

```
salt '*' lowpkg.owner /usr/bin/apachectl
salt '*' lowpkg.owner /usr/bin/apachectl /etc/httpd/conf/httpd.conf
```

salt.modules.rpm.**verify**(**packages*, ***kwargs*)

Runs an rpm -Va on a system, and returns the results in a dict

Files with an attribute of config, doc, ghost, license or readme in the package header can be ignored using the `ignore_types` keyword argument

CLI Example:

```
salt '*' lowpkg.verify
salt '*' lowpkg.verify httpd
salt '*' lowpkg.verify httpd postfix
salt '*' lowpkg.verify httpd postfix ignore_types=['config','doc']
```

`salt.modules.rpm.`**`version_cmp`**(*ver1*, *ver2*, *ignore_epoch=False*)

New in version 2015.8.9.

Do a cmp-style comparison on two packages. Return -1 if ver1 < ver2, 0 if ver1 == ver2, and 1 if ver1 > ver2. Return None if there was a problem making the comparison.

**ignore_epoch** [False] Set to `True` to ignore the epoch when comparing versions

New in version 2015.8.10,2016.3.2.

CLI Example:

```
salt '*' pkg.version_cmp '0.2-001' '0.2.0.1-002'
```

### 13.6.262 salt.modules.rpmbuild

RPM Package builder system

New in version 2015.8.0.

This system allows for all of the components to build rpms safely in chrooted environments. This also provides a function to generate yum repositories

This module implements the pkgbuild interface

`salt.modules.rpmbuild.`**`build`**(*runas*, *tgt*, *dest_dir*, *spec*, *sources*, *deps*, *env*, *template*, *saltenv='base'*, *log_dir='/var/log/salt/pkgbuild'*)

Given the package destination directory, the spec file source and package sources, use mock to safely build the rpm defined in the spec file

CLI Example:

```
salt '*' pkgbuild.build mock epel-7-x86_64 /var/www/html https://raw.
↪githubusercontent.com/saltstack/libnacl/master/pkg/rpm/python-libnacl.spec
↪https://pypi.python.org/packages/source/l/libnacl/libnacl-1.3.5.tar.gz
```

This example command should build the libnacl package for rhel 7 using user mock and place it in /var/www/html/ on the minion

`salt.modules.rpmbuild.`**`make_repo`**(*repodir*, *keyid=None*, *env=None*, *use_passphrase=False*, *gnupghome='/etc/salt/gpgkeys'*, *runas='root'*, *timeout=15.0*)

Make a package repository and optionally sign packages present

Given the repodir, create a `yum` repository out of the rpms therein and optionally sign it and packages present, the name is directory to turn into a repo. This state is best used with onchanges linked to your package building states.

**repodir** The directory to find packages that will be in the repository.

**keyid** Changed in version 2016.3.0.

Optional Key ID to use in signing packages and repository. Utilizes Public and Private keys associated with keyid which have been loaded into the minion's Pillar data.

For example, contents from a Pillar data file with named Public and Private keys as follows:

```
gpg_pkg_priv_key: |
  -----BEGIN PGP PRIVATE KEY BLOCK-----
  Version: GnuPG v1

  lQO+BFciIfQBCADAPCtzx7I5Rl32escCMZsPzaEKWe7bIX1em4KCKkBoX47IG54b
  w82PCE8Y1jF/9Uk2m3RKVWp3YcLlc7Ap3gj6VO4ysvVz28UbnhPxsIkOlf2cq8qc
  .
  .
  Ebe+8JCQTwqSXPRTzXmy/b5WXDeM79CkLWvuGpXFor76D+ECMRPv/rawukEcNptn
  R5OmgHqvydEnO4pWbn8JzQO9YX/Us0SMHBVzLC8eIi5ZIopzalvX
  =JvW8
  -----END PGP PRIVATE KEY BLOCK-----

gpg_pkg_priv_keyname: gpg_pkg_key.pem

gpg_pkg_pub_key: |
  -----BEGIN PGP PUBLIC KEY BLOCK-----
  Version: GnuPG v1

  mQENBFciIfQBCADAPCtzx7I5Rl32escCMZsPzaEKWe7bIX1em4KCKkBoX47IG54b
  w82PCE8Y1jF/9Uk2m3RKVWp3YcLlc7Ap3gj6VO4ysvVz28UbnhPxsIkOlf2cq8qc
  .
  .
  bYP7t5iwJmQzRMyFInYRt77wkJBPCpJc9FPNebL9vlZcN4zv0KQta+4alcWivvoP
  4QIxE+/+trC6QRw2m2dHk6aAeq/J0Sc7ilZufwnNA71hf9SzRIwcFXMsLx4iLlki
  inNqW9c=
  =s1CX
  -----END PGP PUBLIC KEY BLOCK-----

gpg_pkg_pub_keyname: gpg_pkg_key.pub
```

**env** Changed in version 2016.3.0.

A dictionary of environment variables to be utilized in creating the repository.

---

**Note**: This parameter is not used for making `yum` repositories.

---

**use_passphrase** [False] New in version 2016.3.0.

Use a passphrase with the signing key presented in `keyid`. Passphrase is received from Pillar data which could be passed on the command line with `pillar` parameter. For example:

```
pillar='{ "gpg_passphrase" : "my_passphrase" }'
```

**gnupghome** [/etc/salt/gpgkeys] New in version 2016.3.0.

Location where GPG related files are stored, used with `keyid`.

**runas** [root] New in version 2016.3.0.

User to create the repository as, and optionally sign packages.

---

**Note**: Ensure the user has correct permissions to any files and directories which are to be utilized.

---

**timeout** [15.0] New in version 2016.3.4.

Timeout in seconds to wait for the prompt for inputting the passphrase.

CLI Example:

```
salt '*' pkgbuild.make_repo /var/www/html/
```

salt.modules.rpmbuild.**make_src_pkg**(*dest_dir*, *spec*, *sources*, *env=None*, *template=None*, *saltenv='base'*)

Create a source rpm from the given spec file and sources

CLI Example:

```
salt '*' pkgbuild.make_src_pkg /var/www/html/ https://raw.githubusercontent.com/
↪saltstack/libnacl/master/pkg/rpm/python-libnacl.spec https://pypi.python.org/
↪packages/source/l/libnacl/libnacl-1.3.5.tar.gz
```

This example command should build the libnacl SOURCE package and place it in /var/www/html/ on the minion

### 13.6.263 salt.modules.rsync

Wrapper for rsync

New in version 2014.1.0.

This data can also be passed into *pillar*. Options passed into opts will overwrite options passed into pillar.

salt.modules.rsync.**config**(*conf_path='/etc/rsyncd.conf'*)

Changed in version 2016.3.0: Return data now contains just the contents of the rsyncd.conf as a string, instead of a dictionary as returned from `cmd.run_all`.

Returns the contents of the rsync config file
**conf_path** [/etc/rsyncd.conf] Path to the config file
CLI Example:

```
salt '*' rsync.config
```

salt.modules.rsync.**rsync**(*src*, *dst*, *delete=False*, *force=False*, *update=False*, *passwordfile=None*, *exclude=None*, *excludefrom=None*, *dryrun=False*)

Changed in version 2016.3.0: Return data now contains just the output of the rsync command, instead of a dictionary as returned from `cmd.run_all`.

Rsync files from src to dst

CLI Example:

```
salt '*' rsync.rsync {src} {dst} {delete=True} {update=True} {passwordfile=/etc/
↪pass.crt} {exclude=xx}
salt '*' rsync.rsync {src} {dst} {delete=True} {excludefrom=/xx.ini}
```

salt.modules.rsync.**version**()

Changed in version 2016.3.0: Return data now contains just the version number as a string, instead of a dictionary as returned from `cmd.run_all`.

Returns rsync version

CLI Example:

```
salt '*' rsync.version
```

### 13.6.264 salt.modules.runit

runit service module

This module is compatible with the *service* states, so it can be used to maintain services using the `provider` argument:

```
myservice:
  service:
    - running
    - provider: runit
```

Note that the `enabled` argument is not available with this provider.

`salt.modules.runit.`**`available`**(*name*)
Returns `True` if the specified service is available, otherwise returns `False`.

CLI Example:

```
salt '*' runit.available foo
```

`salt.modules.runit.`**`full_restart`**(*name*)
Calls runit.restart() function

CLI Example:

```
salt '*' runit.full_restart <service name>
```

`salt.modules.runit.`**`get_all`**()
Return a list of all available services

CLI Example:

```
salt '*' runit.get_all
```

`salt.modules.runit.`**`missing`**(*name*)
The inverse of runit.available. Returns `True` if the specified service is not available, otherwise returns `False`.

CLI Example:

```
salt '*' runit.missing foo
```

`salt.modules.runit.`**`reload`**(*name*)
Send a HUP to service via runit

CLI Example:

```
salt '*' runit.reload <service name>
```

`salt.modules.runit.`**`restart`**(*name*)
Restart service via runit. This will stop/start service

CLI Example:

```
salt '*' runit.restart <service name>
```

`salt.modules.runit.`**`start`**(*name*)
Starts service via runit

CLI Example:

```
salt '*' runit.start <service name>
```

salt.modules.runit.**status**(*name*, *sig=None*)
Return the status for a service via runit, return pid if running

CLI Example:

```
salt '*' runit.status <service name>
```

salt.modules.runit.**stop**(*name*)
Stops service via runit

CLI Example:

```
salt '*' runit.stop <service name>
```

salt.modules.runit.**term**(*name*)
Send a TERM to service via runit

CLI Example:

```
salt '*' runit.term <service name>
```

### 13.6.265 salt.modules.rvm

Manage ruby installations and gemsets with RVM, the Ruby Version Manager.

salt.modules.rvm.**do**(*ruby*, *command*, *runas=None*, *cwd=None*)
Execute a command in an RVM controlled environment.
**ruby** Which ruby to use
**command** The rvm command to execute
**runas** The user under which to run rvm. If not specified, then rvm will be run as the user under which Salt is running.
**cwd** The directory from which to run the rvm command. Defaults to the user's home directory.
CLI Example:

```
salt '*' rvm.do 2.0.0 <command>
```

salt.modules.rvm.**gemset_copy**(*source*, *destination*, *runas=None*)
Copy all gems from one gemset to another.
**source** The name of the gemset to copy, complete with ruby version
**destination** The destination gemset
**runas** The user under which to run rvm. If not specified, then rvm will be run as the user under which Salt is running.
CLI Example:

```
salt '*' rvm.gemset_copy foobar bazquo
```

salt.modules.rvm.**gemset_create**(*ruby*, *gemset*, *runas=None*)
Creates a gemset.
**ruby** The ruby version for which to create the gemset
**gemset** The name of the gemset to create
**runas** The user under which to run rvm. If not specified, then rvm will be run as the user under which Salt is running.
CLI Example:

```
salt '*' rvm.gemset_create 2.0.0 foobar
```

salt.modules.rvm.**gemset_delete**(*ruby*, *gemset*, *runas=None*)

Delete a gemset

**ruby** The ruby version to which the gemset belongs

**gemset** The gemset to delete

**runas** The user under which to run rvm. If not specified, then rvm will be run as the user under which Salt is running.

CLI Example:

```
salt '*' rvm.gemset_delete 2.0.0 foobar
```

salt.modules.rvm.**gemset_empty**(*ruby*, *gemset*, *runas=None*)

Remove all gems from a gemset.

**ruby** The ruby version to which the gemset belongs

**gemset** The gemset to empty

**runas** The user under which to run rvm. If not specified, then rvm will be run as the user under which Salt is running.

CLI Example:

```
salt '*' rvm.gemset_empty 2.0.0 foobar
```

salt.modules.rvm.**gemset_list**(*ruby='default'*, *runas=None*)

List all gemsets for the given ruby.

**ruby** [default] The ruby version for which to list the gemsets

**runas** The user under which to run rvm. If not specified, then rvm will be run as the user under which Salt is running.

CLI Example:

```
salt '*' rvm.gemset_list
```

salt.modules.rvm.**gemset_list_all**(*runas=None*)

List all gemsets for all installed rubies.

Note that you must have set a default ruby before this can work.

**runas** The user under which to run rvm. If not specified, then rvm will be run as the user under which Salt is running.

CLI Example:

```
salt '*' rvm.gemset_list_all
```

salt.modules.rvm.**get**(*version='stable'*, *runas=None*)

Update RVM

**version** [stable] Which version of RVM to install, (e.g. stable or head)

CLI Example:

```
salt '*' rvm.get
```

salt.modules.rvm.**install**(*runas=None*)

Install RVM system-wide

**runas** The user under which to run the rvm installer script. If not specified, then it be run as the user under which Salt is running.

CLI Example:

```
salt '*' rvm.install
```

salt.modules.rvm.**install_ruby**(*ruby*, *runas=None*)

Install a ruby implementation.

**ruby** The version of ruby to install

**runas** The user under which to run rvm. If not specified, then rvm will be run as the user under which Salt is running.

CLI Example:

```
salt '*' rvm.install_ruby 1.9.3-p385
```

salt.modules.rvm.**is_installed**(*runas=None*)

Check if RVM is installed.

CLI Example:

```
salt '*' rvm.is_installed
```

salt.modules.rvm.**list**(*runas=None*)

List all rvm-installed rubies

**runas** The user under which to run rvm. If not specified, then rvm will be run as the user under which Salt is running.

CLI Example:

```
salt '*' rvm.list
```

salt.modules.rvm.**reinstall_ruby**(*ruby*, *runas=None*)

Reinstall a ruby implementation

**ruby** The version of ruby to reinstall

**runas** The user under which to run rvm. If not specified, then rvm will be run as the user under which Salt is running.

CLI Example:

```
salt '*' rvm.reinstall_ruby 1.9.3-p385
```

salt.modules.rvm.**rubygems**(*ruby*, *version*, *runas=None*)

Installs a specific rubygems version in the given ruby

**ruby** The ruby for which to install rubygems

**version** The version of rubygems to install, or `remove' to use the version that ships with 1.9

**runas** The user under which to run rvm. If not specified, then rvm will be run as the user under which Salt is running.

CLI Example:

```
salt '*' rvm.rubygems 2.0.0 1.8.24
```

salt.modules.rvm.**set_default**(*ruby*, *runas=None*)

Set the default ruby

**ruby** The version of ruby to make the default

**runas** The user under which to run rvm. If not specified, then rvm will be run as the user under which Salt is running.

CLI Example:

```
salt '*' rvm.set_default 2.0.0
```

salt.modules.rvm.**wrapper**(*ruby_string*, *wrapper_prefix*, *runas=None*, **binaries*)

Install RVM wrapper scripts

**ruby_string** Ruby/gemset to install wrappers for
**wrapper_prefix** What to prepend to the name of the generated wrapper binaries
**runas** The user under which to run rvm. If not specified, then rvm will be run as the user under which Salt is running.
**binaries** [None] The names of the binaries to create wrappers for. When nothing is given, wrappers for ruby, gem, rake, irb, rdoc, ri and testrb are generated.
CLI Example:

```
salt '*' rvm.wrapper <ruby_string> <wrapper_prefix>
```

### 13.6.266 salt.modules.s3

Connection module for Amazon S3

**configuration** This module accepts explicit s3 credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-
↪ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
s3.keyid: GKTADJGHEIQSXMKKRBJ08H
s3.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

A service_url may also be specified in the configuration:

```
s3.service_url: s3.amazonaws.com
```

A role_arn may also be specified in the configuration:

```
s3.role_arn: arn:aws:iam::111111111111:role/my-role-to-assume
```

If a service_url is not specified, the default is s3.amazonaws.com. This may appear in various documentation as an ``endpoint''. A comprehensive list for Amazon S3 may be found at:

```
http://docs.aws.amazon.com/general/latest/gr/rande.html#s3_region
```

The service_url will form the basis for the final endpoint that is used to query the service.

SSL verification may also be turned off in the configuration:

```
s3.verify_ssl: False
```

This is required if using S3 bucket names that contain a period, as these will not match Amazon's S3 wildcard certificates. Certificate verification is enabled by default.

AWS region may be specified in the configuration:

```
s3.location: eu-central-1
```

Default is us-east-1.

This module should be usable to query other S3-like services, such as Eucalyptus.

**depends** requests

salt.modules.s3.**delete**(*bucket*, *path=None*, *action=None*, *key=None*, *keyid=None*, *service_url=None*, *verify_ssl=None*, *kms_keyid=None*, *location=None*, *role_arn=None*)

Delete a bucket, or delete an object from a bucket.

CLI Example to delete a bucket:

```
salt myminion s3.delete mybucket
```

CLI Example to delete an object from a bucket:

```
salt myminion s3.delete mybucket remoteobject
```

salt.modules.s3.**get**(*bucket=None*, *path=None*, *return_bin=False*, *action=None*, *local_file=None*, *key=None*, *keyid=None*, *service_url=None*, *verify_ssl=None*, *kms_keyid=None*, *location=None*, *role_arn=None*)

List the contents of a bucket, or return an object from a bucket. Set return_bin to True in order to retrieve an object wholesale. Otherwise, Salt will attempt to parse an XML response.

CLI Example to list buckets:

```
salt myminion s3.get
```

CLI Example to list the contents of a bucket:

```
salt myminion s3.get mybucket
```

CLI Example to return the binary contents of an object:

```
salt myminion s3.get mybucket myfile.png return_bin=True
```

CLI Example to save the binary contents of an object to a local file:

```
salt myminion s3.get mybucket myfile.png local_file=/tmp/myfile.png
```

It is also possible to perform an action on a bucket. Currently, S3 supports the following actions:

```
acl
cors
lifecycle
policy
location
logging
notification
tagging
versions
requestPayment
versioning
website
```

To perform an action on a bucket:

```
salt myminion s3.get mybucket myfile.png action=acl
```

salt.modules.s3.**head**(*bucket*, *path=None*, *key=None*, *keyid=None*, *service_url=None*, *verify_ssl=None*, *kms_keyid=None*, *location=None*, *role_arn=None*)

Return the metadata for a bucket, or an object in a bucket.

CLI Examples:

```
salt myminion s3.head mybucket
salt myminion s3.head mybucket myfile.png
```

salt.modules.s3.**put**(*bucket*, *path=None*, *return_bin=False*, *action=None*, *local_file=None*, *key=None*, *keyid=None*, *service_url=None*, *verify_ssl=None*, *kms_keyid=None*, *location=None*, *role_arn=None*)

Create a new bucket, or upload an object to a bucket.

CLI Example to create a bucket:

```
salt myminion s3.put mybucket
```

CLI Example to upload an object to a bucket:

```
salt myminion s3.put mybucket remotepath local_file=/path/to/file
```

### 13.6.267 salt.modules.s6 module

s6 service module

This module is compatible with the *service* states, so it can be used to maintain services using the `provider` argument:

```
myservice:
  service:
    - running
    - provider: s6
```

Note that the `enabled` argument is not available with this provider.

**codeauthor** :email:`Marek Skrobacki <skrobul@skrobul.com>`

salt.modules.s6.**available**(*name*)

Returns `True` if the specified service is available, otherwise returns `False`.

CLI Example:

```
salt '*' s6.available foo
```

salt.modules.s6.**full_restart**(*name*)

Calls s6.restart() function

CLI Example:

```
salt '*' s6.full_restart <service name>
```

salt.modules.s6.**get_all**()

Return a list of all available services

CLI Example:

```
salt '*' s6.get_all
```

salt.modules.s6.**missing**(*name*)

The inverse of s6.available. Returns `True` if the specified service is not available, otherwise returns `False`.

CLI Example:

```
salt '*' s6.missing foo
```

salt.modules.s6.**reload**(*name*)
Send a HUP to service via s6

CLI Example:

```
salt '*' s6.reload <service name>
```

salt.modules.s6.**restart**(*name*)
Restart service via s6. This will stop/start service

CLI Example:

```
salt '*' s6.restart <service name>
```

salt.modules.s6.**start**(*name*)
Starts service via s6

CLI Example:

```
salt '*' s6.start <service name>
```

salt.modules.s6.**status**(*name*, *sig=None*)
Return the status for a service via s6, return pid if running

CLI Example:

```
salt '*' s6.status <service name>
```

salt.modules.s6.**stop**(*name*)
Stops service via s6

CLI Example:

```
salt '*' s6.stop <service name>
```

salt.modules.s6.**term**(*name*)
Send a TERM to service via s6

CLI Example:

```
salt '*' s6.term <service name>
```

### 13.6.268 salt.modules.salt_proxy module

Salt proxy module

New in version 2015.8.3.

Module to deploy and manage salt-proxy processes on a minion.

salt.modules.salt_proxy.**configure_proxy**(*proxyname*, *start=True*)
Create the salt proxy file and start the proxy process if required
**Parameters**:
**proxyname**: Name to be used for this proxy (should match entries in pillar)
**start**: Boolean indicating if the process should be started default = True
CLI Example:

```
salt deviceminion salt_proxy.configure_proxy p8000
```

salt.modules.salt_proxy.**is_running**(*proxyname*)

Check if the salt-proxy process associated with this proxy (name) is running.

Returns True if the process is running False otherwise

**Parameters**:

**proxyname**: String name of the proxy (p8000 for example)

CLI Example:

```
salt deviceminion salt_proxy.is_running p8000
```

### 13.6.269 salt.modules.saltcloudmod

Control a salt cloud system

salt.modules.saltcloudmod.**create**(*name*, *profile*)

Create the named vm

CLI Example:

```
salt <minion-id> saltcloud.create webserver rackspace_centos_512
```

### 13.6.270 salt.modules.saltutil

The Saltutil module is used to manage the state of the salt minion itself. It is used to manage minion modules as well as automate updates to the salt minion.

**depends**

- esky Python module for update functionality

salt.modules.saltutil.**clear_cache**()

Forcibly removes all caches on a minion.

New in version 2014.7.0.

WARNING: The safest way to clear a minion cache is by first stopping the minion and then deleting the cache files before restarting it.

CLI Example:

```
salt '*' saltutil.clear_cache
```

salt.modules.saltutil.**cmd**(*tgt*, *fun*, *arg=()*, *timeout=None*, *expr_form='glob'*, *ret=''*, *kwarg=None*, *ssh=False*, ***kwargs*)

Assuming this minion is a master, execute a salt command

CLI Example:

```
salt '*' saltutil.cmd
```

salt.modules.saltutil.**cmd_iter**(*tgt*, *fun*, *arg=()*, *timeout=None*, *expr_form='glob'*, *ret=''*, *kwarg=None*, *ssh=False*, ***kwargs*)

Assuming this minion is a master, execute a salt command

CLI Example:

```
salt '*' saltutil.cmd_iter
```

salt.modules.saltutil.**find_cached_job**(*jid*)

Return the data for a specific cached job id. Note this only works if cache_jobs has previously been set to True on the minion.

CLI Example:

```
salt '*' saltutil.find_cached_job <job id>
```

salt.modules.saltutil.**find_job**(*jid*)

Return the data for a specific job id that is currently running.

**jid** The job id to search for and return data.

CLI Example:

```
salt '*' saltutil.find_job <job id>
```

Note that the find_job function only returns job information when the job is still running. If the job is currently running, the output looks something like this:

```
# salt my-minion saltutil.find_job 20160503150049487736
my-minion:
    ----------
    arg:
        - 30
    fun:
        test.sleep
    jid:
        20160503150049487736
    pid:
        9601
    ret:
    tgt:
        my-minion
    tgt_type:
        glob
    user:
        root
```

If the job has already completed, the job cannot be found and therefore the function returns an empty dictionary, which looks like this on the CLI:

```
# salt my-minion saltutil.find_job 20160503150049487736
my-minion:
    ----------
```

salt.modules.saltutil.**is_running**(*fun*)

If the named function is running return the data associated with it/them. The argument can be a glob

CLI Example:

```
salt '*' saltutil.is_running state.highstate
```

salt.modules.saltutil.**kill_job**(*jid*)

Sends a kill signal (SIGKILL 9) to the named salt job's process

CLI Example:

```
salt '*' saltutil.kill_job <job id>
```

salt.modules.saltutil.**mmodule**(*saltenv*, *fun*, **args*, ***kwargs*)
Loads minion modules from an environment so that they can be used in pillars for that environment

CLI Example:

```
salt '*' saltutil.mmodule base test.ping
```

salt.modules.saltutil.**refresh_beacons**()
Signal the minion to refresh the beacons.

CLI Example:

```
salt '*' saltutil.refresh_beacons
```

salt.modules.saltutil.**refresh_grains**(***kwargs*)
New in version 2016.3.6,2016.11.4,Nitrogen.

Refresh the minion's grains without syncing custom grains modules from `salt://_grains`.

---

**Note**: The available execution modules will be reloaded as part of this proceess, as grains can affect which modules are available.

---

**refresh_pillar** [True] Set to `False` to keep pillar data from being refreshed.

CLI Examples:

```
salt '*' saltutil.refresh_grains
```

salt.modules.saltutil.**refresh_modules**(*async=True*)
Signal the minion to refresh the module and grain data

The default is to refresh module asynchronously. To block until the module refresh is complete, set the `async' flag to False.

CLI Example:

```
salt '*' saltutil.refresh_modules
```

salt.modules.saltutil.**refresh_pillar**()
Signal the minion to refresh the pillar data.

CLI Example:

```
salt '*' saltutil.refresh_pillar
```

salt.modules.saltutil.**regen_keys**()
Used to regenerate the minion keys.

CLI Example:

```
salt '*' saltutil.regen_keys
```

salt.modules.saltutil.**revoke_auth**(*preserve_minion_cache=False*)
The minion sends a request to the master to revoke its own key. Note that the minion session will be revoked and the minion may not be able to return the result of this command back to the master.

If the `preserve_minion_cache' flag is set to True, the master cache for this minion will not be removed.

CLI Example:

```
salt '*' saltutil.revoke_auth
```

salt.modules.saltutil.**runner**(*name*, ***kwargs*)

Execute a runner module (this function must be run on the master)

New in version 2014.7.0.

**name** The name of the function to run

**kwargs** Any keyword arguments to pass to the runner function

CLI Example:

```
salt '*' saltutil.runner jobs.list_jobs
```

salt.modules.saltutil.**running**()

Return the data on all running salt processes on the minion

CLI Example:

```
salt '*' saltutil.running
```

salt.modules.saltutil.**signal_job**(*jid*, *sig*)

Sends a signal to the named salt job's process

CLI Example:

```
salt '*' saltutil.signal_job <job id> 15
```

salt.modules.saltutil.**sync_all**(*saltenv=None*, *refresh=True*)

Changed in version 2015.8.11,2016.3.2: On masterless minions, pillar modules are now synced, and refreshed when `refresh` is set to `True`.

Sync down all of the dynamic modules from the file server for a specific environment. This function synchronizes custom modules, states, beacons, grains, returners, output modules, renderers, and utils.

**refresh** [True] Also refresh the execution modules and recompile pillar data available to the minion. This refresh will be performed even if no new dynamic modules are synced. Set to `False` to prevent this refresh.

---

**Important**: If this function is executed using a *`module.run`* state, the SLS file will not have access to newly synced execution modules unless a `refresh` argument is added to the state, like so:

```
load_my_custom_module:
  module.run:
    - name: saltutil.sync_all
    - refresh: True
```

See *here* for a more detailed explanation of why this is necessary.

---

CLI Examples:

```
salt '*' saltutil.sync_all
salt '*' saltutil.sync_all saltenv=dev
salt '*' saltutil.sync_all saltenv=base,dev
```

salt.modules.saltutil.**sync_beacons**(*saltenv=None*, *refresh=True*)

New in version 2015.5.1.

Sync beacons from `salt://_beacons` to the minion

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

**refresh** [True] If `True`, refresh the available beacons on the minion. This refresh will be performed even if no new beacons are synced. Set to `False` to prevent this refresh.

CLI Example:

```
salt '*' saltutil.sync_beacons
salt '*' saltutil.sync_beacons saltenv=dev
salt '*' saltutil.sync_beacons saltenv=base,dev
```

`salt.modules.saltutil.`**`sync_engines`**(*saltenv=None*, *refresh=False*)

New in version 2016.3.0.

Sync engine modules from `salt://_engines` to the minion

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

**refresh** [True] If `True`, refresh the available execution modules on the minion. This refresh will be performed even if no new engine modules are synced. Set to `False` to prevent this refresh.

CLI Examples:

```
salt '*' saltutil.sync_engines
salt '*' saltutil.sync_engines saltenv=base,dev
```

`salt.modules.saltutil.`**`sync_grains`**(*saltenv=None*, *refresh=True*)

New in version 0.10.0.

Sync grains modules from `salt://_grains` to the minion

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

**refresh** [True] If `True`, refresh the available execution modules and recompile pillar data for the minion. This refresh will be performed even if no new grains modules are synced. Set to `False` to prevent this refresh.

CLI Examples:

```
salt '*' saltutil.sync_grains
salt '*' saltutil.sync_grains saltenv=dev
salt '*' saltutil.sync_grains saltenv=base,dev
```

`salt.modules.saltutil.`**`sync_log_handlers`**(*saltenv=None*, *refresh=True*)

New in version 2015.8.0.

Sync log handlers from `salt://_log_handlers` to the minion

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

**refresh** [True] If `True`, refresh the available execution modules on the minion. This refresh will be performed even if no new log handlers are synced. Set to `False` to prevent this refresh.

CLI Examples:

```
salt '*' saltutil.sync_log_handlers
salt '*' saltutil.sync_log_handlers saltenv=dev
salt '*' saltutil.sync_log_handlers saltenv=base,dev
```

`salt.modules.saltutil.`**`sync_modules`**(*saltenv=None*, *refresh=True*)

New in version 0.10.0.

Sync execution modules from `salt://_modules` to the minion

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

**refresh** [True] If `True`, refresh the available execution modules on the minion. This refresh will be performed even if no new execution modules are synced. Set to `False` to prevent this refresh.

---

**Important**: If this function is executed using a *`module.run`* state, the SLS file will not have access to newly synced execution modules unless a `refresh` argument is added to the state, like so:

```
load_my_custom_module:
  module.run:
    - name: saltutil.sync_modules
    - refresh: True
```

See *here* for a more detailed explanation of why this is necessary.

---

CLI Example:

```
salt '*' saltutil.sync_modules
salt '*' saltutil.sync_modules saltenv=dev
salt '*' saltutil.sync_modules saltenv=base,dev
```

`salt.modules.saltutil.`**`sync_output`**(*saltenv=None*, *refresh=True*)

Sync outputters from `salt://_output` to the minion

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

**refresh** [True] If `True`, refresh the available execution modules on the minion. This refresh will be performed even if no new outputters are synced. Set to `False` to prevent this refresh.

CLI Examples:

```
salt '*' saltutil.sync_output
salt '*' saltutil.sync_output saltenv=dev
salt '*' saltutil.sync_output saltenv=base,dev
```

`salt.modules.saltutil.`**`sync_outputters`**(*saltenv=None*, *refresh=True*)

This function is an alias of `sync_output`.

Sync outputters from `salt://_output` to the minion

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

**refresh** [True] If `True`, refresh the available execution modules on the minion. This refresh will be performed even if no new outputters are synced. Set to `False` to prevent this refresh.

CLI Examples:

```
salt '*' saltutil.sync_output
salt '*' saltutil.sync_output saltenv=dev
salt '*' saltutil.sync_output saltenv=base,dev
```

`salt.modules.saltutil.`**`sync_pillar`**(*saltenv=None*, *refresh=True*)

New in version 2015.8.11,2016.3.2.

Sync pillar modules from the `salt://_pillar` directory on the Salt fileserver. This function is environment-aware, pass the desired environment to grab the contents of the `_pillar` directory from that environment. The default environment, if none is specified, is `base`.

**refresh** [True] Also refresh the execution modules available to the minion, and refresh pillar data.

---

**Note**: This function will raise an error if executed on a traditional (i.e. not masterless) minion

---

CLI Examples:

```
salt '*' saltutil.sync_pillar
salt '*' saltutil.sync_pillar saltenv=dev
```

salt.modules.saltutil.**sync_proxymodules**(*saltenv=None*, *refresh=False*)

New in version 2015.8.2.

Sync proxy modules from `salt://_proxy` to the minion

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

**refresh** [True] If `True`, refresh the available execution modules on the minion. This refresh will be performed even if no new proxy modules are synced. Set to `False` to prevent this refresh.

CLI Examples:

```
salt '*' saltutil.sync_proxymodules
salt '*' saltutil.sync_proxymodules saltenv=dev
salt '*' saltutil.sync_proxymodules saltenv=base,dev
```

salt.modules.saltutil.**sync_renderers**(*saltenv=None*, *refresh=True*)

New in version 0.10.0.

Sync renderers from `salt://_renderers` to the minion

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

**refresh** [True] If `True`, refresh the available execution modules on the minion. This refresh will be performed even if no new renderers are synced. Set to `False` to prevent this refresh. Set to `False` to prevent this refresh.

CLI Examples:

```
salt '*' saltutil.sync_renderers
salt '*' saltutil.sync_renderers saltenv=dev
salt '*' saltutil.sync_renderers saltenv=base,dev
```

salt.modules.saltutil.**sync_returners**(*saltenv=None*, *refresh=True*)

New in version 0.10.0.

Sync beacons from `salt://_returners` to the minion

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

**refresh** [True] If `True`, refresh the available execution modules on the minion. This refresh will be performed even if no new returners are synced. Set to `False` to prevent this refresh.

CLI Examples:

```
salt '*' saltutil.sync_returners
salt '*' saltutil.sync_returners saltenv=dev
```

salt.modules.saltutil.**sync_sdb**(*saltenv=None*)

New in version 2015.5.8,2015.8.3.

Sync sdb modules from `salt://_sdb` to the minion

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

**refresh** [False] This argument has no affect and is included for consistency with the other sync functions.

CLI Example:

```
salt '*' saltutil.sync_sdb
salt '*' saltutil.sync_sdb saltenv=dev
salt '*' saltutil.sync_sdb saltenv=base,dev
```

salt.modules.saltutil.**sync_states**(*saltenv=None*, *refresh=True*)

New in version 0.10.0.

Sync state modules from `salt://_states` to the minion

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

**refresh** [True] If `True`, refresh the available states on the minion. This refresh will be performed even if no new state modules are synced. Set to `False` to prevent this refresh.

CLI Examples:

```
salt '*' saltutil.sync_states
salt '*' saltutil.sync_states saltenv=dev
salt '*' saltutil.sync_states saltenv=base,dev
```

salt.modules.saltutil.**sync_utils**(*saltenv=None*, *refresh=True*)

New in version 2014.7.0.

Sync utility modules from `salt://_utils` to the minion

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

**refresh** [True] If `True`, refresh the available execution modules on the minion. This refresh will be performed even if no new utility modules are synced. Set to `False` to prevent this refresh.

CLI Examples:

```
salt '*' saltutil.sync_utils
salt '*' saltutil.sync_utils saltenv=dev
salt '*' saltutil.sync_utils saltenv=base,dev
```

salt.modules.saltutil.**term_job**(*jid*)

Sends a termination signal (SIGTERM 15) to the named salt job's process

CLI Example:

```
salt '*' saltutil.term_job <job id>
```

salt.modules.saltutil.**update**(*version=None*)

Update the salt minion from the URL defined in opts['update_url'] SaltStack, Inc provides the latest builds here: update_url: https://repo.saltstack.com/windows/

Be aware that as of 2014-8-11 there's a bug in esky such that only the latest version available in the update_url can be downloaded and installed.

This feature requires the minion to be running a bdist_esky build.

The version number is optional and will default to the most recent version available at opts['update_url'].

Returns details about the transaction upon completion.

CLI Examples:

```
salt '*' saltutil.update
salt '*' saltutil.update 0.10.3
```

salt.modules.saltutil.**wheel**(*name*, **args*, ***kwargs*)

Execute a wheel module and function. This function must be run against a minion that is local to the master.

New in version 2014.7.0.

**name** The name of the function to run

**args** Any positional arguments to pass to the wheel function. A common example of this would be the `match` arg needed for key functions.

New in version v2015.8.11.

**kwargs** Any keyword arguments to pass to the wheel function

CLI Example:

```
salt my-local-minion saltutil.wheel key.accept jerry
salt my-local-minion saltutil.wheel minions.connected
```

---

**Note:** Since this function must be run against a minion that is running locally on the master in order to get accurate returns, if this function is run against minions that are not local to the master, ``empty'' returns are expected. The remote minion does not have access to wheel functions and their return data.

---

### 13.6.271 salt.modules.schedule

Module for managing the Salt schedule on a minion

New in version 2014.7.0.

`salt.modules.schedule.`**`add`**(*name*, ***kwargs*)

Add a job to the schedule

CLI Example:

```
salt '*' schedule.add job1 function='test.ping' seconds=3600
# If function have some arguments, use job_args
salt '*' schedule.add job2 function='cmd.run' job_args="['date >> /tmp/date.log']
 ↪" seconds=60
```

`salt.modules.schedule.`**`build_schedule_item`**(*name*, ***kwargs*)

Build a schedule job

CLI Example:

```
salt '*' schedule.build_schedule_item job1 function='test.ping' seconds=3600
```

`salt.modules.schedule.`**`copy`**(*name*, *target*, ***kwargs*)

Copy scheduled job to another minion or minions.

CLI Example:

```
salt '*' schedule.copy jobname target
```

`salt.modules.schedule.`**`delete`**(*name*, ***kwargs*)

Delete a job from the minion's schedule

CLI Example:

```
salt '*' schedule.delete job1
```

`salt.modules.schedule.`**`disable`**(***kwargs*)

Disable all scheduled jobs on the minion

CLI Example:

```
salt '*' schedule.disable
```

salt.modules.schedule.**disable_job**(*name*, ***kwargs*)
Disable a job in the minion's schedule

CLI Example:

```
salt '*' schedule.disable_job job1
```

salt.modules.schedule.**enable**(***kwargs*)
Enable all scheduled jobs on the minion

CLI Example:

```
salt '*' schedule.enable
```

salt.modules.schedule.**enable_job**(*name*, ***kwargs*)
Enable a job in the minion's schedule

CLI Example:

```
salt '*' schedule.enable_job job1
```

salt.modules.schedule.**is_enabled**(*name*)
List a Job only if its enabled

New in version 2015.5.3.

CLI Example:

```
salt '*' schedule.is_enabled name=job_name
```

salt.modules.schedule.**list**(*show_all=False*, *show_disabled=True*, *where=None*, *return_yaml=True*)
List the jobs currently scheduled on the minion

CLI Example:

```
salt '*' schedule.list

# Show all jobs including hidden internal jobs
salt '*' schedule.list show_all=True

# Hide disabled jobs from list of jobs
salt '*' schedule.list show_disabled=False
```

salt.modules.schedule.**modify**(*name*, ***kwargs*)
Modify an existing job in the schedule

CLI Example:

```
salt '*' schedule.modify job1 function='test.ping' seconds=3600
```

salt.modules.schedule.**move**(*name*, *target*, ***kwargs*)
Move scheduled job to another minion or minions.

CLI Example:

```
salt '*' schedule.move jobname target
```

salt.modules.schedule.**purge**(***kwargs*)
Purge all the jobs currently scheduled on the minion

CLI Example:

```
salt '*' schedule.purge
```

salt.modules.schedule.**reload**()
Reload saved scheduled jobs on the minion

CLI Example:

```
salt '*' schedule.reload
```

salt.modules.schedule.**run_job**(*name*, *force=False*)
Run a scheduled job on the minion immediately

CLI Example:

```
salt '*' schedule.run_job job1

salt '*' schedule.run_job job1 force=True
Force the job to run even if it is disabled.
```

salt.modules.schedule.**save**(***kwargs*)
Save all scheduled jobs on the minion

CLI Example:

```
salt '*' schedule.save
```

### 13.6.272 salt.modules.scsi

SCSI administration module

salt.modules.scsi.**ls**(*get_size=True*)
List SCSI devices, with details

CLI Examples:

```
salt '*' scsi.ls
salt '*' scsi.ls get_size=False
```

**get_size** [True] Get the size information for scsi devices. This option should be set to False for older OS distributions (RHEL6 and older) due to lack of support for the `-s' option in lsscsi.

New in version 2015.5.10.

salt.modules.scsi.**rescan_all**(*host*)
List scsi devices

CLI Example:

```
salt '*' scsi.rescan_all 0
```

### 13.6.273 salt.modules.sdb

#### Module for Manipulating Data via the Salt DB API

salt.modules.sdb.**get**(*uri*)
Get a value from a db, using a uri in the form of sdb://<profile>/<key>. If the uri provided does not start with sdb://, then it will be returned as-is.

CLI Example:

```
salt '*' sdb.get sdb://mymemcached/foo
```

salt.modules.sdb.**set**(*uri*, *value*)

Set a value in a db, using a uri in the form of `sdb://<profile>/<key>`. If the uri provided does not start with `sdb://` or the value is not successfully set, return `False`.

CLI Example:

```
salt '*' sdb.set sdb://mymemcached/foo bar
```

### 13.6.274 salt.modules.seed

Virtual machine image management tools

salt.modules.seed.**apply**(*path*, *id_=None*, *config=None*, *approve_key=True*, *install=True*, *prep_install=False*, *pub_key=None*, *priv_key=None*, *mount_point=None*)

Seed a location (disk image, directory, or block device) with the minion config, approve the minion's key, and/or install salt-minion.

CLI Example:

```
salt 'minion' seed.apply path id [config=config_data] \
        [gen_key=(true|false)] [approve_key=(true|false)] \
        [install=(true|false)]
```

**path** Full path to the directory, device, or disk image on the target minion's file system.
**id** Minion id with which to seed the path.
**config** Minion configuration options. By default, the `master' option is set to the target host's `master'.
**approve_key** Request a pre-approval of the generated minion key. Requires that the salt-master be configured to either auto-accept all keys or expect a signing request from the target host. Default: true.
**install** Install salt-minion, if absent. Default: true.
**prep_install** Prepare the bootstrap script, but don't run it. Default: false

salt.modules.seed.**mkconfig**(*config=None*, *tmp=None*, *id_=None*, *approve_key=True*, *pub_key=None*, *priv_key=None*)

Generate keys and config and put them in a tmp directory.
**pub_key** absolute path or file content of an optional preseeded salt key
**priv_key** absolute path or file content of an optional preseeded salt key
CLI Example:

```
salt 'minion' seed.mkconfig [config=config_data] [tmp=tmp_dir] \
        [id_=minion_id] [approve_key=(true|false)]
```

salt.modules.seed.**prep_bootstrap**(*mpt*)

Update and get the random script to a random place

CLI Example:

```
salt '*' seed.prep_bootstrap /tmp
```

### 13.6.275 salt.modules.selinux

Execute calls on selinux

**Note:** This module requires the `semanage`, `setsebool`, and `semodule` commands to be available on the minion. On RHEL-based distributions, ensure that the `policycoreutils` and `policycoreutils-python` packages are installed. If not on a Fedora or RHEL-based distribution, consult the selinux documentation for your distribution to ensure that the proper packages are installed.

`salt.modules.selinux.`**`getenforce`**`()`
Return the mode selinux is running in

CLI Example:

```
salt '*' selinux.getenforce
```

`salt.modules.selinux.`**`getsebool`**`(`*boolean*`)`
Return the information on a specific selinux boolean

CLI Example:

```
salt '*' selinux.getsebool virt_use_usb
```

`salt.modules.selinux.`**`getsemod`**`(`*module*`)`
Return the information on a specific selinux module

CLI Example:

```
salt '*' selinux.getsemod mysql
```

New in version 2016.3.0.

`salt.modules.selinux.`**`list_sebool`**`()`
Return a structure listing all of the selinux booleans on the system and what state they are in

CLI Example:

```
salt '*' selinux.list_sebool
```

`salt.modules.selinux.`**`list_semod`**`()`
Return a structure listing all of the selinux modules on the system and what state they are in

CLI Example:

```
salt '*' selinux.list_semod
```

New in version 2016.3.0.

`salt.modules.selinux.`**`selinux_fs_path`**`(`**args*`)`
Return the location of the SELinux VFS directory

CLI Example:

```
salt '*' selinux.selinux_fs_path
```

`salt.modules.selinux.`**`setenforce`**`(`*mode*`)`
Set the SELinux enforcing mode

CLI Example:

```
salt '*' selinux.setenforce enforcing
```

salt.modules.selinux.**setsebool**(*boolean*, *value*, *persist=False*)
Set the value for a boolean

CLI Example:

```
salt '*' selinux.setsebool virt_use_usb off
```

salt.modules.selinux.**setsebools**(*pairs*, *persist=False*)
Set the value of multiple booleans

CLI Example:

```
salt '*' selinux.setsebools '{virt_use_usb: on, squid_use_tproxy: off}'
```

salt.modules.selinux.**setsemod**(*module*, *state*)
Enable or disable an SELinux module.

CLI Example:

```
salt '*' selinux.setsemod nagios Enabled
```

New in version 2016.3.0.

### 13.6.276 salt.modules.sensors

Read lm-sensors

New in version 2014.1.3.

salt.modules.sensors.**sense**(*chip*, *fahrenheit=False*)
Gather lm-sensors data from a given chip

To determine the chip to query, use the `sensors' command and see the leading line in the block.

Example:

/usr/bin/sensors

coretemp-isa-0000 Adapter: ISA adapter Physical id 0: +56.0°C (high = +87.0°C, crit = +105.0°C) Core 0: +52.0°C (high = +87.0°C, crit = +105.0°C) Core 1: +50.0°C (high = +87.0°C, crit = +105.0°C) Core 2: +56.0°C (high = +87.0°C, crit = +105.0°C) Core 3: +53.0°C (high = +87.0°C, crit = +105.0°C)

Given the above, the chip is `coretemp-isa-0000'.

### 13.6.277 salt.modules.serverdensity_device

#### Wrapper around Server Density API

New in version 2014.7.0.

salt.modules.serverdensity_device.**create**(*name*, ***params*)
Function to create device in Server Density. For more info, see the API docs.

CLI Example:

```
salt '*' serverdensity_device.create lama
salt '*' serverdensity_device.create rich_lama group=lama_band installedRAM=32768
```

salt.modules.serverdensity_device.**delete**(*device_id*)
Delete a device from Server Density. For more information, see the API docs.

CLI Example:

```
salt '*' serverdensity_device.delete 51f7eafcdba4bb235e000ae4
```

salt.modules.serverdensity_device.**get_sd_auth**(*val*, *sd_auth_pillar_name='serverdensity'*)
Returns requested Server Density authentication value from pillar.

CLI Example:

```
salt '*' serverdensity_device.get_sd_auth <val>
```

salt.modules.serverdensity_device.**install_agent**(*agent_key*, *agent_version=1*)
Function downloads Server Density installation agent, and installs sd-agent with agent_key. Optionally the agent_version would select the series to use (defaults on the v1 one).

CLI Example:

```
salt '*' serverdensity_device.install_agent c2bbdd6689ff46282bdaa07555641498
salt '*' serverdensity_device.install_agent c2bbdd6689ff46282bdaa07555641498 2
```

salt.modules.serverdensity_device.**ls**(***params*)
List devices in Server Density

Results will be filtered by any params passed to this function. For more information, see the API docs on listing and searching.

CLI Example:

```
salt '*' serverdensity_device.ls
salt '*' serverdensity_device.ls name=lama
salt '*' serverdensity_device.ls name=lama group=lama_band installedRAM=32768
```

salt.modules.serverdensity_device.**update**(*device_id*, ***params*)
Updates device information in Server Density. For more information see the API docs.

CLI Example:

```
salt '*' serverdensity_device.update 51f7eafcdba4bb235e000ae4 name=lama
 ↪group=lama_band
salt '*' serverdensity_device.update 51f7eafcdba4bb235e000ae4 name=better_lama
 ↪group=rock_lamas swapSpace=512
```

### 13.6.278 salt.modules.service

service is a virtual module that is fulfilled by one of the following modules:

| Execution Module | Used for |
|---|---|
| *debian_service* | Debian Wheezy and earlier |
| *freebsdservice* | FreeBSD-based OSes using `service(8)` |
| *gentoo_service* | Gentoo Linux using `sysvinit` and `rc-update(8)` |
| *launchctl* | Mac OS hosts using `launchctl(1)` |
| *netbsdservice* | NetBSD-based OSes |
| *openbsdservice* | OpenBSD-based OSes |
| *rh_service* | RedHat-based distros and derivatives using `service(8)` and `chkconfig(8)`. Supports both pure sysvinit and mixed sysvinit/upstart systems. |
| *service* | Fallback which simply wraps sysvinit scripts |
| *smf* | Solaris-based OSes which use SMF |
| *systemd* | Linux distros which use systemd |
| *upstart* | Ubuntu-based distros using upstart |
| *win_service* | Windows |

If Salt's OS detection does not identify a different virtual service module, the minion will fall back to using this basic module, which simply wraps sysvinit scripts.

`salt.modules.service.`**`available`**(*name*)

Returns `True` if the specified service is available, otherwise returns `False`.

CLI Example:

```
salt '*' service.available sshd
```

`salt.modules.service.`**`get_all`**()

Return a list of all available services

CLI Example:

```
salt '*' service.get_all
```

`salt.modules.service.`**`missing`**(*name*)

The inverse of service.available. Returns `True` if the specified service is not available, otherwise returns `False`.

CLI Example:

```
salt '*' service.missing sshd
```

`salt.modules.service.`**`reload`**(*name*)

Refreshes config files by calling service reload. Does not perform a full restart.

CLI Example:

```
salt '*' service.reload <service name>
```

salt.modules.service.**restart**(*name*)
Restart the specified service

CLI Example:

```
salt '*' service.restart <service name>
```

salt.modules.service.**run**(*name*, *action*)
Run the specified service with an action.

New in version 2015.8.1.
**name** Service name.
**action** Action name (like start, stop, reload, restart).
CLI Example:

```
salt '*' service.run apache2 reload
salt '*' service.run postgresql initdb
```

salt.modules.service.**start**(*name*)
Start the specified service

CLI Example:

```
salt '*' service.start <service name>
```

salt.modules.service.**status**(*name*, *sig=None*)
Return the status for a service, returns the PID or an empty string if the service is running or not, pass a signature to use to find the service via ps

CLI Example:

```
salt '*' service.status <service name> [service signature]
```

salt.modules.service.**stop**(*name*)
Stop the specified service

CLI Example:

```
salt '*' service.stop <service name>
```

### 13.6.279 salt.modules.shadow

shadow is a virtual module that is fulfilled by one of the following modules:

| Execution Module | Used for |
|---|---|
| *shadow* | Linux |
| *bsd_shadow* | FreeBSD, OpenBSD, NetBSD |
| *solaris_shadow* | Solaris-based OSes |
| *win_shadow* | Windows |

Manage the shadow file on Linux systems

**Important**: If you feel that Salt should be using this module to manage passwords on a minion, and it is using a different module (or gives an error similar to *`shadow.info' is not available*), see *here*.

salt.modules.shadow.**default_hash**()
Returns the default hash used for unset passwords

CLI Example:

```
salt '*' shadow.default_hash
```

salt.modules.shadow.**del_password**(*name*)
New in version 2014.7.0.

Delete the password from name user

CLI Example:

```
salt '*' shadow.del_password username
```

salt.modules.shadow.**gen_password**(*password*, *crypt_salt=None*, *algorithm='sha512'*)
New in version 2014.7.0.

Generate hashed password

**Note**: When called this function is called directly via remote-execution, the password argument may be displayed in the system's process list. This may be a security risk on certain systems.

**password** Plaintext password to be hashed.
**crypt_salt** Crpytographic salt. If not given, a random 8-character salt will be generated.
**algorithm** The following hash algorithms are supported:

- md5
- blowfish (not in mainline glibc, only available in distros that add it)
- sha256
- sha512 (default)

CLI Example:

```
salt '*' shadow.gen_password 'I_am_password'
salt '*' shadow.gen_password 'I_am_password' crypt_salt='I_am_salt'
 ↪algorithm=sha256
```

salt.modules.shadow.**info**(*name*)
Return information for the specified user

CLI Example:

```
salt '*' shadow.info root
```

salt.modules.shadow.**set_date**(*name*, *date*)
Sets the value for the date the password was last changed to days since the epoch (January 1, 1970). See man chage.

CLI Example:

```
salt '*' shadow.set_date username 0
```

salt.modules.shadow.**set_expire**(*name*, *expire*)
Changed in version 2014.7.0.

Sets the value for the date the account expires as days since the epoch (January 1, 1970). Using a value of -1 will clear expiration. See man chage.

CLI Example:

```
salt '*' shadow.set_expire username -1
```

salt.modules.shadow.**set_inactdays**(*name*, *inactdays*)
Set the number of days of inactivity after a password has expired before the account is locked. See man chage.

CLI Example:

```
salt '*' shadow.set_inactdays username 7
```

salt.modules.shadow.**set_maxdays**(*name*, *maxdays*)
Set the maximum number of days during which a password is valid. See man chage.

CLI Example:

```
salt '*' shadow.set_maxdays username 90
```

salt.modules.shadow.**set_mindays**(*name*, *mindays*)
Set the minimum number of days between password changes. See man chage.

CLI Example:

```
salt '*' shadow.set_mindays username 7
```

salt.modules.shadow.**set_password**(*name*, *password*, *use_usermod=False*)
Set the password for a named user. The password must be a properly defined hash. The password hash can be generated with this command:

```
python -c "import crypt; print crypt.crypt('password','\$6\$SALTsalt')"
```

`SALTsalt` is the 8-character crpytographic salt. Valid characters in the salt are `.`, `/`, and any alphanumeric character.

Keep in mind that the $6 represents a sha512 hash, if your OS is using a different hashing algorithm this needs to be changed accordingly

CLI Example:

```
salt '*' shadow.set_password root '$1$UYCIxa628.9qXjpQCjM4a..'
```

salt.modules.shadow.**set_warndays**(*name*, *warndays*)
Set the number of days of warning before a password change is required. See man chage.

CLI Example:

```
salt '*' shadow.set_warndays username 7
```

### 13.6.280 salt.modules.slack_notify

Module for sending messages to Slack

New in version 2015.5.0.

**configuration** This module can be used by either passing an api key and version directly or by specifying both in a configuration profile in the salt master/minion config.

For example:

```
slack:
  api_key: peWcBiMOS9HrZG15peWcBiMOS9HrZG15
```

salt.modules.slack_notify.**find_room**(*name*, *api_key=None*)

Find a room by name and return it.

**Parameters**

- **name** -- The room name.
- **api_key** -- The Slack admin api key.

**Returns** The room object.

CLI Example:

```
salt '*' slack.find_room name="random"

salt '*' slack.find_room name="random" api_key=peWcBiMOS9HrZG15peWcBiMOS9HrZG15
```

salt.modules.slack_notify.**find_user**(*name*, *api_key=None*)

Find a user by name and return it.

**Parameters**

- **name** -- The user name.
- **api_key** -- The Slack admin api key.

**Returns** The user object.

CLI Example:

```
salt '*' slack.find_user name="ThomasHatch"

salt '*' slack.find_user name="ThomasHatch" api_
 ↪key=peWcBiMOS9HrZG15peWcBiMOS9HrZG15
```

salt.modules.slack_notify.**list_rooms**(*api_key=None*)

List all Slack rooms.

**Parameters** **api_key** -- The Slack admin api key.

**Returns** The room list.

CLI Example:

```
salt '*' slack.list_rooms

salt '*' slack.list_rooms api_key=peWcBiMOS9HrZG15peWcBiMOS9HrZG15
```

salt.modules.slack_notify.**list_users**(*api_key=None*)

List all Slack users.

**Parameters** **api_key** -- The Slack admin api key.

**Returns** The user list.

CLI Example:

```
salt '*' slack.list_users

salt '*' slack.list_users api_key=peWcBiMOS9HrZG15peWcBiMOS9HrZG15
```

salt.modules.slack_notify.**post_message**(*channel*, *message*, *from_name*, *api_key=None*, *icon=None*)

Send a message to a Slack channel.

**Parameters**

- **channel** -- The channel name, either will work.
- **message** -- The message to send to the Slack channel.
- **from_name** -- Specify who the message is from.
- **api_key** -- The Slack api key, if not specified in the configuration.
- **icon** -- URL to an image to use as the icon for this message

**Returns** Boolean if message was sent successfully.

CLI Example:

```
salt '*' slack.post_message channel="Development Room" message="Build is done"
↪from_name="Build Server"
```

### 13.6.281 salt.modules.slsutil

Utility functions for use with or in SLS files

### 13.6.282 salt.modules.smartos_imgadm

Module for running imgadm command on SmartOS

salt.modules.smartos_imgadm.**avail**(*search=None*, *verbose=False*)

Return a list of available images

**search** [string] search keyword

**verbose** [boolean (False)] toggle verbose output

CLI Example:

```
salt '*' imgadm.avail [percona]
salt '*' imgadm.avail verbose=True
```

salt.modules.smartos_imgadm.**delete**(*uuid*)

Remove an installed image

**uuid** [string] Specifies uuid to import

CLI Example:

```
salt '*' imgadm.delete e42f8c84-bbea-11e2-b920-078fab2aab1f
```

salt.modules.smartos_imgadm.**get**(*uuid*)

Return info on an installed image

**uuid** [string] uuid of image

CLI Example:

```
salt '*' imgadm.get e42f8c84-bbea-11e2-b920-078fab2aab1f
```

salt.modules.smartos_imgadm.**import**(*uuid*, *verbose=False*)

Import an image from the repository

**uuid** [string] uuid to import

**verbose** [boolean (False)] toggle verbose output

CLI Example:

```
salt '*' imgadm.import e42f8c84-bbea-11e2-b920-078fab2aab1f [verbose=True]
```

salt.modules.smartos_imgadm.**list**(*verbose=False*)
Return a list of installed images
**verbose** [boolean (False)] toggle verbose output
CLI Example:

```
salt '*' imgadm.list [verbose=True]
```

salt.modules.smartos_imgadm.**show**(*uuid*)
Show manifest of a given image
**uuid** [string] uuid of image
CLI Example:

```
salt '*' imgadm.show e42f8c84-bbea-11e2-b920-078fab2aab1f
```

salt.modules.smartos_imgadm.**update**(*uuid=''*)
Gather info on unknown image(s) (locally installed)
**uuid** [string] optional uuid of image
CLI Example:

```
salt '*' imgadm.update [uuid]
```

salt.modules.smartos_imgadm.**vacuum**(*verbose=False*)
Remove unused images
**verbose** [boolean (False)] toggle verbose output
CLI Example:

```
salt '*' imgadm.vacuum [verbose=True]
```

salt.modules.smartos_imgadm.**version**()
Return imgadm version

CLI Example:

```
salt '*' imgadm.version
```

### 13.6.283 salt.modules.smartos_virt

virst compatibility module for managing VMs on SmartOS

salt.modules.smartos_virt.**create**(*domain*)
Deprecated since version 2016.3.0: Use *start()* instead.

Start a defined domain

CLI Example:

```
salt '*' virt.create <domain>
```

salt.modules.smartos_virt.**destroy**(*domain*)
Deprecated since version 2016.3.0: Use *stop()* instead.

Power off a defined domain

CLI Example:

```
salt '*' virt.destroy <domain>
```

salt.modules.smartos_virt.**get_macs**(*domain*)
Return a list off MAC addresses from the named VM

CLI Example:

```
salt '*' virt.get_macs <domain>
```

salt.modules.smartos_virt.**init**(***kwargs*)
Initialize a new VM

CLI Example:

```
salt '*' virt.init image_uuid='...' alias='...' [...]
```

salt.modules.smartos_virt.**list_active_vms**()
Return a list of uuids for active virtual machine on the minion

CLI Example:

```
salt '*' virt.list_active_vms
```

salt.modules.smartos_virt.**list_domains**()
Return a list of virtual machine names on the minion

CLI Example:

```
salt '*' virt.list_domains
```

salt.modules.smartos_virt.**list_inactive_vms**()
Return a list of uuids for inactive virtual machine on the minion

CLI Example:

```
salt '*' virt.list_inactive_vms
```

salt.modules.smartos_virt.**list_vms**()
Deprecated since version 2016.3.0: Use *list_domains()* instead.

List all virtual machines.

CLI Example:

```
salt '*' virt.list_vms <domain>
```

salt.modules.smartos_virt.**reboot**(*domain*)
Reboot a domain via ACPI request

CLI Example:

```
salt '*' virt.reboot <domain>
```

salt.modules.smartos_virt.**setmem**(*domain*, *memory*)
Change the amount of memory allocated to VM. <memory> is to be specified in MB.

Note for KVM : this would require a restart of the VM.

CLI Example:

```
salt '*' virt.setmem <domain> 512
```

salt.modules.smartos_virt.**shutdown**(*domain*)
Send a soft shutdown signal to the named vm

CLI Example:

```
salt '*' virt.shutdown <domain>
```

salt.modules.smartos_virt.**start**(*domain*)
Start a defined domain

CLI Example:

```
salt '*' virt.start <domain>
```

salt.modules.smartos_virt.**stop**(*domain*)
Hard power down the virtual machine, this is equivalent to powering off the hardware.

CLI Example:

```
salt '*' virt.destroy <domain>
```

salt.modules.smartos_virt.**vm_info**(*domain*)
Return a dict with information about the specified VM on this CN

CLI Example:

```
salt '*' virt.vm_info <domain>
```

salt.modules.smartos_virt.**vm_virt_type**(*domain*)
Return VM virtualization type : OS or KVM

CLI Example:

```
salt '*' virt.vm_virt_type <domain>
```

### 13.6.284 salt.modules.smartos_vmadm

Module for running vmadm command on SmartOS

salt.modules.smartos_vmadm.**create**(*from_file=None*, ***kwargs*)
Create a new vm
**from_file** [string] json file to create the vm from -- if present, all other options will be ignored
**kwargs** [string|int|...] options to set for the vm
CLI Example:

```
salt '*' vmadm.create from_file=/tmp/new_vm.json
salt '*' vmadm.create image_uuid='...' alias='...' nics='[{ "nic_tag": "admin",
↪"ip": "198.51.100.123", ...}, {...}]' [...]
```

salt.modules.smartos_vmadm.**create_snapshot**(*vm*, *name*, *key='uuid'*)
Create snapshot of a vm
**vm** [string] vm to be targeted
**name** [string]
**snapshot name** The snapname must be 64 characters or less and must only contain alphanumeric characters and characters in the set [-_.:%] to comply with ZFS restrictions.

**key** [string [uuid|alias|hostname]] value type of `vm' parameter
CLI Example:

```
salt '*' vmadm.create_snapshot 186da9ab-7392-4f55-91a5-b8f1fe770543 baseline
salt '*' vmadm.create_snapshot nacl baseline key=alias
```

salt.modules.smartos_vmadm.**delete**(*vm*, *key='uuid'*)
Delete a vm
**vm** [string] vm to be deleted
**key** [string [uuid|alias|hostname]] value type of `vm' parameter
CLI Example:

```
salt '*' vmadm.delete 186da9ab-7392-4f55-91a5-b8f1fe770543
salt '*' vmadm.delete nacl key=alias
```

salt.modules.smartos_vmadm.**delete_snapshot**(*vm*, *name*, *key='uuid'*)
Delete snapshot of a vm
**vm** [string] vm to be targeted
**name** [string]
**snapshot name** The snapname must be 64 characters or less and must only contain alphanumeric characters and characters in the set [-_.:%] to comply with ZFS restrictions.
**key** [string [uuid|alias|hostname]] value type of `vm' parameter
CLI Example:

```
salt '*' vmadm.delete_snapshot 186da9ab-7392-4f55-91a5-b8f1fe770543 baseline
salt '*' vmadm.delete_snapshot nacl baseline key=alias
```

salt.modules.smartos_vmadm.**get**(*vm*, *key='uuid'*)
Output the JSON object describing a VM
**vm** [string] vm to be targeted
**key** [string [uuid|alias|hostname]] value type of `vm' parameter
CLI Example:

```
salt '*' vmadm.get 186da9ab-7392-4f55-91a5-b8f1fe770543
salt '*' vmadm.get nacl key=alias
```

salt.modules.smartos_vmadm.**info**(*vm*, *info_type='all'*, *key='uuid'*)
Lookup info on running kvm
**vm** [string] vm to be targeted
**info_type** [string [all|block|blockstats|chardev|cpus|kvm|pci|spice|version|vnc]] info type to return
**key** [string [uuid|alias|hostname]] value type of `vm' parameter
CLI Example:

```
salt '*' vmadm.info 186da9ab-7392-4f55-91a5-b8f1fe770543
salt '*' vmadm.info 186da9ab-7392-4f55-91a5-b8f1fe770543 vnc
salt '*' vmadm.info nacl key=alias
salt '*' vmadm.info nacl vnc key=alias
```

salt.modules.smartos_vmadm.**list**(*search=None*, *sort=None*, *order='uuid, type, ram, state, alias'*, *keyed=True*)
Return a list of VMs
**search** [string] vmadm filter property
**sort** [string] vmadm sort (-s) property
**order** [string] vmadm order (-o) property -- Default: uuid,type,ram,state,alias
**keyed** [boolean]

**specified if the output should be an array (False) or dict (True)** For a dict the key is the first item from the order parameter. Note: If key is not unique last vm wins.

CLI Example:

```
salt '*' vmadm.list
salt '*' vmadm.list order=alias,ram,cpu_cap sort=-ram,-cpu_cap
salt '*' vmadm.list search='type=KVM'
```

salt.modules.smartos_vmadm.**lookup**(*search=None, order=None, one=False*)

Return a list of VMs using lookup

**search** [string] vmadm filter property

**order** [string] vmadm order (-o) property -- Default: uuid,type,ram,state,alias

**one** [boolean] return only one result (vmadm's -1)

CLI Example:

```
salt '*' vmadm.lookup search='state=running'
salt '*' vmadm.lookup search='state=running' order=uuid,alias,hostname
salt '*' vmadm.lookup search='alias=nacl' one=True
```

salt.modules.smartos_vmadm.**reboot**(*vm, force=False, key='uuid'*)

Reboot a vm

**vm** [string] vm to be rebooted

**force** [boolean] force reboot of vm if true

**key** [string [uuid|alias|hostname]] value type of `vm' parameter

CLI Example:

```
salt '*' vmadm.reboot 186da9ab-7392-4f55-91a5-b8f1fe770543
salt '*' vmadm.reboot 186da9ab-7392-4f55-91a5-b8f1fe770543 True
salt '*' vmadm.reboot vm=nacl key=alias
salt '*' vmadm.reboot vm=nina.example.org key=hostname
```

salt.modules.smartos_vmadm.**receive**(*uuid, source*)

Receive a vm from a directory

**uuid** [string] uuid of vm to be received

**source** [string] source directory

CLI Example:

```
salt '*' vmadm.receive 186da9ab-7392-4f55-91a5-b8f1fe770543 /opt/backups
```

salt.modules.smartos_vmadm.**reprovision**(*vm, image, key='uuid'*)

Reprovision a vm

**vm** [string] vm to be reprovisioned

**image** [string] uuid of new image

**key** [string [uuid|alias|hostname]] value type of `vm' parameter

CLI Example:

```
salt '*' vmadm.reprovision 186da9ab-7392-4f55-91a5-b8f1fe770543 c02a2044-c1bd-
↪11e4-bd8c-dfc1db8b0182
salt '*' vmadm.reprovision nacl c02a2044-c1bd-11e4-bd8c-dfc1db8b0182 key=alias
```

salt.modules.smartos_vmadm.**rollback_snapshot**(*vm, name, key='uuid'*)

Rollback snapshot of a vm

**vm** [string] vm to be targeted

**name** [string]

**snapshot name** The snapname must be 64 characters or less and must only contain alphanumeric characters and characters in the set [-_.:%] to comply with ZFS restrictions.

**key** [string [uuid|alias|hostname]] value type of `vm' parameter
CLI Example:

```
salt '*' vmadm.rollback_snapshot 186da9ab-7392-4f55-91a5-b8f1fe770543 baseline
salt '*' vmadm.rollback_snapshot nacl baseline key=alias
```

salt.modules.smartos_vmadm.**send**(*vm*, *target*, *key='uuid'*)
Send a vm to a directory
**vm** [string] vm to be sent
**target** [string] target directory
**key** [string [uuid|alias|hostname]] value type of `vm' parameter
CLI Example:

```
salt '*' vmadm.send 186da9ab-7392-4f55-91a5-b8f1fe770543 /opt/backups
salt '*' vmadm.send vm=nacl target=/opt/backups key=alias
```

salt.modules.smartos_vmadm.**start**(*vm*, *options=None*, *key='uuid'*)
Start a vm
**vm** [string] vm to be started
**options** [string] optional additional options
**key** [string [uuid|alias|hostname]] value type of `vm' parameter
CLI Example:

```
salt '*' vmadm.start 186da9ab-7392-4f55-91a5-b8f1fe770543
salt '*' vmadm.start 186da9ab-7392-4f55-91a5-b8f1fe770543 'order=c,once=d cdrom=/
↪path/to/image.iso,ide'
salt '*' vmadm.start vm=nacl key=alias
salt '*' vmadm.start vm=nina.example.org key=hostname
```

salt.modules.smartos_vmadm.**stop**(*vm*, *force=False*, *key='uuid'*)
Stop a vm
**vm** [string] vm to be stopped
**force** [boolean] force stop of vm if true
**key** [string [uuid|alias|hostname]] value type of `vm' parameter
CLI Example:

```
salt '*' vmadm.stop 186da9ab-7392-4f55-91a5-b8f1fe770543
salt '*' vmadm.stop 186da9ab-7392-4f55-91a5-b8f1fe770543 True
salt '*' vmadm.stop vm=nacl key=alias
salt '*' vmadm.stop vm=nina.example.org key=hostname
```

salt.modules.smartos_vmadm.**sysrq**(*vm*, *action='nmi'*, *key='uuid'*)
Send non-maskable interrupt to vm or capture a screenshot
**vm** [string] vm to be targeted
**action** [string] nmi or screenshot -- Default: nmi
**key** [string [uuid|alias|hostname]] value type of `vm' parameter
CLI Example:

```
salt '*' vmadm.sysrq 186da9ab-7392-4f55-91a5-b8f1fe770543 nmi
salt '*' vmadm.sysrq 186da9ab-7392-4f55-91a5-b8f1fe770543 screenshot
salt '*' vmadm.sysrq nacl nmi key=alias
```

salt.modules.smartos_vmadm.**update**(*vm*, *from_file=None*, *key='uuid'*, ***kwargs*)
Update a new vm
**vm** [string] vm to be updated
**from_file** [string] json file to update the vm with -- if present, all other options will be ignored

**key** [string [uuid|alias|hostname]] value type of `vm' parameter
**kwargs** [string|int|...] options to update for the vm
CLI Example:

```
salt '*' vmadm.update vm=186da9ab-7392-4f55-91a5-b8f1fe770543 from_file=/tmp/new_
 ↪vm.json
salt '*' vmadm.update vm=nacl key=alias from_file=/tmp/new_vm.json
salt '*' vmadm.update vm=186da9ab-7392-4f55-91a5-b8f1fe770543 max_physical_
 ↪memory=1024
```

### 13.6.285 salt.modules.smbios

Interface to SMBIOS/DMI

(Parsing through dmidecode)

#### External References

Desktop Management Interface (DMI)
System Management BIOS
DMIdecode

salt.modules.smbios.**get**(*string*, *clean=True*)
Get an individual DMI string from SMBIOS info
**string**
**The string to fetch. DMIdecode supports:**

- bios-vendor
- bios-version
- bios-release-date
- system-manufacturer
- system-product-name
- system-version
- system-serial-number
- system-uuid
- baseboard-manufacturer
- baseboard-product-name
- baseboard-version
- baseboard-serial-number
- baseboard-asset-tag
- chassis-manufacturer
- chassis-type
- chassis-version
- chassis-serial-number

- chassis-asset-tag
- processor-family
- processor-manufacturer
- processor-version
- processor-frequency

**clean**

Don't return well-known false information
(invalid UUID's, serial 000000000's, etcetera)
Defaults to True

CLI Example:

```
salt '*' smbios.get system-uuid clean=False
```

salt.modules.smbios.**records**(*rec_type=None, fields=None, clean=True*)

Return DMI records from SMBIOS

**type** Return only records of type(s) The SMBIOS specification defines the following DMI types:

| Type | Information |
|---|---|
| 0 | BIOS |
| 1 | System |
| 2 | Baseboard |
| 3 | Chassis |
| 4 | Processor |
| 5 | Memory Controller |
| 6 | Memory Module |
| 7 | Cache |
| 8 | Port Connector |
| 9 | System Slots |
| 10 | On Board Devices |
| 11 | OEM Strings |
| 12 | System Configuration Options |
| 13 | BIOS Language |
| 14 | Group Associations |
| 15 | System Event Log |
| 16 | Physical Memory Array |
| 17 | Memory Device |
| 18 | 32-bit Memory Error |
| 19 | Memory Array Mapped Address |
| 20 | Memory Device Mapped Address |
| 21 | Built-in Pointing Device |
| 22 | Portable Battery |
| 23 | System Reset |
| 24 | Hardware Security |
| 25 | System Power Controls |
| 26 | Voltage Probe |
| 27 | Cooling Device |
| 28 | Temperature Probe |
| 29 | Electrical Current Probe |
| 30 | Out-of-band Remote Access |

Continued on next page

Table 13.7 -- continued from previous page

| Type | Information |
|---|---|
| 31 | Boot Integrity Services |
| 32 | System Boot |
| 33 | 64-bit Memory Error |
| 34 | Management Device |
| 35 | Management Device Component |
| 36 | Management Device Threshold Data |
| 37 | Memory Channel |
| 38 | IPMI Device |
| 39 | Power Supply |
| 40 | Additional Information |
| 41 | Onboard Devices Extended Information |
| 42 | Management Controller Host Interface |

**clean**

Don't return well-known false information
(invalid UUID's, serial 000000000's, etcetera)
Defaults to `True`

CLI Example:

```
salt '*' smbios.records clean=False
salt '*' smbios.records 14
salt '*' smbios.records 4 core_count,thread_count,current_speed
```

### 13.6.286 salt.modules.smf

Service support for Solaris 10 and 11, should work with other systems that use SMF also. (e.g. SmartOS)

---

**Important:** If you feel that Salt should be using this module to manage services on a minion, and it is using a different module (or gives an error similar to *`service.start' is not available*), see *here*.

---

`salt.modules.smf.`**`available`**(*name*)

Returns `True` if the specified service is available, otherwise returns `False`.

We look up the name with the svcs command to get back the FMRI This allows users to use simpler service names

CLI Example:

```
salt '*' service.available net-snmp
```

`salt.modules.smf.`**`disable`**(*name*, ***kwargs*)

Disable the named service to start at boot

CLI Example:

```
salt '*' service.disable <service name>
```

`salt.modules.smf.`**`disabled`**(*name*)

Check to see if the named service is disabled to start on boot

CLI Example:

```
salt '*' service.disabled <service name>
```

salt.modules.smf.**enable**(*name*, ***kwargs*)
Enable the named service to start at boot

CLI Example:

```
salt '*' service.enable <service name>
```

salt.modules.smf.**enabled**(*name*, ***kwargs*)
Check to see if the named service is enabled to start on boot

CLI Example:

```
salt '*' service.enabled <service name>
```

salt.modules.smf.**get_all**()
Return all installed services

CLI Example:

```
salt '*' service.get_all
```

salt.modules.smf.**get_disabled**()
Return the disabled services

CLI Example:

```
salt '*' service.get_disabled
```

salt.modules.smf.**get_enabled**()
Return the enabled services

CLI Example:

```
salt '*' service.get_enabled
```

salt.modules.smf.**get_running**()
Return the running services

CLI Example:

```
salt '*' service.get_running
```

salt.modules.smf.**get_stopped**()
Return the stopped services

CLI Example:

```
salt '*' service.get_stopped
```

salt.modules.smf.**missing**(*name*)
The inverse of service.available. Returns `True` if the specified service is not available, otherwise returns `False`.

CLI Example:

```
salt '*' service.missing net-snmp
```

salt.modules.smf.**reload**(*name*)
Reload the named service

CLI Example:

```
salt '*' service.reload <service name>
```

salt.modules.smf.**restart**(*name*)
Restart the named service

CLI Example:

```
salt '*' service.restart <service name>
```

salt.modules.smf.**start**(*name*)
Start the specified service

CLI Example:

```
salt '*' service.start <service name>
```

salt.modules.smf.**status**(*name*, *sig=None*)
Return the status for a service, returns a bool whether the service is running.

CLI Example:

```
salt '*' service.status <service name>
```

salt.modules.smf.**stop**(*name*)
Stop the specified service

CLI Example:

```
salt '*' service.stop <service name>
```

### 13.6.287 salt.modules.smtp

Module for Sending Messages via SMTP

New in version 2014.7.0.

**depends**

- smtplib python module

**configuration** This module can be used by either passing a jid and password directly to send_message, or by specifying the name of a configuration profile in the minion config, minion pillar, or master config.

For example:

```
my-smtp-login:
    smtp.server: smtp.domain.com
    smtp.tls: True
    smtp.sender: admin@domain.com
    smtp.username: myuser
    smtp.password: verybadpass
```

The resourcename refers to the resource that is using this account. It is user-definable, and optional. The following configurations are both valid:

```
my-smtp-login:
    smtp.server: smtp.domain.com
    smtp.tls: True
    smtp.sender: admin@domain.com
    smtp.username: myuser
    smtp.password: verybadpass

another-smtp-login:
    smtp.server: smtp.domain.com
    smtp.tls: True
    smtp.sender: admin@domain.com
    smtp.username: myuser
    smtp.password: verybadpass
```

salt.modules.smtp.**send_msg**(*recipient*, *message*, *subject='Message from Salt'*, *sender=None*, *server=None*, *use_ssl='True'*, *username=None*, *password=None*, *profile=None*)

Send a message to an SMTP recipient. Designed for use in states.

CLI Examples:

```
smtp.send_msg 'admin@example.com' 'This is a salt module test'             profile=
↪'my-smtp-account'
smtp.send_msg 'admin@example.com' 'This is a salt module test'             
↪username='myuser' password='verybadpass' sender="admin@example.com'             
↪server='smtp.domain.com'
```

### 13.6.288 salt.modules.solaris_fmadm

Module for running fmadm and fmdump on Solaris

**maintainer** Jorge Schrauwen <sjorge@blackdot.be>

**maturity** new

**platform** solaris,illumos

New in version 2016.3.0.

salt.modules.solaris_fmadm.**acquit**(*fmri*)

Acquit resource or acquit case
**fmri**: **string** fmri or uuid
CLI Example:

```
salt '*' fmadm.acquit fmri | uuid
```

salt.modules.solaris_fmadm.**config**()

Display fault manager configuration

CLI Example:

```
salt '*' fmadm.config
```

salt.modules.solaris_fmadm.**faulty**()

Display list of faulty resources

CLI Example:

```
salt '*' fmadm.faulty
```

salt.modules.solaris_fmadm.**flush**(*fmri*)
Flush cached state for resource
**fmri**: **string** fmri
CLI Example:

```
salt '*' fmadm.flush fmri
```

salt.modules.solaris_fmadm.**healthy**()
Return whether fmadm is reporting faults

CLI Example:

```
salt '*' fmadm.healthy
```

salt.modules.solaris_fmadm.**list**(*after=None*, *before=None*)
Display fault management logs
**after** [string] filter events after time, see man fmdump for format
**before** [string] filter events before time, see man fmdump for format
CLI Example:

```
salt '*' fmadm.list
```

salt.modules.solaris_fmadm.**load**(*path*)
Load specified fault manager module
**path**: **string** path of fault manager module
CLI Example:

```
salt '*' fmadm.load /module/path
```

salt.modules.solaris_fmadm.**repaired**(*fmri*)
Notify fault manager that resource has been repaired
**fmri**: **string** fmri
CLI Example:

```
salt '*' fmadm.repaired fmri
```

salt.modules.solaris_fmadm.**replaced**(*fmri*)
Notify fault manager that resource has been replaced
**fmri**: **string** fmri
CLI Example:

```
salt '*' fmadm.repaired fmri
```

salt.modules.solaris_fmadm.**reset**(*module*, *serd=None*)
Reset module or sub-component
**module**: **string** module to unload
**serd** [string] serd sub module
CLI Example:

```
salt '*' fmadm.reset software-response
```

salt.modules.solaris_fmadm.**show**(*uuid*)
Display log details
**uuid**: **string** uuid of fault

CLI Example:

```
salt '*' fmadm.show 11b4070f-4358-62fa-9e1e-998f485977e1
```

salt.modules.solaris_fmadm.**unload**(*module*)
Unload specified fault manager module
**module**: **string** module to unload
CLI Example:

```
salt '*' fmadm.unload software-response
```

### 13.6.289 salt.modules.solaris_group

Manage groups on Solaris

**Important**: If you feel that Salt should be using this module to manage groups on a minion, and it is using a different module (or gives an error similar to *`group.info' is not available*), see *here*.

salt.modules.solaris_group.**add**(*name*, *gid=None*, ***kwargs*)
Add the specified group

CLI Example:

```
salt '*' group.add foo 3456
```

salt.modules.solaris_group.**chgid**(*name*, *gid*)
Change the gid for a named group

CLI Example:

```
salt '*' group.chgid foo 4376
```

salt.modules.solaris_group.**delete**(*name*)
Remove the named group

CLI Example:

```
salt '*' group.delete foo
```

salt.modules.solaris_group.**getent**(*refresh=False*)
Return info on all groups

CLI Example:

```
salt '*' group.getent
```

salt.modules.solaris_group.**info**(*name*)
Return information about a group

CLI Example:

```
salt '*' group.info foo
```

### 13.6.290 salt.modules.solaris_shadow

Manage the password database on Solaris systems

**Important**: If you feel that Salt should be using this module to manage passwords on a minion, and it is using a different module (or gives an error similar to *`shadow.info' is not available*), see *here*.

salt.modules.solaris_shadow.**default_hash**()
Returns the default hash used for unset passwords

CLI Example:

```
salt '*' shadow.default_hash
```

salt.modules.solaris_shadow.**del_password**(*name*)
New in version 2015.8.8.

Delete the password from name user

CLI Example:

```
salt '*' shadow.del_password username
```

salt.modules.solaris_shadow.**gen_password**(*password*, *crypt_salt=None*, *algorithm='sha512'*)
New in version 2015.8.8.

Generate hashed password

**Note**: When called this function is called directly via remote-execution, the password argument may be displayed in the system's process list. This may be a security risk on certain systems.

**password** Plaintext password to be hashed.
**crypt_salt** Crpytographic salt. If not given, a random 8-character salt will be generated.
**algorithm** The following hash algorithms are supported:

- md5
- blowfish (not in mainline glibc, only available in distros that add it)
- sha256
- sha512 (default)

CLI Example:

```
salt '*' shadow.gen_password 'I_am_password'
salt '*' shadow.gen_password 'I_am_password' crypt_salt='I_am_salt'
 ↪algorithm=sha256
```

salt.modules.solaris_shadow.**info**(*name*)
Return information for the specified user

CLI Example:

```
salt '*' shadow.info root
```

salt.modules.solaris_shadow.**set_maxdays**(*name*, *maxdays*)
Set the maximum number of days during which a password is valid. See man passwd.

CLI Example:

```
salt '*' shadow.set_maxdays username 90
```

salt.modules.solaris_shadow.**set_mindays**(*name*, *mindays*)
Set the minimum number of days between password changes. See man passwd.

CLI Example:

```
salt '*' shadow.set_mindays username 7
```

salt.modules.solaris_shadow.**set_password**(*name*, *password*)
Set the password for a named user. The password must be a properly defined hash, the password hash can be generated with this command: `openssl passwd -1 <plaintext password>`

CLI Example:

```
salt '*' shadow.set_password root $1$UYCIxa628.9qXjpQCjM4a..
```

salt.modules.solaris_shadow.**set_warndays**(*name*, *warndays*)
Set the number of days of warning before a password change is required. See man passwd.

CLI Example:

```
salt '*' shadow.set_warndays username 7
```

### 13.6.291 salt.modules.solaris_system

Support for reboot, shutdown, etc

This module is assumes we are using solaris-like shutdown

New in version 2016.3.0.

salt.modules.solaris_system.**halt**()
Halt a running system

CLI Example:

```
salt '*' system.halt
```

salt.modules.solaris_system.**init**(*state*)
Change the system runlevel on sysV compatible systems

CLI Example:
**state** [string] Init state

```
salt '*' system.init 3
```

salt.modules.solaris_system.**poweroff**()
Poweroff a running system

CLI Example:

```
salt '*' system.poweroff
```

salt.modules.solaris_system.**reboot**(*delay=0*, *message=None*)
Reboot the system
**delay** [int] Optional wait time in seconds before the system will be rebooted.
**message** [string] Optional message to broadcast before rebooting.

CLI Example:

```
salt '*' system.reboot
salt '*' system.reboot 60 "=== system upgraded ==="
```

salt.modules.solaris_system.**shutdown**(*delay=0*, *message=None*)

Shutdown a running system

**delay** [int] Optional wait time in seconds before the system will be shutdown.

**message** [string] Optional message to broadcast before rebooting.

CLI Example:

```
salt '*' system.shutdown
salt '*' system.shutdown 60 "=== disk replacement ==="
```

### 13.6.292 salt.modules.solaris_user

Manage users with the useradd command

---

**Important**: If you feel that Salt should be using this module to manage users on a minion, and it is using a different module (or gives an error similar to *`user.info' is not available*), see *here*.

---

salt.modules.solaris_user.**add**(*name*, *uid=None*, *gid=None*, *groups=None*, *home=None*, *shell=None*, *unique=True*, *fullname=''*, *roomnumber=''*, *workphone=''*, *homephone=''*, *createhome=True*, ***kwargs*)

Add a user to the minion

CLI Example:

```
salt '*' user.add name <uid> <gid> <groups> <home> <shell>
```

salt.modules.solaris_user.**chfullname**(*name*, *fullname*)

Change the user's Full Name

CLI Example:

```
salt '*' user.chfullname foo "Foo Bar"
```

salt.modules.solaris_user.**chgid**(*name*, *gid*)

Change the default group of the user

CLI Example:

```
salt '*' user.chgid foo 4376
```

salt.modules.solaris_user.**chgroups**(*name*, *groups*, *append=False*)

Change the groups to which a user belongs

**name** Username to modify

**groups** List of groups to set for the user. Can be passed as a comma-separated list or a Python list.

**append** [False] Set to `True` to append these groups to the user's existing list of groups. Otherwise, the specified groups will replace any existing groups for the user.

CLI Example:

```
salt '*' user.chgroups foo wheel,root True
```

salt.modules.solaris_user.**chhome**(*name*, *home*, *persist=False*)

Set a new home directory for an existing user

**name** Username to modify

**home** New home directory to set

**persist** [False] Set to `True` to prevent configuration files in the new home directory from being overwritten by the files from the skeleton directory.

CLI Example:

```
salt '*' user.chhome foo /home/users/foo True
```

salt.modules.solaris_user.**chhomephone**(*name*, *homephone*)

Change the user's Home Phone

CLI Example:

```
salt '*' user.chhomephone foo "7735551234"
```

salt.modules.solaris_user.**chroomnumber**(*name*, *roomnumber*)

Change the user's Room Number

CLI Example:

```
salt '*' user.chroomnumber foo 123
```

salt.modules.solaris_user.**chshell**(*name*, *shell*)

Change the default shell of the user

CLI Example:

```
salt '*' user.chshell foo /bin/zsh
```

salt.modules.solaris_user.**chuid**(*name*, *uid*)

Change the uid for a named user

CLI Example:

```
salt '*' user.chuid foo 4376
```

salt.modules.solaris_user.**chworkphone**(*name*, *workphone*)

Change the user's Work Phone

CLI Example:

```
salt '*' user.chworkphone foo "7735550123"
```

salt.modules.solaris_user.**delete**(*name*, *remove=False*, *force=False*)

Remove a user from the minion

CLI Example:

```
salt '*' user.delete name remove=True force=True
```

salt.modules.solaris_user.**getent**(*refresh=False*)

Return the list of all info for all users

CLI Example:

```
salt '*' user.getent
```

salt.modules.solaris_user.**info**(*name*)
Return user information

CLI Example:

```
salt '*' user.info root
```

salt.modules.solaris_user.**list_groups**(*name*)
Return a list of groups the named user belongs to

CLI Example:

```
salt '*' user.list_groups foo
```

salt.modules.solaris_user.**list_users**()
Return a list of all users CLI Example: .. code-block:: bash
salt `*' user.list_users

salt.modules.solaris_user.**rename**(*name*, *new_name*)
Change the username for a named user

CLI Example:

```
salt '*' user.rename name new_name
```

### 13.6.293 salt.modules.solarisips

IPS pkg support for Solaris

---

**Important**: If you feel that Salt should be using this module to manage packages on a minion, and it is using a different module (or gives an error similar to *`pkg.install' is not available*), see *here*.

---

This module provides support for Solaris 11 new package management - IPS (Image Packaging System). This is the default pkg module for Solaris 11 (and later).

If you want to use also other packaging module (e.g. pkgutil) together with IPS, you need to override the `pkg` provider in sls for each package:

```
mypackage:
  pkg.installed:
    - provider: pkgutil
```

Or you can override it globally by setting the *`providers`* parameter in your Minion config file like this:

```
providers:
  pkg: pkgutil
```

Or you can override it globally by setting the *`providers`* parameter in your Minion config file like this:

```
providers:
  pkg: pkgutil
```

salt.modules.solarisips.**available_version**(*name*, ***kwargs*)
This function is an alias of `latest_version`.

The available version of the package in the repository. In case of multiple matches, it returns list of all matched packages. Accepts full or partial FMRI. Please use pkg.latest_version as pkg.available_version is being deprecated.

CLI Example:

```
salt '*' pkg.latest_version pkg://solaris/entire
```

salt.modules.solarisips.**get_fmri**(*name*, ***kwargs*)

Returns FMRI from partial name. Returns empty string (`') if not found. In case of multiple match, the function returns list of all matched packages.

CLI Example:

```
salt '*' pkg.get_fmri bash
```

salt.modules.solarisips.**install**(*name=None*, *refresh=False*, *pkgs=None*, *version=None*, *test=False*, ***kwargs*)

Install the named package using the IPS pkg command. Accepts full or partial FMRI.

Returns a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

Multiple Package Installation Options:
**pkgs** A list of packages to install. Must be passed as a python list.
CLI Example:

```
salt '*' pkg.install vim
salt '*' pkg.install pkg://solaris/editor/vim
salt '*' pkg.install pkg://solaris/editor/vim refresh=True
salt '*' pkg.install pkgs='["foo", "bar"]'
```

salt.modules.solarisips.**is_installed**(*name*, ***kwargs*)

Returns True if the package is installed. Otherwise returns False. Name can be full or partial FMRI. In case of multiple match from partial FMRI name, it returns True.

CLI Example:

```
salt '*' pkg.is_installed bash
```

salt.modules.solarisips.**latest_version**(*name*, ***kwargs*)

The available version of the package in the repository. In case of multiple matches, it returns list of all matched packages. Accepts full or partial FMRI. Please use pkg.latest_version as pkg.available_version is being deprecated.

CLI Example:

```
salt '*' pkg.latest_version pkg://solaris/entire
```

salt.modules.solarisips.**list_pkgs**(*versions_as_list=False*, ***kwargs*)

List the currently installed packages as a dict:

```
{'<package_name>': '<version>'}
```

CLI Example:

```
salt '*' pkg.list_pkgs
```

salt.modules.solarisips.**list_upgrades**(*refresh=False*, ***kwargs*)

Lists all packages available for update.

When run in global zone, it reports only upgradable packages for the global zone.

When run in non-global zone, it can report more upgradable packages than `pkg update -vn`, because `pkg update` hides packages that require newer version of `pkg://solaris/entire` (which means that they can be upgraded only from the global zone). If `pkg://solaris/entire` is found in the list of upgrades, then the global zone should be updated to get all possible updates. Use `refresh=True` to refresh the package database.

**refresh** [False] Set to `True` to force a full pkg DB refresh before listing

CLI Example:

```
salt '*' pkg.list_upgrades
salt '*' pkg.list_upgrades refresh=True
```

salt.modules.solarisips.**normalize_name**(*name*, ***kwargs*)

Internal function. Normalizes pkg name to full FMRI before running pkg.install. In case of multiple matches or no match, it returns the name without modifications.

CLI Example:

```
salt '*' pkg.normalize_name vim
```

salt.modules.solarisips.**purge**(*name*, ***kwargs*)

Remove specified package. Accepts full or partial FMRI.

Returns a list containing the removed packages.

CLI Example:

```
salt '*' pkg.purge <package name>
```

salt.modules.solarisips.**refresh_db**(*full=False*)

Updates the remote repos database.

full : False
: Set to `True` to force a refresh of the pkg DB from all publishers, regardless of the last refresh time.

CLI Example:

```
salt '*' pkg.refresh_db
salt '*' pkg.refresh_db full=True
```

salt.modules.solarisips.**remove**(*name=None*, *pkgs=None*, ***kwargs*)

Remove specified package. Accepts full or partial FMRI. In case of multiple match, the command fails and won't modify the OS.

**name** The name of the package to be deleted.

Multiple Package Options:

**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

Returns a list containing the removed packages.

CLI Example:

```
salt '*' pkg.remove <package name>
salt '*' pkg.remove tcsh
```

```
salt '*' pkg.remove pkg://solaris/shell/tcsh
salt '*' pkg.remove pkgs='["foo", "bar"]'
```

salt.modules.solarisips.**search**(*name*, *versions_as_list=False*, ***kwargs*)

Searches the repository for given pkg name. The name can be full or partial FMRI. All matches are printed. Globs are also supported.

CLI Example:

```
salt '*' pkg.search bash
```

salt.modules.solarisips.**upgrade**(*refresh=False*, ***kwargs*)

Upgrade all packages to the latest possible version. When run in global zone, it updates also all non-global zones. In non-global zones upgrade is limited by dependency constrains linked to the version of pkg://solaris/entire.

Returns also the raw output of the `pkg update` command (because if update creates a new boot environment, no immediate changes are visible in `pkg list`).

CLI Example:

```
salt '*' pkg.upgrade
```

salt.modules.solarisips.**upgrade_available**(*name*)

Check if there is an upgrade available for a certain package Accepts full or partial FMRI. Returns all matches found.

CLI Example:

```
salt '*' pkg.upgrade_available apache-22
```

salt.modules.solarisips.**version**(**names*, ***kwargs*)

Common interface for obtaining the version of installed packages. Accepts full or partial FMRI. If called using pkg_resource, full FMRI is required.

CLI Example:

```
salt '*' pkg.version vim
salt '*' pkg.version foo bar baz
salt '*' pkg_resource.version pkg://solaris/entire
```

### 13.6.294 salt.modules.solarispkg

Package support for Solaris

---

**Important**: If you feel that Salt should be using this module to manage packages on a minion, and it is using a different module (or gives an error similar to *`pkg.install' is not available*), see *here*.

---

salt.modules.solarispkg.**install**(*name=None*, *sources=None*, *saltenv='base'*, ***kwargs*)

Install the passed package. Can install packages from the following sources:

- Locally (package already exists on the minion
- HTTP/HTTPS server
- FTP server
- Salt master

Returns a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

CLI Examples:

```
# Installing a data stream pkg that already exists on the minion

salt '*' pkg.install sources='[{"<pkg name>": "/dir/on/minion/<pkg filename>"}]'
salt '*' pkg.install sources='[{"SMClgcc346": "/var/spool/pkg/gcc-3.4.6-sol10-
 ↪sparc-local.pkg"}]'

# Installing a data stream pkg that exists on the salt master

salt '*' pkg.install sources='[{"<pkg name>": "salt://pkgs/<pkg filename>"}]'
salt '*' pkg.install sources='[{"SMClgcc346": "salt://pkgs/gcc-3.4.6-sol10-sparc-
 ↪local.pkg"}]'
```

CLI Example:

```
# Installing a data stream pkg that exists on a HTTP server
salt '*' pkg.install sources='[{"<pkg name>": "http://packages.server.com/<pkg
 ↪filename>"}]'
salt '*' pkg.install sources='[{"SMClgcc346": "http://packages.server.com/gcc-3.4.
 ↪6-sol10-sparc-local.pkg"}]'
```

If working with solaris zones and you want to install a package only in the global zone you can pass `current_zone_only=True' to salt to have the package only installed in the global zone. (Behind the scenes this is passing `-G' to the pkgadd command.) Solaris default when installing a package in the global zone is to install it in all zones. This overrides that and installs the package only in the global.

CLI Example:

```
# Installing a data stream package only in the global zone:
salt 'global_zone' pkg.install sources='[{"SMClgcc346": "/var/spool/pkg/gcc-3.4.6-
 ↪sol10-sparc-local.pkg"}]' current_zone_only=True
```

By default salt automatically provides an adminfile, to automate package installation, with these options set:

```
email=
instance=quit
partial=nocheck
runlevel=nocheck
idepend=nocheck
rdepend=nocheck
space=nocheck
setuid=nocheck
conflict=nocheck
action=nocheck
basedir=default
```

You can override any of these options in two ways. First you can optionally pass any of the options as a kwarg to the module/state to override the default value or you can optionally pass the `admin_source' option providing your own adminfile to the minions.

Note: You can find all of the possible options to provide to the adminfile by reading the admin man page:

```
man -s 4 admin
```

CLI Example:

```
# Overriding the 'instance' adminfile option when calling the module directly
salt '*' pkg.install sources='[{"<pkg name>": "salt://pkgs/<pkg filename>"}]'
↪instance="overwrite"
```

SLS Example:

```
# Overriding the 'instance' adminfile option when used in a state

SMClgcc346:
  pkg.installed:
    - sources:
      - SMClgcc346: salt://srv/salt/pkgs/gcc-3.4.6-sol10-sparc-local.pkg
    - instance: overwrite
```

**Note**: The ID declaration is ignored, as the package name is read from the `sources` parameter.

CLI Example:

```
# Providing your own adminfile when calling the module directly

salt '*' pkg.install sources='[{"<pkg name>": "salt://pkgs/<pkg filename>"}]'
↪admin_source='salt://pkgs/<adminfile filename>'

# Providing your own adminfile when using states

<pkg name>:
  pkg.installed:
    - sources:
      - <pkg name>: salt://pkgs/<pkg filename>
    - admin_source: salt://pkgs/<adminfile filename>
```

**Note**: The ID declaration is ignored, as the package name is read from the `sources` parameter.

`salt.modules.solarispkg.`**`latest_version`**(**names*, ***kwargs*)

Return the latest version of the named package available for upgrade or installation. If more than one package name is specified, a dict of name/version pairs is returned.

If the latest version of a given package is already installed, an empty string will be returned for that package.

CLI Example:

```
salt '*' pkg.latest_version <package name>
salt '*' pkg.latest_version <package1> <package2> <package3> ...
```

NOTE: As package repositories are not presently supported for Solaris pkgadd, this function will always return an empty string for a given package.

`salt.modules.solarispkg.`**`list_pkgs`**(*versions_as_list=False*, ***kwargs*)

List the packages currently installed as a dict:

```
{'<package_name>': '<version>'}
```

CLI Example:

```
salt '*' pkg.list_pkgs
```

salt.modules.solarispkg.**purge**(*name=None, pkgs=None, **kwargs*)

Package purges are not supported, this function is identical to `remove()`.

**name** The name of the package to be deleted

Multiple Package Options:

**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.purge <package name>
salt '*' pkg.purge <package1>,<package2>,<package3>
salt '*' pkg.purge pkgs='["foo", "bar"]'
```

salt.modules.solarispkg.**remove**(*name=None, pkgs=None, saltenv='base', **kwargs*)

Remove packages with pkgrm

**name** The name of the package to be deleted

By default salt automatically provides an adminfile, to automate package removal, with these options set:

```
email=
instance=quit
partial=nocheck
runlevel=nocheck
idepend=nocheck
rdepend=nocheck
space=nocheck
setuid=nocheck
conflict=nocheck
action=nocheck
basedir=default
```

You can override any of these options in two ways. First you can optionally pass any of the options as a kwarg to the module/state to override the default value or you can optionally pass the `admin_source' option providing your own adminfile to the minions.

Note: You can find all of the possible options to provide to the adminfile by reading the admin man page:

```
man -s 4 admin
```

Multiple Package Options:

**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.remove <package name>
salt '*' pkg.remove SUNWgit
salt '*' pkg.remove <package1>,<package2>,<package3>
salt '*' pkg.remove pkgs='["foo", "bar"]'
```

salt.modules.solarispkg.**upgrade_available**(*name*)

Check whether or not an upgrade is available for a given package

CLI Example:

```
salt '*' pkg.upgrade_available <package name>
```

salt.modules.solarispkg.**version**(**names*, ***kwargs*)

Returns a string representing the package version or an empty string if not installed. If more than one package name is specified, a dict of name/version pairs is returned.

CLI Example:

```
salt '*' pkg.version <package name>
salt '*' pkg.version <package1> <package2> <package3> ...
```

### 13.6.295 salt.modules.solr

Apache Solr Salt Module

Author: Jed Glazner Version: 0.2.1 Modified: 12/09/2011

This module uses HTTP requests to talk to the apache solr request handlers to gather information and report errors. Because of this the minion doesn't necessarily need to reside on the actual slave. However if you want to use the signal function the minion must reside on the physical solr host.

This module supports multi-core and standard setups. Certain methods are master/slave specific. Make sure you set the solr.type. If you have questions or want a feature request please ask.

#### Coming Features in 0.3

1. Add command for checking for replication failures on slaves
2. Improve match_index_versions since it's pointless on busy solr masters
3. Add additional local fs checks for backups to make sure they succeeded

#### Override these in the minion config

**solr.cores** A list of core names e.g. ['core1',core2']. An empty list indicates non-multicore setup.

**solr.baseurl** The root level URL to access solr via HTTP

**solr.request_timeout** The number of seconds before timing out an HTTP/HTTPS/FTP request. If nothing is specified then the python global timeout setting is used.

**solr.type** Possible values are `master' or `slave'

**solr.backup_path** The path to store your backups. If you are using cores and you can specify to append the core name to the path in the backup method.

**solr.num_backups** For versions of solr >= 3.5. Indicates the number of backups to keep. This option is ignored if your version is less.

**solr.init_script** The full path to your init script with start/stop options

**solr.dih.options** A list of options to pass to the DIH.

### Required Options for DIH

**clean** [False] Clear the index before importing

**commit** [True] Commit the documents to the index upon completion

**optimize** [True] Optimize the index after commit is complete

**verbose** [True] Get verbose output

`salt.modules.solr.`**`abort_import`**(*handler*, *host=None*, *core_name=None*, *verbose=False*)

MASTER ONLY Aborts an existing import command to the specified handler. This command can only be run if the minion is configured with solr.type=master

**handler** [str] The name of the data import handler.

**host** [str (None)] The solr host to query. __opts__['host'] is default.

**core** [str (None)] The core the handler belongs to.

**verbose** [boolean (False)] Run the command with verbose output.

Return : dict<str,obj>:

```
{'success':boolean, 'data':dict, 'errors':list, 'warnings':list}
```

CLI Example:

```
salt '*' solr.abort_import dataimport None music {'clean':True}
```

`salt.modules.solr.`**`backup`**(*host=None*, *core_name=None*, *append_core_to_path=False*)

Tell solr make a backup. This method can be mis-leading since it uses the backup API. If an error happens during the backup you are not notified. The status: `OK' in the response simply means that solr received the request successfully.

**host** [str (None)] The solr host to query. __opts__['host'] is default.

**core_name** [str (None)] The name of the solr core if using cores. Leave this blank if you are not using cores or if you want to check all cores.

**append_core_to_path** [boolean (False)] If True add the name of the core to the backup path. Assumes that minion backup path is not None.

Return : dict<str,obj>:

```
{'success':boolean, 'data':dict, 'errors':list, 'warnings':list}
```

CLI Example:

```
salt '*' solr.backup music
```

`salt.modules.solr.`**`core_status`**(*host=None*, *core_name=None*)

MULTI-CORE HOSTS ONLY Get the status for a given core or all cores if no core is specified

**host** [str (None)] The solr host to query. __opts__['host'] is default.

**core_name** [str] The name of the core to reload

Return : dict<str,obj>:

```
{'success':boolean, 'data':dict, 'errors':list, 'warnings':list}
```

CLI Example:

```
salt '*' solr.core_status None music
```

`salt.modules.solr.`**`delta_import`**(*handler*, *host=None*, *core_name=None*, *options=None*, *extra=None*)

Submits an import command to the specified handler using specified options. This command can only be run if the minion is configured with solr.type=master

**handler** [str] The name of the data import handler.
**host** [str (None)] The solr host to query. __opts__['host'] is default.
**core** [str (None)] The core the handler belongs to.
**options** [dict (__opts__)] A list of options such as clean, optimize commit, verbose, and pause_replication. leave blank to use __opts__ defaults. options will be merged with __opts__
**extra** [dict ([])] Extra name value pairs to pass to the handler. e.g. ["name=value"]
Return : dict<str,obj>:

```
{'success':boolean, 'data':dict, 'errors':list, 'warnings':list}
```

CLI Example:

```
salt '*' solr.delta_import dataimport None music {'clean':True}
```

salt.modules.solr.**full_import**(*handler*, *host=None*, *core_name=None*, *options=None*, *extra=None*)
MASTER ONLY Submits an import command to the specified handler using specified options. This command can only be run if the minion is configured with solr.type=master
**handler** [str] The name of the data import handler.
**host** [str (None)] The solr host to query. __opts__['host'] is default.
**core** [str (None)] The core the handler belongs to.
**options** [dict (__opts__)] A list of options such as clean, optimize commit, verbose, and pause_replication. leave blank to use __opts__ defaults. options will be merged with __opts__
**extra** [dict ([])] Extra name value pairs to pass to the handler. e.g. ["name=value"]
Return : dict<str,obj>:

```
{'success':boolean, 'data':dict, 'errors':list, 'warnings':list}
```

CLI Example:

```
salt '*' solr.full_import dataimport None music {'clean':True}
```

salt.modules.solr.**import_status**(*handler*, *host=None*, *core_name=None*, *verbose=False*)
Submits an import command to the specified handler using specified options. This command can only be run if the minion is configured with solr.type: `master'
**handler** [str] The name of the data import handler.
**host** [str (None)] The solr host to query. __opts__['host'] is default.
**core** [str (None)] The core the handler belongs to.
**verbose** [boolean (False)] Specifies verbose output
Return : dict<str,obj>:

```
{'success':boolean, 'data':dict, 'errors':list, 'warnings':list}
```

CLI Example:

```
salt '*' solr.import_status dataimport None music False
```

salt.modules.solr.**is_replication_enabled**(*host=None*, *core_name=None*)
SLAVE CALL Check for errors, and determine if a slave is replicating or not.
**host** [str (None)] The solr host to query. __opts__['host'] is default.
**core_name** [str (None)] The name of the solr core if using cores. Leave this blank if you are not using cores or if you want to check all cores.
Return : dict<str,obj>:

```
{'success':boolean, 'data':dict, 'errors':list, 'warnings':list}
```

CLI Example:

```
salt '*' solr.is_replication_enabled music
```

salt.modules.solr.**lucene_version**(*core_name=None*)

Gets the lucene version that solr is using. If you are running a multi-core setup you should specify a core name since all the cores run under the same servlet container, they will all have the same version.

**core_name** [str (None)] The name of the solr core if using cores. Leave this blank if you are not using cores or if you want to check all cores.

Return: dict<str,obj>:

```
{'success':boolean, 'data':dict, 'errors':list, 'warnings':list}
```

CLI Example:

```
salt '*' solr.lucene_version
```

salt.modules.solr.**match_index_versions**(*host=None, core_name=None*)

SLAVE CALL Verifies that the master and the slave versions are in sync by comparing the index version. If you are constantly pushing updates the index the master and slave versions will seldom match. A solution to this is pause indexing every so often to allow the slave to replicate and then call this method before allowing indexing to resume.

**host** [str (None)] The solr host to query. __opts__['host'] is default.

**core_name** [str (None)] The name of the solr core if using cores. Leave this blank if you are not using cores or if you want to check all cores.

Return : dict<str,obj>:

```
{'success':boolean, 'data':dict, 'errors':list, 'warnings':list}
```

CLI Example:

```
salt '*' solr.match_index_versions music
```

salt.modules.solr.**optimize**(*host=None, core_name=None*)

Search queries fast, but it is a very expensive operation. The ideal process is to run this with a master/slave configuration. Then you can optimize the master, and push the optimized index to the slaves. If you are running a single solr instance, or if you are going to run this on a slave be aware than search performance will be horrible while this command is being run. Additionally it can take a LONG time to run and your HTTP request may timeout. If that happens adjust your timeout settings.

**host** [str (None)] The solr host to query. __opts__['host'] is default.

**core_name** [str (None)] The name of the solr core if using cores. Leave this blank if you are not using cores or if you want to check all cores.

Return : dict<str,obj>:

```
{'success':boolean, 'data':dict, 'errors':list, 'warnings':list}
```

CLI Example:

```
salt '*' solr.optimize music
```

salt.modules.solr.**ping**(*host=None, core_name=None*)

Does a health check on solr, makes sure solr can talk to the indexes.

**host** [str (None)] The solr host to query. __opts__['host'] is default.

**core_name** [str (None)] The name of the solr core if using cores. Leave this blank if you are not using cores or if you want to check all cores.

Return : dict<str,obj>:

```
{'success':boolean, 'data':dict, 'errors':list, 'warnings':list}
```

CLI Example:

```
salt '*' solr.ping music
```

salt.modules.solr.**reload_core**(*host=None*, *core_name=None*)

MULTI-CORE HOSTS ONLY Load a new core from the same configuration as an existing registered core. While the ``new'' core is initializing, the ``old'' one will continue to accept requests. Once it has finished, all new request will go to the ``new'' core, and the ``old'' core will be unloaded.

**host** [str (None)] The solr host to query. __opts__['host'] is default.

**core_name** [str] The name of the core to reload

Return : dict<str,obj>:

```
{'success':boolean, 'data':dict, 'errors':list, 'warnings':list}
```

CLI Example:

```
salt '*' solr.reload_core None music
```

Return data is in the following format:

```
{'success':bool, 'data':dict, 'errors':list, 'warnings':list}
```

salt.modules.solr.**reload_import_config**(*handler*, *host=None*, *core_name=None*, *verbose=False*)

MASTER ONLY re-loads the handler config XML file. This command can only be run if the minion is a `master' type

**handler** [str] The name of the data import handler.

**host** [str (None)] The solr host to query. __opts__['host'] is default.

**core** [str (None)] The core the handler belongs to.

**verbose** [boolean (False)] Run the command with verbose output.

Return : dict<str,obj>:

```
{'success':boolean, 'data':dict, 'errors':list, 'warnings':list}
```

CLI Example:

```
salt '*' solr.reload_import_config dataimport None music {'clean':True}
```

salt.modules.solr.**replication_details**(*host=None*, *core_name=None*)

Get the full replication details.

**host** [str (None)] The solr host to query. __opts__['host'] is default.

**core_name** [str (None)] The name of the solr core if using cores. Leave this blank if you are not using cores or if you want to check all cores.

Return : dict<str,obj>:

```
{'success':boolean, 'data':dict, 'errors':list, 'warnings':list}
```

CLI Example:

```
salt '*' solr.replication_details music
```

salt.modules.solr.**set_is_polling**(*polling*, *host=None*, *core_name=None*)

SLAVE CALL Prevent the slaves from polling the master for updates.

**polling** [boolean] True will enable polling. False will disable it.

**host** [str (None)] The solr host to query. __opts__['host'] is default.
**core_name** [str (None)] The name of the solr core if using cores. Leave this blank if you are not using cores or if you want to check all cores.
Return : dict<str,obj>:

```
{'success':boolean, 'data':dict, 'errors':list, 'warnings':list}
```

CLI Example:

```
salt '*' solr.set_is_polling False
```

salt.modules.solr.**set_replication_enabled**(*status*, *host=None*, *core_name=None*)
MASTER ONLY Sets the master to ignore poll requests from the slaves. Useful when you don't want the slaves replicating during indexing or when clearing the index.
**status** [boolean] Sets the replication status to the specified state.
**host** [str (None)] The solr host to query. __opts__['host'] is default.
**core_name** [str (None)] The name of the solr core if using cores. Leave this blank if you are not using cores or if you want to set the status on all cores.
Return : dict<str,obj>:

```
{'success':boolean, 'data':dict, 'errors':list, 'warnings':list}
```

CLI Example:

```
salt '*' solr.set_replication_enabled false, None, music
```

salt.modules.solr.**signal**(*signal=None*)
Signals Apache Solr to start, stop, or restart. Obviously this is only going to work if the minion resides on the solr host. Additionally Solr doesn't ship with an init script so one must be created.
**signal** [str (None)] The command to pass to the apache solr init valid values are `start', `stop', and `restart'
CLI Example:

```
salt '*' solr.signal restart
```

salt.modules.solr.**version**(*core_name=None*)
Gets the solr version for the core specified. You should specify a core here as all the cores will run under the same servlet container and so will all have the same version.
**core_name** [str (None)] The name of the solr core if using cores. Leave this blank if you are not using cores or if you want to check all cores.
Return : dict<str,obj>:

```
{'success':boolean, 'data':dict, 'errors':list, 'warnings':list}
```

CLI Example:

```
salt '*' solr.version
```

### 13.6.296 salt.modules.splunk

Module for interop with the Splunk API

New in version 2016.3.0..

**depends**

- splunk-sdk python module

**configuration** Configure this module by specifying the name of a configuration profile in the minion config, minion pillar, or master config. The module will use the `splunk' key by default, if defined.

For example:

```
splunk:
    username: alice
    password: abc123
    host: example.splunkcloud.com
    port: 8080
```

`salt.modules.splunk.`**`create_user`**(*email*, *profile='splunk'*, ***kwargs*)
create a splunk user by name/email

CLI Example:
salt myminion splunk.create_user user@example.com roles=['user'] realname='"Test User"' name=testuser

`salt.modules.splunk.`**`delete_user`**(*email*, *profile='splunk'*)
Delete a splunk user by email

CLI Example:
salt myminion splunk_user.delete `user@example.com`

`salt.modules.splunk.`**`get_user`**(*email*, *profile='splunk'*, ***kwargs*)
Get a splunk user by name/email

CLI Example:
salt myminion splunk.get_user `user@example.com` user_details=false salt myminion splunk.get_user `user@example.com` user_details=true

`salt.modules.splunk.`**`list_users`**(*profile='splunk'*)
List all users in the splunk DB

CLI Example:
salt myminion splunk.list_users

`salt.modules.splunk.`**`update_user`**(*email*, *profile='splunk'*, ***kwargs*)
Create a splunk user by email

CLI Example:
salt myminion splunk.update_user example@domain.com roles=['user'] realname='"Test User"'

### 13.6.297 salt.modules.splunk_search

Module for interop with the Splunk API

New in version 2015.5.0.

**depends**

- splunk-sdk python module

**configuration** Configure this module by specifying the name of a configuration profile in the minion config, minion pillar, or master config. The module will use the `splunk' key by default, if defined.

For example:

```
splunk:
    username: alice
    password: abc123
```

```
    host: example.splunkcloud.com
    port: 8080
```

salt.modules.splunk_search.**create**(*name*, *profile='splunk'*, ***kwargs*)
Create a splunk search

CLI Example:
splunk_search.create `my search name' search='error msg'

salt.modules.splunk_search.**delete**(*name*, *profile='splunk'*)
Delete a splunk search

CLI Example:
splunk_search.delete `my search name'

salt.modules.splunk_search.**get**(*name*, *profile='splunk'*)
Get a splunk search

CLI Example:
splunk_search.get `my search name'

salt.modules.splunk_search.**list**(*profile='splunk'*)
List splunk searches (names only)
**CLI Example**: splunk_search.list

salt.modules.splunk_search.**list_all**(*prefix=None*, *app=None*, *owner=None*, *description_contains=None*, *name_not_contains=None*, *profile='splunk'*)
Get all splunk search details. Produces results that can be used to create an sls file.

if app or owner are specified, results will be limited to matching saved searches.

if description_contains is specified, results will be limited to those where ``description_contains in description'' is true if name_not_contains is specified, results will be limited to those where ``name_not_contains not in name'' is true.

If prefix parameter is given, alarm names in the output will be prepended with the prefix; alarms that have the prefix will be skipped. This can be used to convert existing alarms to be managed by salt, as follows:

CLI example:

1. **Make a ``backup'' of all existing searches** $ salt-call splunk_search.list_all --out=txt | sed ``s/local: //'' > legacy_searches.sls
2. **Get all searches with new prefixed names** $ salt-call splunk_search.list_all ``prefix=**MANAGED BY SALT** '' --out=txt | sed ``s/local: //'' > managed_searches.sls
3. **Insert the managed searches into splunk** $ salt-call state.sls managed_searches.sls
4. Manually verify that the new searches look right
5. Delete the original searches $ sed s/present/absent/ legacy_searches.sls > remove_legacy_searches.sls $ salt-call state.sls remove_legacy_searches.sls
6. Get all searches again, verify no changes $ salt-call splunk_search.list_all --out=txt | sed ``s/local: //'' > final_searches.sls $ diff final_searches.sls managed_searches.sls

salt.modules.splunk_search.**update**(*name*, *profile='splunk'*, ***kwargs*)
Update a splunk search

CLI Example:
splunk_search.update `my search name' sharing=app

### 13.6.298 salt.modules.sqlite3

Support for SQLite3

salt.modules.sqlite3.**fetch**(*db=None*, *sql=None*)
Retrieve data from an sqlite3 db (returns all rows, be careful!)

CLI Example:

```
salt '*' sqlite3.fetch /root/test.db 'SELECT * FROM test;'
```

salt.modules.sqlite3.**indexes**(*db=None*)
Show all indices in the database, for people with poor spelling skills

CLI Example:

```
salt '*' sqlite3.indexes /root/test.db
```

salt.modules.sqlite3.**indices**(*db=None*)
Show all indices in the database

CLI Example:

```
salt '*' sqlite3.indices /root/test.db
```

salt.modules.sqlite3.**modify**(*db=None*, *sql=None*)
Issue an SQL query to sqlite3 (with no return data), usually used to modify the database in some way (insert, delete, create, etc)

CLI Example:

```
salt '*' sqlite3.modify /root/test.db 'CREATE TABLE test(id INT, testdata TEXT);'
```

salt.modules.sqlite3.**sqlite_version**()
Return version of sqlite

CLI Example:

```
salt '*' sqlite3.sqlite_version
```

salt.modules.sqlite3.**tables**(*db=None*)
Show all tables in the database

CLI Example:

```
salt '*' sqlite3.tables /root/test.db
```

salt.modules.sqlite3.**version**()
Return version of pysqlite

CLI Example:

```
salt '*' sqlite3.version
```

### 13.6.299 salt.modules.ssh

Manage client ssh components

**Note:** This module requires the use of MD5 hashing. Certain security audits may not permit the use of MD5. For those cases, this module should be disabled or removed.

salt.modules.ssh.**auth_keys**(*user=None*, *config='.ssh/authorized_keys'*)

Return the authorized keys for users

CLI Example:

```
salt '*' ssh.auth_keys
salt '*' ssh.auth_keys root
salt '*' ssh.auth_keys user=root
salt '*' ssh.auth_keys user="[user1, user2]"
```

salt.modules.ssh.**check_key**(*user*, *key*, *enc*, *comment*, *options*, *config='.ssh/authorized_keys'*, *cache_keys=None*)

Check to see if a key needs updating, returns ``update'', ``add'' or ``exists''

CLI Example:

```
salt '*' ssh.check_key <user> <key> <enc> <comment> <options>
```

salt.modules.ssh.**check_key_file**(*user*, *source*, *config='.ssh/authorized_keys'*, *saltenv='base'*, *env=None*)

Check a keyfile from a source destination against the local keys and return the keys to change

CLI Example:

```
salt '*' ssh.check_key_file root salt://ssh/keyfile
```

salt.modules.ssh.**check_known_host**(*user=None*, *hostname=None*, *key=None*, *fingerprint=None*, *config=None*, *port=None*)

Check the record in known_hosts file, either by its value or by fingerprint (it's enough to set up either key or fingerprint, you don't need to set up both).

If provided key or fingerprint doesn't match with stored value, return ``update'', if no value is found for a given host, return ``add'', otherwise return ``exists''.

If neither key, nor fingerprint is defined, then additional validation is not performed.

CLI Example:

```
salt '*' ssh.check_known_host <user> <hostname> key='AAAA...FAaQ=='
```

salt.modules.ssh.**get_known_host**(*user*, *hostname*, *config=None*, *port=None*)

Return information about known host from the configfile, if any. If there is no such key, return None.

CLI Example:

```
salt '*' ssh.get_known_host <user> <hostname>
```

salt.modules.ssh.**hash_known_hosts**(*user=None*, *config=None*)

Hash all the hostnames in the known hosts file.

New in version 2014.7.0.

**user** hash known hosts of this user

**config** path to known hosts file: can be absolute or relative to user's home directory

CLI Example:

```
salt '*' ssh.hash_known_hosts
```

salt.modules.ssh.**host_keys**(*keydir=None*, *private=True*)

Return the minion's host keys

CLI Example:

```
salt '*' ssh.host_keys
salt '*' ssh.host_keys keydir=/etc/ssh
salt '*' ssh.host_keys keydir=/etc/ssh private=False
```

salt.modules.ssh.**key_is_encrypted**(*key*)

New in version 2015.8.7.

Function to determine whether or not a private key is encrypted with a passphrase.

Checks key for a `Proc-Type` header with `ENCRYPTED` in the value. If found, returns `True`, otherwise returns `False`.

CLI Example:

```
salt '*' ssh.key_is_encrypted /root/id_rsa
```

salt.modules.ssh.**recv_known_host**(*hostname*, *enc=None*, *port=None*, *hash_hostname=True*, *hash_known_hosts=True*, *timeout=5*)

Retrieve information about host public key from remote server

**hostname** The name of the remote host (e.g. ``github.com'')

**enc** Defines what type of key is being used, can be ed25519, ecdsa ssh-rsa or ssh-dss

**port** optional parameter, denoting the port of the remote host, which will be used in case, if the public key will be requested from it. By default the port 22 is used.

**hash_hostname** [True] Hash all hostnames and addresses in the known hosts file.

Deprecated since version Carbon: Please use hash_known_hosts instead.

**hash_known_hosts** [True] Hash all hostnames and addresses in the known hosts file.

**timeout** [int] Set the timeout for connection attempts. If `timeout` seconds have elapsed since a connection was initiated to a host or since the last time anything was read from that host, then the connection is closed and the host in question considered unavailable. Default is 5 seconds.

New in version 2016.3.0.

CLI Example:

```
salt '*' ssh.recv_known_host <hostname> enc=<enc> port=<port>
```

salt.modules.ssh.**rm_auth_key**(*user*, *key*, *config='.ssh/authorized_keys'*)

Remove an authorized key from the specified user's authorized key file

CLI Example:

```
salt '*' ssh.rm_auth_key <user> <key>
```

salt.modules.ssh.**rm_auth_key_from_file**(*user*, *source*, *config='.ssh/authorized_keys'*, *saltenv='base'*, *env=None*)

Remove an authorized key from the specified user's authorized key file, using a file as source

CLI Example:

```
salt '*' ssh.rm_auth_key_from_file <user> salt://ssh_keys/<user>.id_rsa.pub
```

salt.modules.ssh.**rm_known_host**(*user=None*, *hostname=None*, *config=None*, *port=None*)
Remove all keys belonging to hostname from a known_hosts file.

CLI Example:

```
salt '*' ssh.rm_known_host <user> <hostname>
```

salt.modules.ssh.**set_auth_key**(*user*, *key*, *enc='ssh-rsa'*, *comment=''*, *options=None*, *config='.ssh/authorized_keys'*, *cache_keys=None*)
Add a key to the authorized_keys file. The ``key'' parameter must only be the string of text that is the encoded key. If the key begins with ``ssh-rsa'' or ends with user@host, remove those from the key before passing it to this function.

CLI Example:

```
salt '*' ssh.set_auth_key <user> '<key>' enc='dsa'
```

salt.modules.ssh.**set_auth_key_from_file**(*user*, *source*, *config='.ssh/authorized_keys'*, *saltenv='base'*, *env=None*)
Add a key to the authorized_keys file, using a file as the source.

CLI Example:

```
salt '*' ssh.set_auth_key_from_file <user> salt://ssh_keys/<user>.id_rsa.pub
```

salt.modules.ssh.**set_known_host**(*user=None*, *hostname=None*, *fingerprint=None*, *key=None*, *port=None*, *enc=None*, *hash_hostname=True*, *config=None*, *hash_known_hosts=True*, *timeout=5*)
Download SSH public key from remote host ``hostname'', optionally validate its fingerprint against ``fingerprint'' variable and save the record in the known_hosts file.

If such a record does already exists in there, do nothing.
**user** The user who owns the ssh authorized keys file to modify
**hostname** The name of the remote host (e.g. ``github.com'')
**fingerprint** The fingerprint of the key which must be presented in the known_hosts file (optional if key specified)
**key** The public key which must be presented in the known_hosts file (optional if fingerprint specified)
**port** optional parameter, denoting the port of the remote host, which will be used in case, if the public key will be requested from it. By default the port 22 is used.
**enc** Defines what type of key is being used, can be ed25519, ecdsa ssh-rsa or ssh-dss
**hash_hostname** [True] Hash all hostnames and addresses in the known hosts file.

Deprecated since version Carbon: Please use hash_known_hosts instead.
**config** The location of the authorized keys file relative to the user's home directory, defaults to ".ssh/known_hosts". If no user is specified, defaults to ``/etc/ssh/ssh_known_hosts''. If present, must be an absolute path when a user is not specified.
**hash_known_hosts** [True] Hash all hostnames and addresses in the known hosts file.
**timeout** [int] Set the timeout for connection attempts. If `timeout` seconds have elapsed since a connection was initiated to a host or since the last time anything was read from that host, then the connection is closed and the host in question considered unavailable. Default is 5 seconds.

New in version 2016.3.0.
CLI Example:

```
salt '*' ssh.set_known_host <user> fingerprint='xx:xx:..:xx' enc='ssh-rsa' config=
↪'.ssh/known_hosts'
```

salt.modules.ssh.**user_keys**(*user=None*, *pubfile=None*, *prvfile=None*)
Return the user's ssh keys on the minion

New in version 2014.7.0.

CLI Example:

```
salt '*' ssh.user_keys
salt '*' ssh.user_keys user=user1
salt '*' ssh.user_keys user=user1 pubfile=/home/user1/.ssh/id_rsa.pub prvfile=/
↪home/user1/.ssh/id_rsa
salt '*' ssh.user_keys user=user1 prvfile=False
salt '*' ssh.user_keys user="['user1','user2'] pubfile=id_rsa.pub prvfile=id_rsa
```

As you can see you can tell Salt not to read from the user's private (or public) key file by setting the file path to `False`. This can be useful to prevent Salt from publishing private data via Salt Mine or others.

### 13.6.300 salt.modules.ssh_package module

Service support for the REST example

`salt.modules.ssh_package.`**`install`**(*name=None, refresh=False, fromrepo=None, pkgs=None, sources=None, **kwargs*)

`salt.modules.ssh_package.`**`list_pkgs`**(*versions_as_list=False, **kwargs*)

`salt.modules.ssh_package.`**`remove`**(*name=None, pkgs=None, **kwargs*)

### 13.6.301 salt.modules.ssh_service module

Provide the service module for the proxy-minion SSH sample .. versionadded:: 2015.8.2

`salt.modules.ssh_service.`**`enabled`**(*name, sig=None*)
Only the `redbull' service is `enabled' in the test

`salt.modules.ssh_service.`**`get_all`**()
Return a list of all available services

CLI Example:

```
salt '*' service.get_all
```

`salt.modules.ssh_service.`**`list`**()
Return a list of all available services.

CLI Example:

```
salt '*' service.list
```

`salt.modules.ssh_service.`**`restart`**(*name, sig=None*)
Restart the specified service with rest_sample CLI Example:

```
salt '*' service.restart <service name>
```

`salt.modules.ssh_service.`**`running`**(*name, sig=None*)
Return whether this service is running.

`salt.modules.ssh_service.`**`start`**(*name, sig=None*)
Start the specified service on the rest_sample

CLI Example:

```
salt '*' service.start <service name>
```

salt.modules.ssh_service.**status**(*name*, *sig=None*)
Return the status for a service via rest_sample, returns a bool whether the service is running.

CLI Example:

```
salt '*' service.status <service name>
```

salt.modules.ssh_service.**stop**(*name*, *sig=None*)
Stop the specified service on the rest_sample

CLI Example:

```
salt '*' service.stop <service name>
```

### 13.6.302 salt.modules.state

Control the state system on the minion.

#### State Caching

When a highstate is called, the minion automatically caches a copy of the last high data. If you then run a highstate with cache=True it will use that cached highdata and won't hit the fileserver except for `salt://` links in the states themselves.

salt.modules.state.**apply**(*mods=None*, ***kwargs*)
New in version 2015.5.0.

This function will call *state.highstate* or *state.sls* based on the arguments passed to this function. It exists as a more intuitive way of applying states.

##### APPLYING ALL STATES CONFIGURED IN TOP.SLS (A.K.A. HIGHSTATE)

To apply all configured states, simply run `state.apply`:

```
salt '*' state.apply
```

The following additional arguments are also accepted when applying all states configured in top.sls:
**test** Run states in test-only (dry-run) mode
**pillar** Custom Pillar values, passed as a dictionary of key-value pairs

```
salt '*' state.apply test pillar='{"foo": "bar"}'
```

---

**Note:** Values passed this way will override Pillar values set via `pillar_roots` or an external Pillar source.

---

**queue** [False] Instead of failing immediately when another state run is in progress, queue the new state run to begin running once the other has finished.

This option starts a new thread for each queued state run, so use this option sparingly.

**localconfig** Optionally, instead of using the minion config, load minion opts from the file specified by this argument, and then merge them with the options from the minion config. This functionality allows for specific states to be run with their own custom minion configuration, including different pillars, file_roots, etc.

```
salt '*' state.apply localconfig=/path/to/minion.yml
```

### APPLYING INDIVIDUAL SLS FILES (A.K.A. STATE.SLS)

To apply individual SLS files, pass them as a comma-separated list:

```
# Run the states configured in salt://test.sls (or salt://test/init.sls)
salt '*' state.apply test
# Run the states configured in salt://test.sls (or salt://test/init.sls)
# and salt://pkgs.sls (or salt://pkgs/init.sls).
salt '*' state.apply test,pkgs
```

The following additional arguments are also accepted when applying individual SLS files:
**test** Run states in test-only (dry-run) mode
**pillar** Custom Pillar values, passed as a dictionary of key-value pairs

```
salt '*' state.apply test pillar='{"foo": "bar"}'
```

---

**Note:** Values passed this way will override Pillar values set via `pillar_roots` or an external Pillar source.

---

**queue** [False] Instead of failing immediately when another state run is in progress, queue the new state run to begin running once the other has finished.

This option starts a new thread for each queued state run, so use this option sparingly.
**concurrent** [False] Execute state runs concurrently instead of serially

**Warning:** This flag is potentially dangerous. It is designed for use when multiple state runs can safely be run at the same time. Do *not* use this flag for performance optimization.

**saltenv** [None] Specify a salt fileserver environment to be used when applying states

Changed in version 0.17.0: Argument name changed from `env` to `saltenv`

Changed in version 2014.7.0: If no saltenv is specified, the minion config will be checked for an `environment` parameter and if found, it will be used. If none is found, `base` will be used. In prior releases, the minion config was not checked and `base` would always be assumed when the saltenv was not explicitly set.
**pillarenv** Specify a Pillar environment to be used when applying states. By default, all Pillar environments will be merged together and used.
**localconfig** Optionally, instead of using the minion config, load minion opts from the file specified by this argument, and then merge them with the options from the minion config. This functionality allows for specific states to be run with their own custom minion configuration, including different pillars, file_roots, etc.

```
salt '*' state.apply test localconfig=/path/to/minion.yml
```

`salt.modules.state.`**`check_request`**(*name=None*)
New in version 2015.5.0.

Return the state request information, if any

CLI Example:

```
salt '*' state.check_request
```

salt.modules.state.**clear_cache**()

Clear out cached state files, forcing even cache runs to refresh the cache on the next state execution.

Remember that the state cache is completely disabled by default, this execution only applies if cache=True is used in states

CLI Example:

```
salt '*' state.clear_cache
```

salt.modules.state.**clear_request**(*name=None*)

New in version 2015.5.0.

Clear out the state execution request without executing it

CLI Example:

```
salt '*' state.clear_request
```

salt.modules.state.**disable**(*states*)

Disable state runs.

CLI Example:

```
salt '*' state.disable highstate

salt '*' state.disable highstate,test.succeed_without_changes
```

---

**Note:** To disable a state file from running provide the same name that would be passed in a state.sls call.

salt `*' state.disable bind.config

---

salt.modules.state.**enable**(*states*)

Enable state function or sls run

CLI Example:

```
salt '*' state.enable highstate

salt '*' state.enable test.succeed_without_changes
```

---

**Note:** To enable a state file from running provide the same name that would be passed in a state.sls call.

salt `*' state.disable bind.config

---

salt.modules.state.**event**(*tagmatch='*'*, *count=-1*, *quiet=False*, *sock_dir=None*, *pretty=False*, *node='minion'*)

Watch Salt's event bus and block until the given tag is matched

New in version 2016.3.0.

This is useful for utilizing Salt's event bus from shell scripts or for taking simple actions directly from the CLI.

Enable debug logging to see ignored events.

**Parameters**

- **tagmatch** -- the event is written to stdout for each tag that matches this pattern; uses the same matching semantics as Salt's Reactor.
- **count** -- this number is decremented for each event that matches the `tagmatch` parameter; pass `-1` to listen forever.
- **quiet** -- do not print to stdout; just block
- **sock_dir** -- path to the Salt master's event socket file.
- **pretty** -- Output the JSON all on a single line if `False` (useful for shell tools); pretty-print the JSON output if `True`.
- **node** -- Watch the minion-side or master-side event bus.

CLI Example:

```
salt-call --local state.event pretty=True
```

`salt.modules.state.`**`high`**(*data*, *test=None*, *queue=False*, ***kwargs*)

Execute the compound calls stored in a single set of high data

This function is mostly intended for testing the state system andis not likely to be needed in everyday usage.

CLI Example:

```
salt '*' state.high '{"vim": {"pkg": ["installed"]}}'
```

`salt.modules.state.`**`highstate`**(*test=None*, *queue=False*, ***kwargs*)

Retrieve the state data from the salt master for this minion and execute it

**test** Run states in test-only (dry-run) mode

**pillar** Custom Pillar values, passed as a dictionary of key-value pairs

```
salt '*' state.apply test pillar='{"foo": "bar"}'
```

---

**Note:** Values passed this way will override Pillar values set via `pillar_roots` or an external Pillar source.

---

Changed in version 2016.3.0: GPG-encrypted CLI Pillar data is now supported via the GPG renderer. See *here* for details.

**pillar_enc** Specify which renderer to use to decrypt encrypted data located within the `pillar` value. Currently, only `gpg` is supported.

New in version 2016.3.0.

**queue** [False] Instead of failing immediately when another state run is in progress, queue the new state run to begin running once the other has finished.

This option starts a new thread for each queued state run, so use this option sparingly.

**localconfig** Optionally, instead of using the minion config, load minion opts from the file specified by this argument, and then merge them with the options from the minion config. This functionality allows for specific states to be run with their own custom minion configuration, including different pillars, file_roots, etc.

**mock**: The mock option allows for the state run to execute without actually calling any states. This then returns a mocked return which will show the requisite ordering as well as fully validate the state run.

New in version 2015.8.4.

CLI Examples:

```
salt '*' state.highstate

salt '*' state.highstate whitelist=sls1_to_run,sls2_to_run
salt '*' state.highstate exclude=sls_to_exclude
salt '*' state.highstate exclude="[{'id': 'id_to_exclude'}, {'sls': 'sls_to_
↪exclude'}]"

salt '*' state.highstate pillar="{foo: 'Foo!', bar: 'Bar!'}"
```

salt.modules.state.**list_disabled**()

List the states which are currently disabled

CLI Example:

```
salt '*' state.list_disabled
```

salt.modules.state.**low**(*data*, *queue=False*, ***kwargs*)

Execute a single low data call

This function is mostly intended for testing the state system and is not likely to be needed in everyday usage.

CLI Example:

```
salt '*' state.low '{"state": "pkg", "fun": "installed", "name": "vi"}'
```

salt.modules.state.**pkg**(*pkg_path*, *pkg_sum*, *hash_type*, *test=None*, ***kwargs*)

Execute a packaged state run, the packaged state run will exist in a tarball available locally. This packaged state can be generated using salt-ssh.

CLI Example:

```
salt '*' state.pkg /tmp/state_pkg.tgz
```

salt.modules.state.**request**(*mods=None*, ***kwargs*)

New in version 2015.5.0.

Request that the local admin execute a state run via *salt-call state.run_request* All arguments match state.apply

CLI Example:

```
salt '*' state.request
salt '*' state.request test
salt '*' state.request test,pkgs
```

salt.modules.state.**run_request**(*name='default'*, ***kwargs*)

New in version 2015.5.0.

Execute the pending state request

CLI Example:

```
salt '*' state.run_request
```

salt.modules.state.**running**(*concurrent=False*)

Return a list of strings that contain state return data if a state function is already running. This function is used to prevent multiple state calls from being run at the same time.

CLI Example:

```
salt '*' state.running
```

salt.modules.state.**show_highstate**(*queue=False*, ***kwargs*)
Retrieve the highstate data from the salt master and display it

Custom Pillar data can be passed with the `pillar` kwarg.

CLI Example:

```
salt '*' state.show_highstate
```

salt.modules.state.**show_low_sls**(*mods*, *saltenv='base'*, *test=None*, *queue=False*, *env=None*, ***kwargs*)
Display the low data from a specific sls. The default environment is `base`, use `saltenv` (`env` in Salt 0.17.x and older) to specify a different environment.

CLI Example:

```
salt '*' state.show_low_sls foo
```

salt.modules.state.**show_lowstate**(*queue=False*, ***kwargs*)
List out the low data that will be applied to this minion

CLI Example:

```
salt '*' state.show_lowstate
```

salt.modules.state.**show_sls**(*mods*, *saltenv='base'*, *test=None*, *queue=False*, *env=None*, ***kwargs*)
Display the state data from a specific sls or list of sls files on the master. The default environment is `base`, use `saltenv` (`env` in Salt 0.17.x and older) to specify a different environment.

This function does not support topfiles. For `top.sls` please use `show_top` instead.

Custom Pillar data can be passed with the `pillar` kwarg.

CLI Example:

```
salt '*' state.show_sls core,edit.vim dev
```

salt.modules.state.**show_top**(*queue=False*, ***kwargs*)
Return the top data that the minion will use for a highstate

CLI Example:

```
salt '*' state.show_top
```

salt.modules.state.**single**(*fun*, *name*, *test=None*, *queue=False*, ***kwargs*)
Execute a single state function with the named kwargs, returns False if insufficient data is sent to the command

By default, the values of the kwargs will be parsed as YAML. So, you can specify lists values, or lists of single entry key-value maps, as you would in a YAML salt file. Alternatively, JSON format of keyword values is also supported.

CLI Example:

```
salt '*' state.single pkg.installed name=vim
```

salt.modules.state.**sls**(*mods*, *saltenv=None*, *test=None*, *exclude=None*, *queue=False*, *env=None*, *pillarenv=None*, ***kwargs*)
Execute the states in one or more SLS files

**test** Run states in test-only (dry-run) mode

**pillar** Custom Pillar values, passed as a dictionary of key-value pairs

```
salt '*' state.apply test pillar='{"foo": "bar"}'
```

---

**Note:** Values passed this way will override Pillar values set via `pillar_roots` or an external Pillar source.

---

Changed in version 2016.3.0: GPG-encrypted CLI Pillar data is now supported via the GPG renderer. See *here* for details.

**pillar_enc** Specify which renderer to use to decrypt encrypted data located within the `pillar` value. Currently, only `gpg` is supported.

New in version 2016.3.0.

**queue** [False] Instead of failing immediately when another state run is in progress, queue the new state run to begin running once the other has finished.

This option starts a new thread for each queued state run, so use this option sparingly.

**concurrent** [False] Execute state runs concurrently instead of serially

**Warning:** This flag is potentially dangerous. It is designed for use when multiple state runs can safely be run at the same time. Do *not* use this flag for performance optimization.

**saltenv** [None] Specify a salt fileserver environment to be used when applying states

Changed in version 0.17.0: Argument name changed from `env` to `saltenv`.

Changed in version 2014.7.0: If no saltenv is specified, the minion config will be checked for an `environment` parameter and if found, it will be used. If none is found, `base` will be used. In prior releases, the minion config was not checked and `base` would always be assumed when the saltenv was not explicitly set.

pillarenv

Specify a Pillar environment to be used when applying states. By default, all Pillar environments will be merged together and used.

localconfig

Optionally, instead of using the minion config, load minion opts from the file specified by this argument, and then merge them with the options from the minion config. This functionality allows for specific states to be run with their own custom minion configuration, including different pillars, file_roots, etc.

**mock**: The mock option allows for the state run to execute without actually calling any states. This then returns a mocked return which will show the requisite ordering as well as fully validate the state run.

New in version 2015.8.4.

CLI Example:

```
salt '*' state.sls core,edit.vim dev
salt '*' state.sls core exclude="[{'id': 'id_to_exclude'}, {'sls': 'sls_to_exclude
↪'}]"

salt '*' state.sls myslsfile pillar="{foo: 'Foo!', bar: 'Bar!'}"
```

`salt.modules.state.`**`sls_id`**(*id_*, *mods*, *saltenv='base'*, *test=None*, *queue=False*, ***kwargs*)

Call a single ID from the named module(s) and handle all requisites

New in version 2014.7.0.

CLI Example:

```
salt '*' state.sls_id apache http
```

salt.modules.state.**template**(*tem*, *queue=False*, ***kwargs*)
Execute the information stored in a template file on the minion.

This function does not ask a master for a SLS file to render but instead directly processes the file at the provided path on the minion.

CLI Example:

```
salt '*' state.template '<Path to template on the minion>'
```

salt.modules.state.**template_str**(*tem*, *queue=False*, ***kwargs*)
Execute the information stored in a string from an sls template

CLI Example:

```
salt '*' state.template_str '<Template String>'
```

salt.modules.state.**top**(*topfn*, *test=None*, *queue=False*, *saltenv=None*, ***kwargs*)
Execute a specific top file instead of the default. This is useful to apply configurations from a different environment (for example, dev or prod), without modifying the default top file.

CLI Example:

```
salt '*' state.top reverse_top.sls
salt '*' state.top prod_top.sls exclude=sls_to_exclude
salt '*' state.top dev_top.sls exclude="[{'id': 'id_to_exclude'}, {'sls': 'sls_to_
↪exclude'}]"
```

### 13.6.303 salt.modules.status

Module for returning various status data about a minion. These data can be useful for compiling into stats later.

salt.modules.status.**all_status**()
Return a composite of all status data and info for this minion. Warning: There is a LOT here!

CLI Example:

```
salt '*' status.all_status
```

salt.modules.status.**cpuinfo**()
..versionchanged:: 2016.3.2 Return the CPU info for this minion

CLI Example:

```
salt '*' status.cpuinfo
```

salt.modules.status.**cpustats**()
Return the CPU stats for this minion

CLI Example:

```
salt '*' status.cpustats
```

salt.modules.status.**custom**()

Return a custom composite of status data and info for this minion, based on the minion config file. An example config like might be:

```
status.cpustats.custom: [ 'cpu', 'ctxt', 'btime', 'processes' ]
```

Where status refers to status.py, cpustats is the function where we get our data, and custom is this function It is followed by a list of keys that we want returned.

This function is meant to replace all_status(), which returns anything and everything, which we probably don't want.

By default, nothing is returned. Warning: Depending on what you include, there can be a LOT here!

CLI Example:

```
salt '*' status.custom
```

salt.modules.status.**diskstats**()

..versionchanged:: 2016.3.2 Return the disk stats for this minion

CLI Example:

```
salt '*' status.diskstats
```

salt.modules.status.**diskusage**(**args*)

Return the disk usage for this minion

Usage:

```
salt '*' status.diskusage [paths and/or filesystem types]
```

CLI Example:

```
salt '*' status.diskusage         # usage for all filesystems
salt '*' status.diskusage / /tmp  # usage for / and /tmp
salt '*' status.diskusage ext?    # usage for ext[234] filesystems
salt '*' status.diskusage / ext?  # usage for / and all ext filesystems
```

salt.modules.status.**loadavg**()

Return the load averages for this minion

CLI Example:

```
salt '*' status.loadavg
```

salt.modules.status.**master**(*master=None*, *connected=True*)

New in version 2014.7.0.

Fire an event if the minion gets disconnected from its master. This function is meant to be run via a scheduled job from the minion. If master_ip is an FQDN/Hostname, it must be resolvable to a valid IPv4 address.

CLI Example:

```
salt '*' status.master
```

salt.modules.status.**meminfo**()

Return the memory info for this minion

CLI Example:

```
salt '*' status.meminfo
```

salt.modules.status.**netdev**()

..versionchanged:: 2016.3.2 Return the network device stats for this minion

CLI Example:

```
salt '*' status.netdev
```

salt.modules.status.**netstats**()

Return the network stats for this minion

CLI Example:

```
salt '*' status.netstats
```

salt.modules.status.**nproc**()

Return the number of processing units available on this system

CLI Example:

```
salt '*' status.nproc
```

salt.modules.status.**pid**(*sig*)

Return the PID or an empty string if the process is running or not. Pass a signature to use to find the process via ps. Note you can pass a Python-compatible regular expression to return all pids of processes matching the regexp.

CLI Example:

```
salt '*' status.pid <sig>
```

salt.modules.status.**ping_master**(*master*)

New in version 2016.3.0.

Sends ping request to the given master. Fires `__master_alive' event on success. Returns bool result.

CLI Example:

```
salt '*' status.ping_master localhost
```

salt.modules.status.**procs**()

Return the process data

CLI Example:

```
salt '*' status.procs
```

salt.modules.status.**time**(*format='%A, %d. %B %Y %I:%M%p'*)

New in version 2016.3.0.

Return the current time on the minion, formatted based on the format parameter.

Default date format: Monday, 27. July 2015 07:55AM

CLI Example:

```
salt '*' status.time

salt '*' status.time '%s'
```

salt.modules.status.**version**()
Return the system version for this minion

CLI Example:

```
salt '*' status.version
```

salt.modules.status.**vmstats**()
..versionchanged:: 2016.3.2 Return the virtual memory stats for this minion

CLI Example:

```
salt '*' status.vmstats
```

salt.modules.status.**w**()
Return a list of logged in users for this minion, using the w command

CLI Example:

```
salt '*' status.w
```

### 13.6.304 salt.modules.stormpath

Support for Stormpath

New in version 2015.8.0.

salt.modules.stormpath.**create_account**(*directory_id*, *email*, *password*, *givenName*, *surname*, ***kwargs*)
Create an account

CLI Examples:
salt myminion stormpath.create_account <directory_id> shemp@example.com letmein Shemp Howard

salt.modules.stormpath.**delete_account**(*account_id*)
Delete an account.

CLI Examples:
salt myminion stormpath.delete_account <account_id>

salt.modules.stormpath.**list_accounts**()
Show all accounts.

CLI Example:
salt myminion stormpath.list_accounts

salt.modules.stormpath.**list_directories**()
Show all directories.

CLI Example:
salt myminion stormpath.list_directories

salt.modules.stormpath.**show_account**(*account_id=None*, *email=None*, *directory_id=None*, *application_id=None*, *group_id=None*, ***kwargs*)
Show a specific account.

CLI Example:
salt myminion stormpath.show_account <account_id>

salt.modules.stormpath.**show_tenant**()
Get the tenant for the login being used.

salt.modules.stormpath.**update_account**(*account_id*, *key=None*, *value=None*, *items=None*)
Update one or more items for this account. Specifying an empty value will clear it for that account.

CLI Examples:
salt myminion stormpath.update_account <account_id> givenName shemp salt myminion stormpath.update_account <account_id> middleName `' salt myminion stormpath.update_account <account_id> items='{``givenName'': ``Shemp''} salt myminion stormpath.update_account <account_id> items='{``middlename'': ``''}

### 13.6.305 salt.modules.supervisord

Provide the service module for system supervisord or supervisord in a virtualenv

salt.modules.supervisord.**add**(*name*, *user=None*, *conf_file=None*, *bin_env=None*)
Activates any updates in config for process/group.
**user** user to run supervisorctl as
**conf_file** path to supervisord config file
**bin_env** path to supervisorctl bin or path to virtualenv with supervisor installed
CLI Example:

```
salt '*' supervisord.add <name>
```

salt.modules.supervisord.**custom**(*command*, *user=None*, *conf_file=None*, *bin_env=None*)
Run any custom supervisord command
**user** user to run supervisorctl as
**conf_file** path to supervisord config file
**bin_env** path to supervisorctl bin or path to virtualenv with supervisor installed
CLI Example:

```
salt '*' supervisord.custom "mstop '*gunicorn*'"
```

salt.modules.supervisord.**options**(*name*, *conf_file=None*)
New in version 2014.1.0.

Read the config file and return the config options for a given process
**name** Name of the configured process
**conf_file** path to supervisord config file
CLI Example:

```
salt '*' supervisord.options foo
```

salt.modules.supervisord.**remove**(*name*, *user=None*, *conf_file=None*, *bin_env=None*)
Removes process/group from active config
**user** user to run supervisorctl as
**conf_file** path to supervisord config file
**bin_env** path to supervisorctl bin or path to virtualenv with supervisor installed
CLI Example:

```
salt '*' supervisord.remove <name>
```

salt.modules.supervisord.**reread**(*user=None*, *conf_file=None*, *bin_env=None*)
Reload the daemon's configuration files
**user** user to run supervisorctl as

**conf_file** path to supervisord config file
**bin_env** path to supervisorctl bin or path to virtualenv with supervisor installed
CLI Example:

```
salt '*' supervisord.reread
```

salt.modules.supervisord.**restart**(*name='all'*, *user=None*, *conf_file=None*, *bin_env=None*)
Restart the named service. Process group names should not include a trailing asterisk.
**user** user to run supervisorctl as
**conf_file** path to supervisord config file
**bin_env** path to supervisorctl bin or path to virtualenv with supervisor installed
CLI Example:

```
salt '*' supervisord.restart <service>
salt '*' supervisord.restart <group>:
```

salt.modules.supervisord.**start**(*name='all'*, *user=None*, *conf_file=None*, *bin_env=None*)
Start the named service. Process group names should not include a trailing asterisk.
**user** user to run supervisorctl as
**conf_file** path to supervisord config file
**bin_env** path to supervisorctl bin or path to virtualenv with supervisor installed
CLI Example:

```
salt '*' supervisord.start <service>
salt '*' supervisord.start <group>:
```

salt.modules.supervisord.**status**(*name=None*, *user=None*, *conf_file=None*, *bin_env=None*)
List programs and its state
**user** user to run supervisorctl as
**conf_file** path to supervisord config file
**bin_env** path to supervisorctl bin or path to virtualenv with supervisor installed
CLI Example:

```
salt '*' supervisord.status
```

salt.modules.supervisord.**status_raw**(*name=None*, *user=None*, *conf_file=None*, *bin_env=None*)
Display the raw output of status
**user** user to run supervisorctl as
**conf_file** path to supervisord config file
**bin_env** path to supervisorctl bin or path to virtualenv with supervisor installed
CLI Example:

```
salt '*' supervisord.status_raw
```

salt.modules.supervisord.**stop**(*name='all'*, *user=None*, *conf_file=None*, *bin_env=None*)
Stop the named service. Process group names should not include a trailing asterisk.
**user** user to run supervisorctl as
**conf_file** path to supervisord config file
**bin_env** path to supervisorctl bin or path to virtualenv with supervisor installed
CLI Example:

```
salt '*' supervisord.stop <service>
salt '*' supervisord.stop <group>:
```

salt.modules.supervisord.**update**(*user=None*, *conf_file=None*, *bin_env=None*)
Reload config and add/remove as necessary

**user** user to run supervisorctl as
**conf_file** path to supervisord config file
**bin_env** path to supervisorctl bin or path to virtualenv with supervisor installed
CLI Example:

```
salt '*' supervisord.update
```

### 13.6.306 salt.modules.svn

Subversion SCM

salt.modules.svn.**add**(*cwd*, *targets*, *user=None*, *username=None*, *password=None*, **opts*)
Add files to be tracked by the Subversion working-copy checkout
**cwd** The path to the Subversion repository
**targets** [None] files and directories to pass to the command as arguments
**user** [None] Run svn as a user other than what the minion runs as
**username** [None] Connect to the Subversion server as another user
**password** [None] Connect to the Subversion server with this password

New in version 0.17.0.

CLI Example:

```
salt '*' svn.add /path/to/repo /path/to/new/file
```

salt.modules.svn.**checkout**(*cwd*, *remote*, *target=None*, *user=None*, *username=None*, *password=None*, **opts*)
Download a working copy of the remote Subversion repository directory or file
**cwd** The path to the Subversion repository
**remote** [None] URL to checkout
**target** [None] The name to give the file or directory working copy Default: svn uses the remote basename
**user** [None] Run svn as a user other than what the minion runs as
**username** [None] Connect to the Subversion server as another user
**password** [None] Connect to the Subversion server with this password

New in version 0.17.0.

CLI Example:

```
salt '*' svn.checkout /path/to/repo svn://remote/repo
```

salt.modules.svn.**commit**(*cwd*, *targets=None*, *msg=None*, *user=None*, *username=None*, *password=None*, **opts*)
Commit the current directory, files, or directories to the remote Subversion repository
**cwd** The path to the Subversion repository
**targets** [None] files and directories to pass to the command as arguments Default: svn uses `.'
**msg** [None] Message to attach to the commit log
**user** [None] Run svn as a user other than what the minion runs as
**username** [None] Connect to the Subversion server as another user
**password** [None] Connect to the Subversion server with this password

New in version 0.17.0.

CLI Example:

```
salt '*' svn.commit /path/to/repo
```

salt.modules.svn.**diff**(*cwd*, *targets=None*, *user=None*, *username=None*, *password=None*, **opts*)
Return the diff of the current directory, files, or directories from the remote Subversion repository

**cwd** The path to the Subversion repository
**targets** [None] files and directories to pass to the command as arguments Default: svn uses `.'
**user** [None] Run svn as a user other than what the minion runs as
**username** [None] Connect to the Subversion server as another user
**password** [None] Connect to the Subversion server with this password

New in version 0.17.0.

CLI Example:

```
salt '*' svn.diff /path/to/repo
```

salt.modules.svn.**export**(*cwd*, *remote*, *target=None*, *user=None*, *username=None*, *password=None*, *revision='HEAD'*, **opts*)

Create an unversioned copy of a tree.
**cwd** The path to the Subversion repository
**remote** [None] URL and path to file or directory checkout
**target** [None] The name to give the file or directory working copy Default: svn uses the remote basename
**user** [None] Run svn as a user other than what the minion runs as
**username** [None] Connect to the Subversion server as another user
**password** [None] Connect to the Subversion server with this password

New in version 0.17.0.

CLI Example:

```
salt '*' svn.export /path/to/repo svn://remote/repo
```

salt.modules.svn.**info**(*cwd*, *targets=None*, *user=None*, *username=None*, *password=None*, *fmt='str'*)

Display the Subversion information from the checkout.
**cwd** The path to the Subversion repository
**targets** [None] files, directories, and URLs to pass to the command as arguments svn uses `.' by default
**user** [None] Run svn as a user other than what the minion runs as
**username** [None] Connect to the Subversion server as another user
**password** [None] Connect to the Subversion server with this password

New in version 0.17.0.

**fmt** [str] How to fmt the output from info. (str, xml, list, dict)
CLI Example:

```
salt '*' svn.info /path/to/svn/repo
```

salt.modules.svn.**remove**(*cwd*, *targets*, *msg=None*, *user=None*, *username=None*, *password=None*, **opts*)

Remove files and directories from the Subversion repository
**cwd** The path to the Subversion repository
**targets** [None] files, directories, and URLs to pass to the command as arguments
**msg** [None] Message to attach to the commit log
**user** [None] Run svn as a user other than what the minion runs as
**username** [None] Connect to the Subversion server as another user
**password** [None] Connect to the Subversion server with this password

New in version 0.17.0.

CLI Example:

```
salt '*' svn.remove /path/to/repo /path/to/repo/remove
```

salt.modules.svn.**status**(*cwd*, *targets=None*, *user=None*, *username=None*, *password=None*, **opts*)

Display the status of the current directory, files, or directories in the Subversion repository

**cwd** The path to the Subversion repository
**targets** [None] files, directories, and URLs to pass to the command as arguments Default: svn uses `.'
**user** [None] Run svn as a user other than what the minion runs as
**username** [None] Connect to the Subversion server as another user
**password** [None] Connect to the Subversion server with this password

New in version 0.17.0.

CLI Example:

```
salt '*' svn.status /path/to/repo
```

salt.modules.svn.**switch**(*cwd*, *remote*, *target=None*, *user=None*, *username=None*, *password=None*, **opts*)

New in version 2014.1.0.

Switch a working copy of a remote Subversion repository directory
**cwd** The path to the Subversion repository
**remote** [None] URL to switch
**target** [None] The name to give the file or directory working copy Default: svn uses the remote basename
**user** [None] Run svn as a user other than what the minion runs as
**username** [None] Connect to the Subversion server as another user
**password** [None] Connect to the Subversion server with this password
CLI Example:

```
salt '*' svn.switch /path/to/repo svn://remote/repo
```

salt.modules.svn.**update**(*cwd*, *targets=None*, *user=None*, *username=None*, *password=None*, **opts*)

Update the current directory, files, or directories from the remote Subversion repository
**cwd** The path to the Subversion repository
**targets** [None] files and directories to pass to the command as arguments Default: svn uses `.'
**user** [None] Run svn as a user other than what the minion runs as
**password** [None] Connect to the Subversion server with this password

New in version 0.17.0.

**username** [None] Connect to the Subversion server as another user
CLI Example:

```
salt '*' svn.update /path/to/repo
```

### 13.6.307 salt.modules.swift

Module for handling OpenStack Swift calls Author: Anthony Stanton <anthony.stanton@gmail.com>

Inspired by the S3 and Nova modules

**depends**

- swiftclient Python module

**configuration** This module is not usable until the user, tenant, auth URL, and password or auth_key are specified either in a pillar or in the minion's config file. For example:

```
keystone.user: admin
keystone.tenant: admin
keystone.auth_url: 'http://127.0.0.1:5000/v2.0/'
keystone.password: verybadpass
# or
keystone.auth_key: 203802934809284k2j34lkj2l3kj43k
```

If configuration for multiple OpenStack accounts is required, they can be set up as different configuration profiles: For example:

```
openstack1:
  keystone.user: admin
  keystone.tenant: admin
  keystone.auth_url: 'http://127.0.0.1:5000/v2.0/'
  keystone.password: verybadpass
  # or
  keystone.auth_key: 203802934809284k2j34lkj2l3kj43k

openstack2:
  keystone.user: admin
  keystone.tenant: admin
  keystone.auth_url: 'http://127.0.0.2:5000/v2.0/'
  keystone.password: verybadpass
  # or
  keystone.auth_key: 303802934809284k2j34lkj2l3kj43k
```

With this configuration in place, any of the swift functions can make use of a configuration profile by declaring it explicitly. For example:

```
salt '*' swift.get mycontainer myfile /tmp/file profile=openstack1
```

NOTE: For Rackspace cloud files setting keystone.auth_version = 1 is recommended.

`salt.modules.swift.`**`delete`**(*cont*, *path=None*, *profile=None*)

Delete a container, or delete an object from a container.

CLI Example to delete a container:

```
salt myminion swift.delete mycontainer
```

CLI Example to delete an object from a container:

```
salt myminion swift.delete mycontainer remoteobject
```

`salt.modules.swift.`**`get`**(*cont=None*, *path=None*, *local_file=None*, *return_bin=False*, *profile=None*)

List the contents of a container, or return an object from a container. Set return_bin to True in order to retrieve an object wholesale. Otherwise, Salt will attempt to parse an XML response.

CLI Example to list containers:

```
salt myminion swift.get
```

CLI Example to list the contents of a container:

```
salt myminion swift.get mycontainer
```

CLI Example to return the binary contents of an object:

```
salt myminion swift.get mycontainer myfile.png return_bin=True
```

CLI Example to save the binary contents of an object to a local file:

```
salt myminion swift.get mycontainer myfile.png local_file=/tmp/myfile.png
```

salt.modules.swift.**head**()

salt.modules.swift.**put**(*cont*, *path=None*, *local_file=None*, *profile=None*)
Create a new container, or upload an object to a container.

CLI Example to create a container:

```
salt myminion swift.put mycontainer
```

CLI Example to upload an object to a container:

```
salt myminion swift.put mycontainer remotepath local_file=/path/to/file
```

### 13.6.308 salt.modules.sysbench

The `sysbench' module is used to analyze the performance of the minions, right from the master! It measures various system parameters such as CPU, Memory, File I/O, Threads and Mutex.

salt.modules.sysbench.**cpu**()
Tests for the CPU performance of minions.

CLI Examples:

```
salt '*' sysbench.cpu
```

salt.modules.sysbench.**fileio**()
This tests for the file read and write operations Various modes of operations are
- •sequential write
- •sequential rewrite
- •sequential read
- •random read
- •random write
- •random read and write

The test works with 32 files with each file being 1Gb in size The test consumes a lot of time. Be patient!

CLI Examples:

```
salt '*' sysbench.fileio
```

salt.modules.sysbench.**memory**()
This tests the memory for read and write operations.

CLI Examples:

```
salt '*' sysbench.memory
```

salt.modules.sysbench.**mutex**()
Tests the implementation of mutex

CLI Examples:

```
salt '*' sysbench.mutex
```

salt.modules.sysbench.**ping**()

salt.modules.sysbench.**threads**()
This tests the performance of the processor's scheduler

CLI Example:

```
salt '*' sysbench.threads
```

### 13.6.309 salt.modules.sysfs module

Module for interfacing with SysFS

**See also**:

https://www.kernel.org/doc/Documentation/filesystems/sysfs.txt

New in version 2016.3.0.

salt.modules.sysfs.**attr**(*key*, *value=None*)

Access/write a SysFS attribute. If the attribute is a symlink, it's destination is returned

**Returns** value or bool

**CLI example**:

```
salt '*' sysfs.attr block/sda/queue/logical_block_size
```

salt.modules.sysfs.**interfaces**(*root*)

Generate a dictionary with all available interfaces relative to root. Symlinks are not followed.

**CLI example**:

```
salt '*' sysfs.interfaces block/bcache0/bcache
```

**Output example**:

```
{
   "r": [
     "state",
     "partial_stripes_expensive",
     "writeback_rate_debug",
     "stripe_size",
     "dirty_data",
     "stats_total/cache_hits",
     "stats_total/cache_bypass_misses",
     "stats_total/bypassed",
     "stats_total/cache_readaheads",
     "stats_total/cache_hit_ratio",
     "stats_total/cache_miss_collisions",
     "stats_total/cache_misses",
     "stats_total/cache_bypass_hits",
   ],
   "rw": [
     "writeback_rate",
     "writeback_rate_update_seconds",
     "cache_mode",
     "writeback_delay",
     "label",
     "writeback_running",
     "writeback_metadata",
     "running",
     "writeback_rate_p_term_inverse",
     "sequential_cutoff",
     "writeback_percent",
     "writeback_rate_d_term",
     "readahead"
```

```
    ],
    "w": [
      "stop",
      "clear_stats",
      "attach",
      "detach"
    ]
}
```

**Note**:

- `r' interfaces are read-only
- `w' interfaces are write-only (e.g. actions)
- `rw' are interfaces that can both be read or written

salt.modules.sysfs.**read**(*key*, *root=''*)

Read from SysFS

**Parameters** **key** -- file or path in SysFS; if key is a list then root will be prefixed on each key

**Returns** the full (tree of) SysFS attributes under key

**CLI example**:

```
salt '*' sysfs.read class/net/em1/statistics
```

salt.modules.sysfs.**target**(*key*, *full=True*)

Return the basename of a SysFS key path

**Parameters**

- **key** -- the location to resolve within SysFS
- **full** -- full path instead of basename

**Returns** fullpath or basename of path

**CLI example**:

```
salt '*' sysfs.read class/ttyS0
```

salt.modules.sysfs.**write**(*key*, *value*)

Write a SysFS attribute/action

**CLI example**:

```
salt '*' sysfs.write devices/system/cpu/cpu0/cpufreq/scaling_governor
 ↪'performance'
```

### 13.6.310 salt.modules.syslog_ng

Module for getting information about syslog-ng

**maintainer** Tibor Benke <btibi@sch.bme.hu>

**maturity** new

**depends** cmd

**platform** all

This module is capable of managing syslog-ng instances which were installed via a package manager or from source. Users can use a directory as a parameter in the case of most functions, which contains the syslog-ng and syslog-ng-ctl binaries.

Syslog-ng can be installed via a package manager or from source. In the latter case, the syslog-ng and syslog-ng-ctl binaries are not available from the PATH, so users should set location of the sbin directory with *syslog_ng.set_binary_path*.

Similarly, users can specify the location of the configuration file with *syslog_ng.set_config_file*, then the module will use it. If it is not set, syslog-ng uses the default configuration file.

class salt.modules.syslog_ng.**Argument**(*value=''*)
A TypedParameterValue has one or more Arguments. For example this can be the value of key_file.

Does not need examples.

**build**()

class salt.modules.syslog_ng.**Buildable**(*iterable*, *join_body_on=''*, *append_extra_newline=True*)
Base class of most classes, which have a build method.

It contains a common build function.

Does not need examples.

**build**()
Builds the textual representation of the whole configuration object with it's children.

**build_body**()
Builds the body of a syslog-ng configuration object.

**build_header**()
Builds the header of a syslog-ng configuration object.

**build_tail**()
Builds the tail of a syslog-ng configuration object.

class salt.modules.syslog_ng.**GivenStatement**(*value*, *add_newline=True*)
**This statement returns a string without modification. It can be used to** use existing configuration snippets.
Does not need examples.

**build**()

class salt.modules.syslog_ng.**NamedStatement**(*type*, *id=''*, *options=None*)
It represents a configuration statement, which has a name, e.g. a source.

Does not need examples.

class salt.modules.syslog_ng.**Option**(*type=''*, *params=None*)
A Statement class contains Option instances.

An instance of Option can represent a file(), tcp(), udp(), etc. option.

Does not need examples.

**add_parameter**(*param*)

**build**()

class salt.modules.syslog_ng.**Parameter**(*iterable=None*, *join_body_on=''*)
An Option has one or more Parameter instances.

Does not need examples.

class salt.modules.syslog_ng.**ParameterValue**(*iterable=None*, *join_body_on='`*)
A TypedParameter can have one or more values.

Does not need examples.

class salt.modules.syslog_ng.**SimpleParameter**(*value='`*)
A Parameter is a SimpleParameter, if it's just a simple type, like a string.

For example:

```
destination d_file {
    file(
        '/var/log/messages'
    );
};
```

`/var/log/messages` is a SimpleParameter.

Does not need examples.

**build**()

class salt.modules.syslog_ng.**SimpleParameterValue**(*value='`*)
A ParameterValuem which holds a simple type, like a string or a number.

For example in ip(127.0.0.1) 127.0.0.1 is a SimpleParameterValue.

Does not need examples.

**build**()

class salt.modules.syslog_ng.**Statement**(*type*, *id='`*, *options=None*, *has_name=True*)
It represents a syslog-ng configuration statement, e.g. source, destination, filter.

Does not need examples.

**add_child**(*option*)

**build_header**()

**build_tail**()

exception salt.modules.syslog_ng.**SyslogNgError**

class salt.modules.syslog_ng.**TypedParameter**(*type='`*, *values=None*)
A Parameter, which has a type:

```
destination d_tcp {
    tcp(
        ip(127.0.0.1)
    );
};
```

`ip(127.0.0.1)` is a TypedParameter.

Does not need examples.

**add_value**(*value*)

**build**()

class salt.modules.syslog_ng.**TypedParameterValue**(*type='`*, *arguments=None*)
We have to go deeper...

A TypedParameter can have a `parameter', which also have a type. For example key_file and cert_file:

```
source demo_tls_source {
    tcp(
        ip(0.0.0.0)
        port(1999)
        tls(
            key_file('/opt/syslog-ng/etc/syslog-ng/key.d/syslog-ng.key')
            cert_file('/opt/syslog-ng/etc/syslog-ng/cert.d/syslog-ng.cert')
        )
    );
};
```

Does not need examples.

**add_argument**(*arg*)

**build**()

class salt.modules.syslog_ng.**UnnamedStatement**(*type*, *options=None*)
It represents a configuration statement, which doesn't have a name, e.g. a log path.

Does not need examples.

salt.modules.syslog_ng.**config**(*name*, *config*, *write=True*)
Builds syslog-ng configuration. This function is intended to be used from the state module, users should not use it directly!

name : the id of the Salt document or it is the format of <statement name>.id config : the parsed YAML code write : if True, it writes the config into the configuration file, otherwise just returns it

CLI Example:

```
salt '*' syslog_ng.config name='s_local' config="[{'tcp':[{'ip':'127.0.0.1'},{
 ↪'port':1233}]}]"
```

salt.modules.syslog_ng.**config_test**(*syslog_ng_sbin_dir=None*, *cfgfile=None*)
Runs syntax check against cfgfile. If syslog_ng_sbin_dir is specified, it is added to the PATH during the test.

CLI Example:

```
salt '*' syslog_ng.config_test
salt '*' syslog_ng.config_test /home/user/install/syslog-ng/sbin
salt '*' syslog_ng.config_test /home/user/install/syslog-ng/sbin /etc/syslog-ng/
 ↪syslog-ng.conf
```

salt.modules.syslog_ng.**get_config_file**()
Returns the configuration directory, which contains syslog-ng.conf.

CLI Example:

```
salt '*' syslog_ng.get_config_file
```

salt.modules.syslog_ng.**modules**(*syslog_ng_sbin_dir=None*)
Returns the available modules. If syslog_ng_sbin_dir is specified, it is added to the PATH during the execution of the command syslog-ng.

CLI Example:

```
salt '*' syslog_ng.modules
salt '*' syslog_ng.modules /home/user/install/syslog-ng/sbin
```

salt.modules.syslog_ng.**reload**(*name*)

Reloads syslog-ng. This function is intended to be used from states.

If *syslog_ng.set_config_file*, is called before, this function will use the set binary path.

CLI Example:

```
salt '*' syslog_ng.reload
```

salt.modules.syslog_ng.**set_binary_path**(*name*)

Sets the path, where the syslog-ng binary can be found. This function is intended to be used from states.

If syslog-ng is installed via a package manager, users don't need to use this function.

CLI Example:

```
salt '*' syslog_ng.set_binary_path name=/usr/sbin
```

salt.modules.syslog_ng.**set_config_file**(*name*)

Sets the configuration's name. This function is intended to be used from states.

CLI Example:

```
salt '*' syslog_ng.set_config_file name=/etc/syslog-ng
```

salt.modules.syslog_ng.**set_parameters**(*version=None*, *binary_path=None*, *config_file=None*, **args*, ***kwargs*)

Sets variables.

CLI Example:

```
salt '*' syslog_ng.set_parameters version='3.6'
salt '*' syslog_ng.set_parameters  binary_path=/home/user/install/syslog-ng/sbin
 ↪config_file=/home/user/install/syslog-ng/etc/syslog-ng.conf
```

salt.modules.syslog_ng.**start**(*name=None*, *user=None*, *group=None*, *chroot=None*, *caps=None*, *no_caps=False*, *pidfile=None*, *enable_core=False*, *fd_limit=None*, *verbose=False*, *debug=False*, *trace=False*, *yydebug=False*, *persist_file=None*, *control=None*, *worker_threads=None*)

Ensures, that syslog-ng is started via the given parameters. This function is intended to be used from the state module.

Users shouldn't use this function, if the service module is available on their system. If *syslog_ng.set_config_file*, is called before, this function will use the set binary path.

CLI Example:

```
salt '*' syslog_ng.start
```

salt.modules.syslog_ng.**stats**(*syslog_ng_sbin_dir=None*)

Returns statistics from the running syslog-ng instance. If syslog_ng_sbin_dir is specified, it is added to the PATH during the execution of the command syslog-ng-ctl.

CLI Example:

```
salt '*' syslog_ng.stats
salt '*' syslog_ng.stats /home/user/install/syslog-ng/sbin
```

salt.modules.syslog_ng.**stop**(*name=None*)

Kills syslog-ng. This function is intended to be used from the state module.

Users shouldn't use this function, if the service module is available on their system. If *syslog_ng.set_config_file* is called before, this function will use the set binary path.

CLI Example:

```
salt '*' syslog_ng.stop
```

salt.modules.syslog_ng.**version**(*syslog_ng_sbin_dir=None*)

Returns the version of the installed syslog-ng. If syslog_ng_sbin_dir is specified, it is added to the PATH during the execution of the command syslog-ng.

CLI Example:

```
salt '*' syslog_ng.version
salt '*' syslog_ng.version /home/user/install/syslog-ng/sbin
```

salt.modules.syslog_ng.**write_config**(*config*, *newlines=2*)

Writes the given parameter config into the config file. This function is intended to be used from states.

If *syslog_ng.set_config_file*, is called before, this function will use the set config file.

CLI Example:

```
salt '*' syslog_ng.write_config config='# comment'
```

salt.modules.syslog_ng.**write_version**(*name*)

Removes the previous configuration file, then creates a new one and writes the name line. This function is intended to be used from states.

If *syslog_ng.set_config_file*, is called before, this function will use the set config file.

CLI Example:

```
salt '*' syslog_ng.write_version name="3.6"
```

### 13.6.311 salt.modules.sysmod

The sys module provides information about the available functions on the minion

salt.modules.sysmod.**argspec**(*module=''*)

Return the argument specification of functions in Salt execution modules.

CLI Example:

```
salt '*' sys.argspec pkg.install
salt '*' sys.argspec sys
salt '*' sys.argspec
```

Module names can be specified as globs.

New in version 2015.5.0.

```
salt '*' sys.argspec 'pkg.*'
```

salt.modules.sysmod.**doc**(**args*)

Return the docstrings for all modules. Optionally, specify a module or a function to narrow the selection.

The strings are aggregated into a single document on the master for easy reading.

Multiple modules/functions can be specified.

CLI Example:

```
salt '*' sys.doc
salt '*' sys.doc sys
salt '*' sys.doc sys.doc
salt '*' sys.doc network.traceroute user.info
```

Modules can be specified as globs.

New in version 2015.5.0.

```
salt '*' sys.doc 'sys.*'
salt '*' sys.doc 'sys.list_*'
```

salt.modules.sysmod.**list_functions**(**args*, ***kwargs*)

List the functions for all modules. Optionally, specify a module or modules from which to list.

CLI Example:

```
salt '*' sys.list_functions
salt '*' sys.list_functions sys
salt '*' sys.list_functions sys user
```

Function names can be specified as globs.

New in version 2015.5.0.

```
salt '*' sys.list_functions 'sys.list_*'
```

salt.modules.sysmod.**list_modules**(**args*)

List the modules loaded on the minion

New in version 2015.5.0.

CLI Example:

```
salt '*' sys.list_modules
```

Module names can be specified as globs.

```
salt '*' sys.list_modules 's*'
```

salt.modules.sysmod.**list_renderers**(**args*)

List the renderers loaded on the minion

New in version 2015.5.0.

CLI Example:

```
salt '*' sys.list_renderers
```

Render names can be specified as globs.

```
salt '*' sys.list_renderers 'yaml*'
```

salt.modules.sysmod.**list_returner_functions**(**args*, ***kwargs*)

List the functions for all returner modules. Optionally, specify a returner module or modules from which to list.

New in version 2014.7.0.

CLI Example:

```
salt '*' sys.list_returner_functions
salt '*' sys.list_returner_functions mysql
salt '*' sys.list_returner_functions mysql etcd
```

Returner names can be specified as globs.

New in version 2015.5.0.

```
salt '*' sys.list_returner_functions 'sqlite3.get_*'
```

salt.modules.sysmod.**list_returners**(**args*)

List the returners loaded on the minion

New in version 2014.7.0.

CLI Example:

```
salt '*' sys.list_returners
```

Returner names can be specified as globs.

New in version 2015.5.0.

```
salt '*' sys.list_returners 's*'
```

salt.modules.sysmod.**list_runner_functions**(**args*, ***kwargs*)

List the functions for all runner modules. Optionally, specify a runner module or modules from which to list.

New in version 2014.7.0.

CLI Example:

```
salt '*' sys.list_runner_functions
salt '*' sys.list_runner_functions state
salt '*' sys.list_runner_functions state virt
```

Runner function names can be specified as globs.

New in version 2015.5.0.

```
salt '*' sys.list_runner_functions 'state.*' 'virt.*'
```

salt.modules.sysmod.**list_runners**(**args*)

List the runners loaded on the minion

New in version 2014.7.0.

CLI Example:

```
salt '*' sys.list_runners
```

Runner names can be specified as globs.

New in version 2015.5.0.

```
salt '*' sys.list_runners 'm*'
```

salt.modules.sysmod.**list_state_functions**(**args*, ***kwargs*)

List the functions for all state modules. Optionally, specify a state module or modules from which to list.

New in version 2014.7.0.

CLI Example:

```
salt '*' sys.list_state_functions
salt '*' sys.list_state_functions file
salt '*' sys.list_state_functions pkg user
```

State function names can be specified as globs.

New in version 2015.5.0.

```
salt '*' sys.list_state_functions 'file.*'
salt '*' sys.list_state_functions 'file.s*'
```

salt.modules.sysmod.**list_state_modules**(**args*)

List the modules loaded on the minion

New in version 2014.7.0.

CLI Example:

```
salt '*' sys.list_state_modules
```

State module names can be specified as globs.

New in version 2015.5.0.

```
salt '*' sys.list_state_modules 'mysql_*'
```

salt.modules.sysmod.**reload_modules**()

Tell the minion to reload the execution modules

CLI Example:

```
salt '*' sys.reload_modules
```

salt.modules.sysmod.**renderer_doc**(**args*)

Return the docstrings for all renderers. Optionally, specify a renderer or a function to narrow the selection.

The strings are aggregated into a single document on the master for easy reading.

Multiple renderers can be specified.

New in version 2015.5.0.

CLI Example:

```
salt '*' sys.renderer_doc
salt '*' sys.renderer_doc cheetah
salt '*' sys.renderer_doc jinja json
```

Renderer names can be specified as globs.

```
salt '*' sys.renderer_doc 'c*' 'j*'
```

salt.modules.sysmod.**returner_argspec**(*module=''*)

Return the argument specification of functions in Salt returner modules.

New in version 2015.5.0.

CLI Example:

```
salt '*' sys.returner_argspec xmpp
salt '*' sys.returner_argspec xmpp smtp
salt '*' sys.returner_argspec
```

Returner names can be specified as globs.

```
salt '*' sys.returner_argspec 'sqlite3.*'
```

salt.modules.sysmod.**returner_doc**(**args*)

Return the docstrings for all returners. Optionally, specify a returner or a function to narrow the selection.

The strings are aggregated into a single document on the master for easy reading.

Multiple returners/functions can be specified.

New in version 2014.7.0.

CLI Example:

```
salt '*' sys.returner_doc
salt '*' sys.returner_doc sqlite3
salt '*' sys.returner_doc sqlite3.get_fun
salt '*' sys.returner_doc sqlite3.get_fun etcd.get_fun
```

Returner names can be specified as globs.

New in version 2015.5.0.

```
salt '*' sys.returner_doc 'sqlite3.get_*'
```

salt.modules.sysmod.**runner_argspec**(*module=''*)

Return the argument specification of functions in Salt runner modules.

New in version 2015.5.0.

CLI Example:

```
salt '*' sys.runner_argspec state
salt '*' sys.runner_argspec http
salt '*' sys.runner_argspec
```

Runner names can be specified as globs.

```
salt '*' sys.runner_argspec 'winrepo.*'
```

salt.modules.sysmod.**runner_doc**(**args*)

Return the docstrings for all runners. Optionally, specify a runner or a function to narrow the selection.

The strings are aggregated into a single document on the master for easy reading.

Multiple runners/functions can be specified.

New in version 2014.7.0.

CLI Example:

```
salt '*' sys.runner_doc
salt '*' sys.runner_doc cache
salt '*' sys.runner_doc cache.grains
salt '*' sys.runner_doc cache.grains mine.get
```

Runner names can be specified as globs.

New in version 2015.5.0.

```
salt '*' sys.runner_doc 'cache.clear_*'
```

salt.modules.sysmod.**state_argspec**(*module=''*)
Return the argument specification of functions in Salt state modules.

New in version 2015.5.0.

CLI Example:

```
salt '*' sys.state_argspec pkg.installed
salt '*' sys.state_argspec file
salt '*' sys.state_argspec
```

State names can be specified as globs.

```
salt '*' sys.state_argspec 'pkg.*'
```

salt.modules.sysmod.**state_doc**(**args*)
Return the docstrings for all states. Optionally, specify a state or a function to narrow the selection.

The strings are aggregated into a single document on the master for easy reading.

Multiple states/functions can be specified.

New in version 2014.7.0.

CLI Example:

```
salt '*' sys.state_doc
salt '*' sys.state_doc service
salt '*' sys.state_doc service.running
salt '*' sys.state_doc service.running ipables.append
```

State names can be specified as globs.

New in version 2015.5.0.

```
salt '*' sys.state_doc 'service.*' 'iptables.*'
```

salt.modules.sysmod.**state_schema**(*module=''*)
Return a JSON Schema for the given state function(s)

New in version 2016.3.0.

CLI Example:

```
salt '*' sys.state_schema
salt '*' sys.state_schema pkg.installed
```

### 13.6.312 salt.modules.sysrc

sysrc module for FreeBSD

salt.modules.sysrc.**get**(***kwargs*)
Return system rc configuration variables

CLI Example:

```
salt '*' sysrc.get includeDefaults=True
```

salt.modules.sysrc.**remove**(*name*, ***kwargs*)
Remove system rc configuration variables

CLI Example:

```
salt '*' sysrc.remove name=sshd_enable
```

salt.modules.sysrc.**set**(*name*, *value*, ***kwargs*)
Set system rc configuration variables

CLI Example:

```
salt '*' sysrc.set name=sshd_flags value="-p 2222"
```

### 13.6.313 salt.modules.system

Support for reboot, shutdown, etc

salt.modules.system.**halt**()
Halt a running system

CLI Example:

```
salt '*' system.halt
```

salt.modules.system.**init**(*runlevel*)
Change the system runlevel on sysV compatible systems

CLI Example:

```
salt '*' system.init 3
```

salt.modules.system.**poweroff**()
Poweroff a running system

CLI Example:

```
salt '*' system.poweroff
```

salt.modules.system.**reboot**(*at_time=None*)
Reboot the system
**at_time** The wait time in minutes before the system will be rebooted.
CLI Example:

```
salt '*' system.reboot
```

salt.modules.system.**shutdown**(*at_time=None*)
Shutdown a running system
**at_time** The wait time in minutes before the system will be shutdown.
CLI Example:

```
salt '*' system.shutdown 5
```

### 13.6.314 salt.modules.system_profiler

System Profiler Module

Interface with Mac OSX's command-line System Profiler utility to get information about package receipts and installed applications.

New in version 2015.5.0.

`salt.modules.system_profiler.`**`applications`**`()`

Return the results of a call to `system_profiler -xml -detail full SPApplicationsDataType` as a dictionary. Top-level keys of the dictionary are the names of each set of install receipts, since there can be multiple receipts with the same name. Contents of each key are a list of dictionaries.

Note that this can take a long time depending on how many applications are installed on the target Mac.

CLI Example:

```
salt '*' systemprofiler.applications
```

`salt.modules.system_profiler.`**`receipts`**`()`

Return the results of a call to `system_profiler -xml -detail full SPInstallHistoryDataType` as a dictionary. Top-level keys of the dictionary are the names of each set of install receipts, since there can be multiple receipts with the same name. Contents of each key are a list of dictionaries.

CLI Example:

```
salt '*' systemprofiler.receipts
```

### 13.6.315 salt.modules.systemd

Provides the service module for systemd

New in version 0.10.0.

**Important**: If you feel that Salt should be using this module to manage services on a minion, and it is using a different module (or gives an error similar to *`service.start' is not available*), see *here*.

`salt.modules.systemd.`**`available`**`(`*`name`*`)`

New in version 0.10.4.

Check that the given service is available taking into account template units.

CLI Example:

```
salt '*' service.available sshd
```

`salt.modules.systemd.`**`disable`**`(`*`name`*`, `*`**kwargs`*`)`

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands run by this function from the `salt-minion` daemon's control group. This is done to avoid a race condition in cases where the `salt-minion` service is restarted while a service is being modified. If desired, usage of systemd-run(1) can be suppressed by setting a *`config option`* called `systemd.scope`, with a value of `False` (no quotes).

Disable the named service to not start when the system boots

CLI Example:

```
salt '*' service.disable <service name>
```

salt.modules.systemd.**disabled**(*name*)
Return if the named service is disabled from starting on boot

CLI Example:

```
salt '*' service.disabled <service name>
```

salt.modules.systemd.**enable**(*name*, ***kwargs*)
Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands run by this function from the `salt-minion` daemon's control group. This is done to avoid a race condition in cases where the `salt-minion` service is restarted while a service is being modified. If desired, usage of systemd-run(1) can be suppressed by setting a *config option* called `systemd.scope`, with a value of `False` (no quotes).

Enable the named service to start when the system boots

CLI Example:

```
salt '*' service.enable <service name>
```

salt.modules.systemd.**enabled**(*name*, ***kwargs*)
Return if the named service is enabled to start on boot

CLI Example:

```
salt '*' service.enabled <service name>
```

salt.modules.systemd.**execs**()
New in version 2014.7.0.

Return a list of all files specified as `ExecStart` for all services.

CLI Example:
salt `*' service.execs

salt.modules.systemd.**force_reload**(*name*)
Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands run by this function from the `salt-minion` daemon's control group. This is done to avoid a race condition in cases where the `salt-minion` service is restarted while a service is being modified. If desired, usage of systemd-run(1) can be suppressed by setting a *config option* called `systemd.scope`, with a value of `False` (no quotes).

New in version 0.12.0.

Force-reload the specified service with systemd

CLI Example:

```
salt '*' service.force_reload <service name>
```

salt.modules.systemd.**get_all**()
Return a list of all available services

CLI Example:

```
salt '*' service.get_all
```

salt.modules.systemd.**get_disabled**()
Return a list of all disabled services

CLI Example:

```
salt '*' service.get_disabled
```

salt.modules.systemd.**get_enabled**()
Return a list of all enabled services

CLI Example:

```
salt '*' service.get_enabled
```

salt.modules.systemd.**get_static**()
New in version 2015.8.5.

Return a list of all static services

CLI Example:

```
salt '*' service.get_static
```

salt.modules.systemd.**mask**(*name*, *runtime=False*)
New in version 2015.5.0.

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands run by this function from the `salt-minion` daemon's control group. This is done to avoid a race condition in cases where the `salt-minion` service is restarted while a service is being modified. If desired, usage of systemd-run(1) can be suppressed by setting a *config option* called `systemd.scope`, with a value of `False` (no quotes).

Mask the specified service with systemd
**runtime** [False] Set to `True` to mask this service only until the next reboot

New in version 2015.8.5.
CLI Example:

```
salt '*' service.mask <service name>
```

salt.modules.systemd.**masked**(*name*)
New in version 2015.8.0.

Changed in version 2015.8.5: The return data for this function has changed. If the service is masked, the return value will now be the output of the `systemctl is-enabled` command (so that a persistent mask can be distinguished from a runtime mask). If the service is not masked, then `False` will be returned.

Check whether or not a service is masked

CLI Example:

```
salt '*' service.masked <service name>
```

salt.modules.systemd.**missing**(*name*)
New in version 2014.1.0.

The inverse of *service.available*. Returns `True` if the specified service is not available, otherwise returns `False`.

CLI Example:

```
salt '*' service.missing sshd
```

salt.modules.systemd.**reload**(*name*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands run by this function from the `salt-minion` daemon's control group. This is done to avoid a race condition in cases where the `salt-minion` service is restarted while a service is being modified. If desired, usage of systemd-run(1) can be suppressed by setting a *config option* called `systemd.scope`, with a value of `False` (no quotes).

Reload the specified service with systemd

CLI Example:

```
salt '*' service.reload <service name>
```

salt.modules.systemd.**restart**(*name*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands run by this function from the `salt-minion` daemon's control group. This is done to avoid a race condition in cases where the `salt-minion` service is restarted while a service is being modified. If desired, usage of systemd-run(1) can be suppressed by setting a *config option* called `systemd.scope`, with a value of `False` (no quotes).

Restart the specified service with systemd

CLI Example:

```
salt '*' service.restart <service name>
```

salt.modules.systemd.**show**(*name*)

New in version 2014.7.0.

Show properties of one or more units/jobs or the manager

CLI Example:

salt `*' service.show <service name>

salt.modules.systemd.**start**(*name*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands run by this function from the `salt-minion` daemon's control group. This is done to avoid a race condition in cases where the `salt-minion` service is restarted while a service is being modified. If desired, usage of systemd-run(1) can be suppressed by setting a *config option* called `systemd.scope`, with a value of `False` (no quotes).

Start the specified service with systemd

CLI Example:

```
salt '*' service.start <service name>
```

salt.modules.systemd.**status**(*name*, *sig=None*)

Return the status for a service via systemd, returns `True` if the service is running and `False` if it is not.

CLI Example:

```
salt '*' service.status <service name>
```

salt.modules.systemd.**stop**(*name*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands run by this function from the `salt-minion` daemon's control group. This is

done to avoid a race condition in cases where the `salt-minion` service is restarted while a service is being modified. If desired, usage of systemd-run(1) can be suppressed by setting a *config option* called `systemd.scope`, with a value of `False` (no quotes).

Stop the specified service with systemd

CLI Example:

```
salt '*' service.stop <service name>
```

`salt.modules.systemd.`**`systemctl_reload`**`()`

New in version 0.15.0.

Reloads systemctl, an action needed whenever unit files are updated.

CLI Example:

```
salt '*' service.systemctl_reload
```

`salt.modules.systemd.`**`unmask`**`(`*name*`)`

New in version 2015.5.0.

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands run by this function from the `salt-minion` daemon's control group. This is done to avoid a race condition in cases where the `salt-minion` service is restarted while a service is being modified. If desired, usage of systemd-run(1) can be suppressed by setting a *config option* called `systemd.scope`, with a value of `False` (no quotes).

Unmask the specified service with systemd

CLI Example:

```
salt '*' service.unmask <service name>
```

### 13.6.316 salt.modules.telemetry

Connection module for Telemetry

New in version 2016.3.0.

https://github.com/mongolab/mongolab-telemetry-api-docs/blob/master/alerts.md

**configuration** This module accepts explicit telemetry credentials or can also read api key credentials from a pillar. More Information available at:

https://github.com/mongolab/mongolab-telemetry-api-docs/blob/master/alerts.md

In the minion's config file:

```
telemetry.telemetry_api_keys:
  - abc123  # Key 1
  - efg321  # Backup Key 1
telemetry_api_base_url: https://telemetry-api.mongolab.com/v0
```

**depends** requests

`salt.modules.telemetry.`**`create_alarm`**`(`*deployment_id*, *metric_name*, *data*, *api_key=None*, *profile='telemetry'*`)`

create an telemetry alarms.

data is a dict of alert configuration data.

Returns (bool success, str message) tuple.

CLI Example:

salt myminion telemetry.create_alarm rs-ds033197 {} profile=telemetry

salt.modules.telemetry.**delete_alarms**(*deployment_id*, *alert_id=None*, *metric_name=None*, *api_key=None*, *profile='telemetry'*)

**delete an alert specified by alert_id or if not specified blows away all the alerts** in the current deployment. Returns (bool success, str message) tuple.

CLI Example:

salt myminion telemetry.delete_alarms rs-ds033197 profile=telemetry

salt.modules.telemetry.**get_alarms**(*deployment_id*, *profile='telemetry'*)

get all the alarms set up against the current deployment

Returns dictionary of alarm information

CLI Example:

salt myminion telemetry.get_alarms rs-ds033197 profile=telemetry

salt.modules.telemetry.**get_alert_config**(*deployment_id*, *metric_name=None*, *api_key=None*, *profile='telemetry'*)

Get all alert definitions associated with a given deployment or if metric_name is specified, obtain the specific alert config

Returns dictionary or list of dictionaries.

CLI Example:

salt myminion telemetry.get_alert_config rs-ds033197 currentConnections profile=telemetry salt myminion telemetry.get_alert_config rs-ds033197 profile=telemetry

salt.modules.telemetry.**get_notification_channel_id**(*notify_channel*, *profile='telemetry'*)

Given an email address, creates a notification-channels if one is not found and also returns the corresponding notification channel id.

**notify_channel** Email escalation policy

**profile** A dict of telemetry config information.

CLI Example:

salt myminion telemetry.get_notification_channel_id userx@company.com profile=telemetry

salt.modules.telemetry.**update_alarm**(*deployment_id*, *metric_name*, *data*, *api_key=None*, *profile='telemetry'*)

update an telemetry alarms. data is a dict of alert configuration data.

Returns (bool success, str message) tuple.

CLI Example:

salt myminion telemetry.update_alarm rs-ds033197 {} profile=telemetry

### 13.6.317 salt.modules.temp

Simple module for creating temporary directories and files

This is a thin wrapper around Pythons tempfile module

New in version 2015.8.0.

salt.modules.temp.**dir**(*suffix=''*, *prefix='tmp'*, *parent=None*)

Create a temporary directory

CLI Example:

```
salt '*' temp.dir
salt '*' temp.dir prefix='mytemp-' parent='/var/run/'
```

salt.modules.temp.**file**(*suffix=''*, *prefix='tmp'*, *parent=None*)
Create a temporary file

CLI Example:

```
salt '*' temp.file
salt '*' temp.file prefix='mytemp-' parent='/var/run/'
```

### 13.6.318 salt.modules.test

Module for running arbitrary tests

salt.modules.test.**arg**(**args*, ***kwargs*)
Print out the data passed into the function `*args` and `kwargs`, this is used to both test the publication data and cli argument passing, but also to display the information available within the publication data. Returns {``args'': args, ``kwargs'': kwargs}.

CLI Example:

```
salt '*' test.arg 1 "two" 3.1 txt="hello" wow='{a: 1, b: "hello"}'
```

salt.modules.test.**arg_repr**(**args*, ***kwargs*)
Print out the data passed into the function `*args` and `kwargs`, this is used to both test the publication data and cli argument passing, but also to display the information available within the publication data. Returns {``args'': repr(args), ``kwargs'': repr(kwargs)}.

CLI Example:

```
salt '*' test.arg_repr 1 "two" 3.1 txt="hello" wow='{a: 1, b: "hello"}'
```

salt.modules.test.**arg_type**(**args*, ***kwargs*)
Print out the types of the args and kwargs. This is used to test the types of the args and kwargs passed down to the minion

CLI Example:

```
salt '*' test.arg_type 1 'int'
```

salt.modules.test.**assertion**(*assertion*)
Assert the given argument

CLI Example:

```
salt '*' test.assertion False
```

salt.modules.test.**attr_call**()
Call grains.items via the attribute

CLI Example:

```
salt '*' test.attr_call
```

salt.modules.test.**collatz**(*start*)
Execute the collatz conjecture from the passed starting number, returns the sequence and the time it took to compute. Used for performance tests.

CLI Example:

```
salt '*' test.collatz 3
```

salt.modules.test.**conf_test**()
Return the value for test.foo in the minion configuration file, or return the default value

CLI Example:

```
salt '*' test.conf_test
```

salt.modules.test.**cross_test**(*func*, *args=None*)
Execute a minion function via the __salt__ object in the test module, used to verify that the minion functions can be called via the __salt__ module.

CLI Example:

```
salt '*' test.cross_test file.gid_to_group 0
```

salt.modules.test.**echo**(*text*)
Return a string - used for testing the connection

CLI Example:

```
salt '*' test.echo 'foo bar baz quo qux'
```

salt.modules.test.**exception**(*message='Test Exception'*)
Raise an exception

Optionally provide an error message or output the full stack.

CLI Example:

```
salt '*' test.exception 'Oh noes!'
```

salt.modules.test.**false**()
Always return False

CLI Example:

```
salt '*' test.false
```

salt.modules.test.**fib**(*num*)
Return the num-th Fibonacci number, and the time it took to compute in seconds. Used for performance tests.

This function is designed to have terrible performance.

CLI Example:

```
salt '*' test.fib 3
```

salt.modules.test.**get_opts**()
Return the configuration options passed to this minion

CLI Example:

```
salt '*' test.get_opts
```

salt.modules.test.**kwarg**(***kwargs*)
Print out the data passed into the function `**kwargs`, this is used to both test the publication data and cli kwarg passing, but also to display the information available within the publication data.

CLI Example:

```
salt '*' test.kwarg num=1 txt="two" env='{a: 1, b: "hello"}'
```

salt.modules.test.**missing_func**()

salt.modules.test.**module_report**()

Return a dict containing all of the execution modules with a report on the overall availability via different references

CLI Example:

```
salt '*' test.module_report
```

salt.modules.test.**not_loaded**()

List the modules that were not loaded by the salt loader system

CLI Example:

```
salt '*' test.not_loaded
```

salt.modules.test.**opts_pkg**()

Return an opts package with the grains and opts for this minion. This is primarily used to create the options used for master side state compiling routines

CLI Example:

```
salt '*' test.opts_pkg
```

salt.modules.test.**outputter**(*data*)

Test the outputter, pass in data to return

CLI Example:

```
salt '*' test.outputter foobar
```

salt.modules.test.**ping**()

Used to make sure the minion is up and responding. Not an ICMP ping.

Returns `True`.

CLI Example:

```
salt '*' test.ping
```

salt.modules.test.**provider**(*module*)

Pass in a function name to discover what provider is being used

CLI Example:

```
salt '*' test.provider service
```

salt.modules.test.**providers**()

Return a dict of the provider names and the files that provided them

CLI Example:

```
salt '*' test.providers
```

salt.modules.test.**rand_sleep**(*max=60*)

Sleep for a random number of seconds, used to test long-running commands and minions returning at differing intervals

CLI Example:

```
salt '*' test.rand_sleep 60
```

salt.modules.test.**rand_str**(*size=9999999999*, *hash_type=None*)

Return a random string

**size** size of the string to generate

**hash_type** hash type to use

New in version 2015.5.2.

CLI Example:

```
salt '*' test.rand_str
```

salt.modules.test.**retcode**(*code=42*)

Test that the returncode system is functioning correctly

CLI Example:

```
salt '*' test.retcode 42
```

salt.modules.test.**sleep**(*length*)

Instruct the minion to initiate a process that will sleep for a given period of time.

CLI Example:

```
salt '*' test.sleep 20
```

salt.modules.test.**stack**()

Return the current stack trace

CLI Example:

```
salt '*' test.stack
```

salt.modules.test.**true**()

Always return True

CLI Example:

```
salt '*' test.true
```

salt.modules.test.**try_**(*module*, *return_try_exception=False*, ***kwargs*)

Try to run a module command. On an exception return None. If *return_try_exception* is set True return the exception. This can be helpful in templates where running a module might fail as expected.

CLI Example:

```
<pre>
{% for i in range(0,230) %}
    {{ salt['test.try'](module='ipmi.get_users', bmc_host='172.2.2.
↪'+i)|yaml(False) }}
{% endfor %}
</pre>
```

salt.modules.test.**tty**(**args*, ***kwargs*)
Deprecated! Moved to cmdmod.

CLI Example:

```
salt '*' test.tty tty0 'This is a test'
salt '*' test.tty pts3 'This is a test'
```

salt.modules.test.**version**()
Return the version of salt on the minion

CLI Example:

```
salt '*' test.version
```

salt.modules.test.**versions**()
This function is an alias of `versions_report`.
Returns versions of components used by salt

CLI Example:

```
salt '*' test.versions_report
```

salt.modules.test.**versions_information**()
Report the versions of dependent and system software

CLI Example:

```
salt '*' test.versions_information
```

salt.modules.test.**versions_report**()
Returns versions of components used by salt

CLI Example:

```
salt '*' test.versions_report
```

### 13.6.319 salt.modules.test_virtual

Module for running arbitrary tests with a __virtual__ function

salt.modules.test_virtual.**ping**()

### 13.6.320 salt.modules.timezone

Module for managing timezone on POSIX-like systems.

salt.modules.timezone.**get_hwclock**()
Get current hardware clock setting (UTC or localtime)

CLI Example:

```
salt '*' timezone.get_hwclock
```

salt.modules.timezone.**get_offset**()
Get current numeric timezone offset from UCT (i.e. -0700)

CLI Example:

```
salt '*' timezone.get_offset
```

salt.modules.timezone.**get_zone**()
Get current timezone (i.e. America/Denver)

CLI Example:

```
salt '*' timezone.get_zone
```

salt.modules.timezone.**get_zonecode**()
Get current timezone (i.e. PST, MDT, etc)

CLI Example:

```
salt '*' timezone.get_zonecode
```

salt.modules.timezone.**set_hwclock**(*clock*)
Sets the hardware clock to be either UTC or localtime

CLI Example:

```
salt '*' timezone.set_hwclock UTC
```

salt.modules.timezone.**set_zone**(*timezone*)
Unlinks, then symlinks /etc/localtime to the set timezone.

The timezone is crucial to several system processes, each of which SHOULD be restarted (for instance, whatever you system uses as its cron and syslog daemons). This will not be automagically done and must be done manually!

CLI Example:

```
salt '*' timezone.set_zone 'America/Denver'
```

salt.modules.timezone.**zone_compare**(*timezone*)
Compares the given timezone name with the system timezone name. Checks the hash sum between the given timezone, and the one set in /etc/localtime. Returns True if names and hash sums match, and False if not. Mostly useful for running state checks.

Changed in version 2016.3.0.

---

**Note:** On Solaris-link operating systems only a string comparison is done.

---

CLI Example:

```
salt '*' timezone.zone_compare 'America/Denver'
```

### 13.6.321 salt.modules.tls

A salt module for SSL/TLS. Can create a Certificate Authority (CA) or use Self-Signed certificates.

**depends**

- PyOpenSSL Python module (0.10 or later, 0.14 or later for

X509 extension support)

**configuration** Add the following values in /etc/salt/minion for the CA module to function properly:

```
ca.cert_base_path: '/etc/pki'
```

CLI Example #1 Creating a CA, a server request and its signed certificate:

```
# salt-call tls.create_ca my_little \
days=5 \
CN='My Little CA' \
C=US \
ST=Utah \
L=Salt Lake City \
O=Saltstack \
emailAddress=pleasedontemail@example.com

Created Private Key: "/etc/pki/my_little/my_little_ca_cert.key"
Created CA "my_little_ca": "/etc/pki/my_little_ca/my_little_ca_cert.crt"

# salt-call tls.create_csr my_little CN=www.example.com
Created Private Key: "/etc/pki/my_little/certs/www.example.com.key
Created CSR for "www.example.com": "/etc/pki/my_little/certs/www.example.com.csr"

# salt-call tls.create_ca_signed_cert my_little CN=www.example.com
Created Certificate for "www.example.com": /etc/pki/my_little/certs/www.example.com.crt
 ↪"
```

CLI Example #2: Creating a client request and its signed certificate

```
# salt-call tls.create_csr my_little CN=DBReplica_No.1 cert_type=client
Created Private Key: "/etc/pki/my_little/certs//DBReplica_No.1.key."
Created CSR for "DBReplica_No.1": "/etc/pki/my_little/certs/DBReplica_No.1.csr."

# salt-call tls.create_ca_signed_cert my_little CN=DBReplica_No.1
Created Certificate for "DBReplica_No.1": "/etc/pki/my_little/certs/DBReplica_No.1.crt"
```

CLI Example #3: Creating both a server and client req + cert for the same CN

```
# salt-call tls.create_csr my_little CN=MasterDBReplica_No.2  \
    cert_type=client
Created Private Key: "/etc/pki/my_little/certs/MasterDBReplica_No.2.key."
Created CSR for "DBReplica_No.1": "/etc/pki/my_little/certs/MasterDBReplica_No.2.csr."

# salt-call tls.create_ca_signed_cert my_little CN=MasterDBReplica_No.2
Created Certificate for "DBReplica_No.1": "/etc/pki/my_little/certs/DBReplica_No.1.crt"

# salt-call tls.create_csr my_little CN=MasterDBReplica_No.2 \
    cert_type=server
Certificate "MasterDBReplica_No.2" already exists

(doh!)

# salt-call tls.create_csr my_little CN=MasterDBReplica_No.2 \
    cert_type=server type_ext=True
Created Private Key: "/etc/pki/my_little/certs/DBReplica_No.1_client.key."
Created CSR for "DBReplica_No.1": "/etc/pki/my_little/certs/DBReplica_No.1_client.csr."

# salt-call tls.create_ca_signed_cert my_little CN=MasterDBReplica_No.2
Certificate "MasterDBReplica_No.2" already exists
```

```
(DOH!)

# salt-call tls.create_ca_signed_cert my_little CN=MasterDBReplica_No.2 \
    cert_type=server type_ext=True
Created Certificate for "MasterDBReplica_No.2": "/etc/pki/my_little/certs/
 ↪MasterDBReplica_No.2_server.crt"
```

CLI Example #4: Create a server req + cert with non-CN filename for the cert

```
# salt-call tls.create_csr my_little CN=www.anothersometh.ing \
    cert_type=server type_ext=True
Created Private Key: "/etc/pki/my_little/certs/www.anothersometh.ing_server.key."
Created CSR for "DBReplica_No.1": "/etc/pki/my_little/certs/www.anothersometh.ing_
 ↪server.csr."

# salt-call tls_create_ca_signed_cert my_little CN=www.anothersometh.ing \
    cert_type=server cert_filename="something_completely_different"
Created Certificate for "www.anothersometh.ing": /etc/pki/my_little/certs/something_
 ↪completely_different.crt
```

salt.modules.tls.**ca_exists**(*ca_name*, *cacert_path=None*, *ca_filename=None*)

Verify whether a Certificate Authority (CA) already exists

**ca_name** name of the CA

**cacert_path** absolute path to ca certificates root directory

**ca_filename** alternative filename for the CA

New in version 2015.5.3.

CLI Example:

```
salt '*' tls.ca_exists test_ca /etc/certs
```

salt.modules.tls.**cert_base_path**(*cacert_path=None*)

Return the base path for certs from CLI or from options

**cacert_path** absolute path to ca certificates root directory

CLI Example:

```
salt '*' tls.cert_base_path
```

salt.modules.tls.**cert_info**(*cert_path*, *digest='sha256'*)

Return information for a particular certificate

**cert_path** path to the cert file

**digest** what digest to use for fingerprinting

CLI Example:

```
salt '*' tls.cert_info /dir/for/certs/cert.pem
```

salt.modules.tls.**create_ca**(*ca_name*, *bits=2048*, *days=365*, *CN='localhost'*, *C='US'*, *ST='Utah'*, *L='Salt Lake City'*, *O='SaltStack'*, *OU=None*, *emailAddress='xyz@pdq.net'*, *fixmode=False*, *cacert_path=None*, *ca_filename=None*, *digest='sha256'*, *onlyif=None*, *unless=None*, *replace=False*)

Create a Certificate Authority (CA)

**ca_name** name of the CA

**bits** number of RSA key bits, default is 2048

**days** number of days the CA will be valid, default is 365

**CN** common name in the request, default is ``localhost''

**C** country, default is ``US''

**ST** state, default is ``Utah''
**L** locality, default is ``Centerville'', the city where SaltStack originated
**O** organization, default is ``SaltStack''
**OU** organizational unit, default is None
**emailAddress** email address for the CA owner, default is `xyz@pdq.net`
**cacert_path** absolute path to ca certificates root directory
**ca_filename** alternative filename for the CA

New in version 2015.5.3.

**digest** The message digest algorithm. Must be a string describing a digest algorithm supported by OpenSSL (by EVP_get_digestbyname, specifically). For example, ``md5'' or ``sha1''. Default: `sha256'
**replace** Replace this certificate even if it exists

New in version 2015.5.1.

Writes out a CA certificate based upon defined config values. If the file already exists, the function just returns assuming the CA certificate already exists.

If the following values were set:

```
ca.cert_base_path='/etc/pki'
ca_name='koji'
```

the resulting CA, and corresponding key, would be written in the following location:

```
/etc/pki/koji/koji_ca_cert.crt
/etc/pki/koji/koji_ca_cert.key
```

CLI Example:

```
salt '*' tls.create_ca test_ca
```

salt.modules.tls.**create_ca_signed_cert**(*ca_name*, *CN*, *days=365*, *cacert_path=None*, *ca_filename=None*, *cert_path=None*, *cert_filename=None*, *digest='sha256'*, *cert_type=None*, *type_ext=False*, *replace=False*)

Create a Certificate (CERT) signed by a named Certificate Authority (CA)

If the certificate file already exists, the function just returns assuming the CERT already exists.

The CN *must* match an existing CSR generated by create_csr. If it does not, this method does nothing.
**ca_name** name of the CA
**CN** common name matching the certificate signing request
**days** number of days certificate is valid, default is 365 (1 year)
**cacert_path** absolute path to ca certificates root directory
**ca_filename** alternative filename for the CA

New in version 2015.5.3.

**cert_path** full path to the certificates directory
**cert_filename** alternative filename for the certificate, useful when using special characters in the CN. If this option is set it will override the certificate filename output effects of `cert_type`. `type_ext` will be completely overridden.

New in version 2015.5.3.

**digest** The message digest algorithm. Must be a string describing a digest algorithm supported by OpenSSL (by EVP_get_digestbyname, specifically). For example, ``md5'' or ``sha1''. Default: `sha256'
**replace** Replace this certificate even if it exists

New in version 2015.5.1.

**cert_type** string. Either `server' or `client' (see create_csr() for details).

If create_csr(type_ext=True) this function **must** be called with the same cert_type so it can find the CSR file.

---

**Note:** create_csr() defaults to cert_type='server'; therefore, if it was also called with type_ext, cert_type becomes a required argument for create_ca_signed_cert()

---

**type_ext** bool. If set True, use `cert_type` as an extension to the CN when formatting the filename.

e.g.: some_subject_CN_server.crt or some_subject_CN_client.crt

This facilitates the context where both types are required for the same subject

If `cert_filename` is *not None*, setting `type_ext` has no effect

If the following values were set:

```
ca.cert_base_path='/etc/pki'
ca_name='koji'
CN='test.egavas.org'
```

the resulting signed certificate would be written in the following location:

```
/etc/pki/koji/certs/test.egavas.org.crt
```

CLI Example:

```
salt '*' tls.create_ca_signed_cert test localhost
```

salt.modules.tls.**create_csr**(*ca_name*, *bits=2048*, *CN='localhost'*, *C='US'*, *ST='Utah'*, *L='Salt Lake City'*, *O='SaltStack'*, *OU=None*, *emailAddress='xyz@pdq.net'*, *subjectAltName=None*, *cacert_path=None*, *ca_filename=None*, *csr_path=None*, *csr_filename=None*, *digest='sha256'*, *type_ext=False*, *cert_type='server'*, *replace=False*)

Create a Certificate Signing Request (CSR) for a particular Certificate Authority (CA)

**ca_name** name of the CA

**bits** number of RSA key bits, default is 2048

**CN** common name in the request, default is ``localhost''

**C** country, default is ``US''

**ST** state, default is ``Utah''

**L** locality, default is ``Centerville'', the city where SaltStack originated

**O** organization, default is ``SaltStack'' NOTE: Must the same as CA certificate or an error will be raised

**OU** organizational unit, default is None

**emailAddress** email address for the request, default is `xyz@pdq.net`

**subjectAltName** valid subjectAltNames in full form, e.g. to add DNS entry you would call this function with this value:

**examples**: **['DNS:somednsname.com`**, `DNS:1.2.3.4`, `IP:1.2.3.4', `IP:2001:4801:7821:77:be76:4eff:fe11:e51', `email:me@i.like.pie.com']

---

**Note:** some libraries do not properly query IP: prefixes, instead looking for the given req. source with a DNS: prefix. To be thorough, you may want to include both DNS: and IP: entries if you are using subjectAltNames for destinations for your TLS connections. e.g.: requests to https://1.2.3.4 will fail from python's requests library w/out the second entry in the above list

---

New in version 2015.8.0.

**cert_type** Specify the general certificate type. Can be either *server* or *client*. Indicates the set of common extensions added to the CSR.

```
server: {
   'basicConstraints': 'CA:FALSE',
   'extendedKeyUsage': 'serverAuth',
   'keyUsage': 'digitalSignature, keyEncipherment'
}

client: {
   'basicConstraints': 'CA:FALSE',
   'extendedKeyUsage': 'clientAuth',
   'keyUsage': 'nonRepudiation, digitalSignature, keyEncipherment'
}
```

**type_ext** boolean. Whether or not to extend the filename with CN_[cert_type] This can be useful if a server and client certificate are needed for the same CN. Defaults to False to avoid introducing an unexpected file naming pattern

The files normally named some_subject_CN.csr and some_subject_CN.key will then be saved

**replace** Replace this signing request even if it exists

New in version 2015.5.1.

Writes out a Certificate Signing Request (CSR) If the file already exists, the function just returns assuming the CSR already exists.

If the following values were set:

```
ca.cert_base_path='/etc/pki'
ca_name='koji'
CN='test.egavas.org'
```

the resulting CSR, and corresponding key, would be written in the following location:

```
/etc/pki/koji/certs/test.egavas.org.csr
/etc/pki/koji/certs/test.egavas.org.key
```

CLI Example:

```
salt '*' tls.create_csr test
```

`salt.modules.tls.`**`create_empty_crl`**(*ca_name*, *cacert_path=None*, *ca_filename=None*, *crl_file=None*)

Create an empty Certificate Revocation List.

New in version 2015.8.0.

**ca_name** name of the CA

**cacert_path** absolute path to ca certificates root directory

**ca_filename** alternative filename for the CA

New in version 2015.5.3.

**crl_file** full path to the CRL file

CLI Example:

```
salt '*' tls.create_empty_crl ca_name='koji'                    ca_filename='ca'
 ↪           crl_file='/etc/openvpn/team1/crl.pem'
```

`salt.modules.tls.`**`create_pkcs12`**(*ca_name*, *CN*, *passphrase=''*, *cacert_path=None*, *replace=False*)

Create a PKCS#12 browser certificate for a particular Certificate (CN)

**ca_name** name of the CA

**CN** common name matching the certificate signing request
**passphrase** used to unlock the PKCS#12 certificate when loaded into the browser
**cacert_path** absolute path to ca certificates root directory
**replace** Replace this certificate even if it exists

New in version 2015.5.1.

If the following values were set:

```
ca.cert_base_path='/etc/pki'
ca_name='koji'
CN='test.egavas.org'
```

the resulting signed certificate would be written in the following location:

```
/etc/pki/koji/certs/test.egavas.org.p12
```

CLI Example:

```
salt '*' tls.create_pkcs12 test localhost
```

salt.modules.tls.**create_self_signed_cert**(*tls_dir='tls'*, *bits=2048*, *days=365*, *CN='localhost'*, *C='US'*, *ST='Utah'*, *L='Salt Lake City'*, *O='SaltStack'*, *OU=None*, *emailAddress='xyz@pdq.net'*, *cacert_path=None*, *cert_filename=None*, *digest='sha256'*, *replace=False*)

Create a Self-Signed Certificate (CERT)

**tls_dir** location appended to the ca.cert_base_path, default is `tls'
**bits** number of RSA key bits, default is 2048
**CN** common name in the request, default is ``localhost''
**C** country, default is ``US''
**ST** state, default is ``Utah''
**L** locality, default is ``Centerville'', the city where SaltStack originated
**O** organization, default is ``SaltStack'' NOTE: Must the same as CA certificate or an error will be raised
**OU** organizational unit, default is None
**emailAddress** email address for the request, default is `xyz@pdq.net`
**cacert_path** absolute path to ca certificates root directory
**digest** The message digest algorithm. Must be a string describing a digest algorithm supported by OpenSSL (by EVP_get_digestbyname, specifically). For example, ``md5'' or ``sha1''. Default: `sha256'
**replace** Replace this certificate even if it exists

New in version 2015.5.1.

Writes out a Self-Signed Certificate (CERT). If the file already exists, the function just returns.

If the following values were set:

```
ca.cert_base_path='/etc/pki'
tls_dir='koji'
CN='test.egavas.org'
```

the resulting CERT, and corresponding key, would be written in the following location:

```
/etc/pki/koji/certs/test.egavas.org.crt
/etc/pki/koji/certs/test.egavas.org.key
```

CLI Example:

```
salt '*' tls.create_self_signed_cert
```

Passing options from the command line:

```
salt 'minion' tls.create_self_signed_cert CN='test.mysite.org'
```

salt.modules.tls.**get_ca**(*ca_name*, *as_text=False*, *cacert_path=None*)

Get the certificate path or content
**ca_name** name of the CA
**as_text** if true, return the certificate content instead of the path
**cacert_path** absolute path to ca certificates root directory
CLI Example:

```
salt '*' tls.get_ca test_ca as_text=False cacert_path=/etc/certs
```

salt.modules.tls.**get_ca_signed_cert**(*ca_name*, *CN='localhost'*, *as_text=False*, *cacert_path=None*, *cert_filename=None*)

Get the certificate path or content
**ca_name** name of the CA
**CN** common name of the certificate
**as_text** if true, return the certificate content instead of the path
**cacert_path** absolute path to certificates root directory
**cert_filename** alternative filename for the certificate, useful when using special characters in the CN

New in version 2015.5.3.

CLI Example:

```
salt '*' tls.get_ca_signed_cert test_ca CN=localhost as_text=False cacert_path=/
↪etc/certs
```

salt.modules.tls.**get_ca_signed_key**(*ca_name*, *CN='localhost'*, *as_text=False*, *cacert_path=None*, *key_filename=None*)

Get the certificate path or content
**ca_name** name of the CA
**CN** common name of the certificate
**as_text** if true, return the certificate content instead of the path
**cacert_path** absolute path to certificates root directory
**key_filename** alternative filename for the key, useful when using special characters

New in version 2015.5.3.

in the CN
CLI Example:

```
salt '*' tls.get_ca_signed_key test_ca CN=localhost
↪as_text=False cacert_path=/etc/certs
```

salt.modules.tls.**get_extensions**(*cert_type*)

Fetch X509 and CSR extension definitions from tls:extensions: (common|server|client) or set them to standard defaults.

New in version 2015.8.0.
**cert_type**: The type of certificate such as `server` or `client`.
CLI Example:

```
salt '*' tls.get_extensions client
```

salt.modules.tls.**maybe_fix_ssl_version**(*ca_name*, *cacert_path=None*, *ca_filename=None*)

Check that the X509 version is correct (was incorrectly set in previous salt versions). This will fix the version if needed.

**ca_name** ca authority name
**cacert_path** absolute path to ca certificates root directory
**ca_filename** alternative filename for the CA

New in version 2015.5.3.

CLI Example:

```
salt '*' tls.maybe_fix_ssl_version test_ca /etc/certs
```

salt.modules.tls.**revoke_cert**(*ca_name*, *CN*, *cacert_path=None*, *ca_filename=None*, *cert_path=None*, *cert_filename=None*, *crl_file=None*)

Revoke a certificate.

New in version 2015.8.0.
**ca_name** Name of the CA.
**CN** Common name matching the certificate signing request.
**cacert_path** Absolute path to ca certificates root directory.
**ca_filename** Alternative filename for the CA.
**cert_path** Path to the cert file.
**cert_filename** Alternative filename for the certificate, useful when using special characters in the CN.
**crl_file** Full path to the CRL file.
CLI Example:

```
salt '*' tls.revoke_cert ca_name='koji'                ca_filename='ca'
 ↪     crl_file='/etc/openvpn/team1/crl.pem'
```

salt.modules.tls.**set_ca_path**(*cacert_path*)

If wanted, store the aforementioned cacert_path in context to be used as the basepath for further operations

CLI Example:

```
salt '*' tls.set_ca_path /etc/certs
```

### 13.6.322 salt.modules.tomcat

Support for Tomcat

This module uses the manager webapp to manage Apache tomcat webapps. If the manager webapp is not configured some of the functions won't work.

**configuration**

- Java bin path should be in default path
- If ipv6 is enabled make sure you permit manager access to ipv6 interface ``0:0:0:0:0:0:0:1''
- If you are using tomcat.tar.gz it has to be installed or symlinked under `/opt`, preferably using name tomcat
- ``tomcat.signal start/stop'' works but it does not use the startup scripts

The following grains/pillar should be set:

```
tomcat-manager:
  user: <username>
  passwd: <password>
```

or the old format:

```
tomcat-manager.user: <username>
tomcat-manager.passwd: <password>
```

Also configure a user in the conf/tomcat-users.xml file:

```
<?xml version='1.0' encoding='utf-8'?>
<tomcat-users>
    <role rolename="manager-script"/>
    <user username="tomcat" password="tomcat" roles="manager-script"/>
</tomcat-users>
```

---

**Note:**

- More information about tomcat manager: http://tomcat.apache.org/tomcat-7.0-doc/manager-howto.html
- if you use only this module for deployments you've might want to strict access to the manager only from localhost for more info: http://tomcat.apache.org/tomcat-7.0-doc/manager-howto.html#Configuring_Manager_Application_Access
- Tested on:

  **JVM Vendor:** Sun Microsystems Inc.

  **JVM Version:** 1.6.0_43-b01

  **OS Architecture:** amd64

  **OS Name:** Linux

  **OS Version:** 2.6.32-358.el6.x86_64

  **Tomcat Version:** Apache Tomcat/7.0.37

---

`salt.modules.tomcat.`**`deploy_war`**(*war*, *context*, *force='no'*, *url='http://localhost:8080/manager'*, *saltenv='base'*, *timeout=180*, *env=None*, *temp_war_location=None*, *version=''*)

Deploy a WAR file

**war** absolute path to WAR file (should be accessible by the user running tomcat) or a path supported by the salt.modules.cp.get_file function

**context** the context path to deploy

**force** [False] set True to deploy the webapp even one is deployed in the context

**url** [http://localhost:8080/manager] the URL of the server manager webapp

**saltenv** [base] the environment for WAR file in used by salt.modules.cp.get_url function

**timeout** [180] timeout for HTTP request

**temp_war_location** [None] use another location to temporarily copy to war file by default the system's temp directory is used

**version** [``] Specify the war version. If this argument is provided, it overrides the version encoded in the war file name, if one is present.

Examples:

```
salt '*' tomcat.deploy_war salt://salt-2015.8.6.war version=2015.08.r6
```

New in version 2015.8.6.

CLI Examples:

cp module

```
salt '*' tomcat.deploy_war salt://application.war /api
salt '*' tomcat.deploy_war salt://application.war /api no
salt '*' tomcat.deploy_war salt://application.war /api yes http://localhost:8080/
 ↪manager
```

minion local file system

```
salt '*' tomcat.deploy_war /tmp/application.war /api
salt '*' tomcat.deploy_war /tmp/application.war /api no
salt '*' tomcat.deploy_war /tmp/application.war /api yes http://localhost:8080/
 ↪manager
```

salt.modules.tomcat.**fullversion**()

Return all server information from catalina.sh version

CLI Example:

```
salt '*' tomcat.fullversion
```

salt.modules.tomcat.**leaks**(*url='http://localhost:8080/manager'*, *timeout=180*)

Find memory leaks in tomcat

**url** [http://localhost:8080/manager] the URL of the server manager webapp

**timeout** [180] timeout for HTTP request

CLI Examples:

```
salt '*' tomcat.leaks
```

salt.modules.tomcat.**ls**(*url='http://localhost:8080/manager'*, *timeout=180*)

list all the deployed webapps

**url** [http://localhost:8080/manager] the URL of the server manager webapp

**timeout** [180] timeout for HTTP request

CLI Examples:

```
salt '*' tomcat.ls
salt '*' tomcat.ls http://localhost:8080/manager
```

salt.modules.tomcat.**passwd**(*passwd*, *user=''*, *alg='sha1'*, *realm=None*)

This function replaces the $CATALINA_HOME/bin/digest.sh script convert a clear-text password to the $CATALINA_BASE/conf/tomcat-users.xml format

CLI Examples:

```
salt '*' tomcat.passwd secret
salt '*' tomcat.passwd secret tomcat sha1
salt '*' tomcat.passwd secret tomcat sha1 'Protected Realm'
```

salt.modules.tomcat.**reload**(*app*, *url='http://localhost:8080/manager'*, *timeout=180*)

Reload the webapp

**app** the webapp context path

**url** [http://localhost:8080/manager] the URL of the server manager webapp

**timeout** [180] timeout for HTTP request

CLI Examples:

```
salt '*' tomcat.reload /jenkins
salt '*' tomcat.reload /jenkins http://localhost:8080/manager
```

salt.modules.tomcat.**serverinfo**(*url='http://localhost:8080/manager'*, *timeout=180*)
return details about the server
**url** [http://localhost:8080/manager] the URL of the server manager webapp
**timeout** [180] timeout for HTTP request
CLI Examples:

```
salt '*' tomcat.serverinfo
salt '*' tomcat.serverinfo http://localhost:8080/manager
```

salt.modules.tomcat.**sessions**(*app*, *url='http://localhost:8080/manager'*, *timeout=180*)
return the status of the webapp sessions
**app** the webapp context path
**url** [http://localhost:8080/manager] the URL of the server manager webapp
**timeout** [180] timeout for HTTP request
CLI Examples:

```
salt '*' tomcat.sessions /jenkins
salt '*' tomcat.sessions /jenkins http://localhost:8080/manager
```

salt.modules.tomcat.**signal**(*signal=None*)
Signals catalina to start, stop, securestart, forcestop.

CLI Example:

```
salt '*' tomcat.signal start
```

salt.modules.tomcat.**start**(*app*, *url='http://localhost:8080/manager'*, *timeout=180*)
Start the webapp
**app** the webapp context path
**url** [http://localhost:8080/manager] the URL of the server manager webapp
**timeout** timeout for HTTP request
CLI Examples:

```
salt '*' tomcat.start /jenkins
salt '*' tomcat.start /jenkins http://localhost:8080/manager
```

salt.modules.tomcat.**status**(*url='http://localhost:8080/manager'*, *timeout=180*)
Used to test if the tomcat manager is up
**url** [http://localhost:8080/manager] the URL of the server manager webapp
**timeout** [180] timeout for HTTP request
CLI Examples:

```
salt '*' tomcat.status
salt '*' tomcat.status http://localhost:8080/manager
```

salt.modules.tomcat.**status_webapp**(*app*, *url='http://localhost:8080/manager'*, *timeout=180*)
return the status of the webapp (stopped | running | missing)
**app** the webapp context path
**url** [http://localhost:8080/manager] the URL of the server manager webapp
**timeout** [180] timeout for HTTP request
CLI Examples:

```
salt '*' tomcat.status_webapp /jenkins
salt '*' tomcat.status_webapp /jenkins http://localhost:8080/manager
```

salt.modules.tomcat.**stop**(*app*, *url='http://localhost:8080/manager'*, *timeout=180*)
Stop the webapp

**app** the webapp context path
**url** [http://localhost:8080/manager] the URL of the server manager webapp
**timeout** [180] timeout for HTTP request
CLI Examples:

```
salt '*' tomcat.stop /jenkins
salt '*' tomcat.stop /jenkins http://localhost:8080/manager
```

salt.modules.tomcat.**undeploy**(*app*, *url='http://localhost:8080/manager'*, *timeout=180*)
Undeploy a webapp
**app** the webapp context path
**url** [http://localhost:8080/manager] the URL of the server manager webapp
**timeout** [180] timeout for HTTP request
CLI Examples:

```
salt '*' tomcat.undeploy /jenkins
salt '*' tomcat.undeploy /jenkins http://localhost:8080/manager
```

salt.modules.tomcat.**version**()
Return server version from catalina.sh version

CLI Example:

```
salt '*' tomcat.version
```

### 13.6.323 salt.modules.trafficserver

Apache Traffic Server execution module.

New in version 2015.8.0.

`traffic_line` is used to execute individual Traffic Server commands and to script multiple commands in a shell.

salt.modules.trafficserver.**alarms**()
List all alarm events that have not been acknowledged (cleared).

```
salt '*' trafficserver.alarms
```

salt.modules.trafficserver.**bounce_cluster**()
Bounce all Traffic Server nodes in the cluster. Bouncing Traffic Server shuts down and immediately restarts Traffic Server, node-by-node.

```
salt '*' trafficserver.bounce_cluster
```

salt.modules.trafficserver.**bounce_local**(*drain=False*)
Bounce Traffic Server on the local node. Bouncing Traffic Server shuts down and immediately restarts the Traffic Server node.

This option modifies the behavior of traffic_line -b and traffic_line -L such that traffic_server is not shut down until the number of active client connections drops to the number given by the proxy.config.restart.active_client_threshold configuration variable.

```
salt '*' trafficserver.bounce_local
salt '*' trafficserver.bounce_local drain=True
```

salt.modules.trafficserver.**clear_alarms**(*alarm*)

Clear (acknowledge) an alarm event. The arguments are “all” for all current alarms, a specific alarm number (e.g. ‘‘1’‘), or an alarm string identifier (e.g. ‘’MGMT_ALARM_PROXY_CONFIG_ERROR’‘).

```
salt '*' trafficserver.clear_alarms [all | #event | name]
```

salt.modules.trafficserver.**clear_cluster**()

Clears accumulated statistics on all nodes in the cluster.

```
salt '*' trafficserver.clear_cluster
```

salt.modules.trafficserver.**clear_node**()

Clears accumulated statistics on the local node.

```
salt '*' trafficserver.clear_node
```

salt.modules.trafficserver.**match_var**(*regex*)

Display the current values of all performance statistics or configuration variables whose names match the given regular expression.

```
salt '*' trafficserver.match_var regex
```

salt.modules.trafficserver.**offline**(*path*)

Mark a cache storage device as offline. The storage is identified by a path which must match exactly a path specified in storage.config. This removes the storage from the cache and redirects requests that would have used this storage to other storage. This has exactly the same effect as a disk failure for that storage. This does not persist across restarts of the traffic_server process.

```
salt '*' trafficserver.offline /path/to/cache
```

salt.modules.trafficserver.**read_var**(**args*)

Read variable definitions from the traffic_line command

This allows reading arbitrary key=value pairs from within trafficserver

```
salt '*' trafficserver.read_var proxy.process.http.tcp_hit_count_stat
```

salt.modules.trafficserver.**refresh**()

Initiate a Traffic Server configuration file reread. Use this command to update the running configuration after any configuration file modification.

The timestamp of the last reconfiguration event (in seconds since epoch) is published in the proxy.node.config.reconfigure_time metric.

```
salt '*' trafficserver.refresh
```

salt.modules.trafficserver.**restart_cluster**()

Restart the traffic_manager process and the traffic_server process on all the nodes in a cluster.

```
salt '*' trafficserver.restart_cluster
```

salt.modules.trafficserver.**restart_local**(*drain=False*)

Restart the traffic_manager and traffic_server processes on the local node.

This option modifies the behavior of traffic_line -b and traffic_line -L such that traffic_server is not shut down until the number of active client connections drops to the number given by the proxy.config.restart.active_client_threshold configuration variable.

```
salt '*' trafficserver.restart_local
salt '*' trafficserver.restart_local drain=True
```

salt.modules.trafficserver.**set_var**(*variable*, *value*)

```
salt '*' trafficserver.set_var proxy.config.http.server_ports
```

salt.modules.trafficserver.**shutdown**()
Shut down Traffic Server on the local node.

```
salt '*' trafficserver.shutdown
```

salt.modules.trafficserver.**startup**()
Start Traffic Server on the local node.

```
salt '*' trafficserver.start
```

salt.modules.trafficserver.**status**()
Show the current proxy server status, indicating if we're running or not.

```
salt '*' trafficserver.status
```

salt.modules.trafficserver.**zero_cluster**()
Reset performance statistics to zero across the cluster.

```
salt '*' trafficserver.zero_cluster
```

salt.modules.trafficserver.**zero_node**()
Reset performance statistics to zero on the local node.

```
salt '*' trafficserver.zero_cluster
```

### 13.6.324 salt.modules.tuned

Interface to Red Hat tuned-adm module

**maintainer** Syed Ali <alicsyed@gmail.com>

**maturity** new

**depends** tuned-adm

**platform** Linux

salt.modules.tuned.**active**()
Return current active profile

CLI Example:

```
salt '*' tuned.active
```

salt.modules.tuned.**list**()
List the profiles available

CLI Example:

```
salt '*' tuned.list
```

salt.modules.tuned.**off**()
Turn off all profiles

CLI Example:

```
salt '*' tuned.off
```

salt.modules.tuned.**profile**(*profile_name*)
Activate specified profile

CLI Example:

```
salt '*' tuned.profile virtual-guest
```

### 13.6.325 salt.modules.twilio_notify

Module for notifications via Twilio

New in version 2014.7.0.

**depends**

- twilio python module

**configuration** Configure this module by specifying the name of a configuration profile in the minion config, minion pillar, or master config.

For example:

```
my-twilio-account:
    twilio.account_sid: AC32a3c83990934481addd5ce1659f04d2
    twilio.auth_token: mytoken
```

salt.modules.twilio_notify.**send_sms**(*profile*, *body*, *to*, *from_*)
Send an sms

CLI Example:
twilio.send_sms twilio-account `Test sms' `+18019999999' `+18011111111'

### 13.6.326 salt.modules.udev

Manage and query udev info

New in version 2015.8.0.

salt.modules.udev.**env**(*dev*)
Return all environment variables udev has for dev

CLI Example:

```
salt '*' udev.env /dev/sda
salt '*' udev.env /sys/class/net/eth0
```

salt.modules.udev.**info**(*dev*)
Extract all info delivered by udevadm

CLI Example:

```
salt '*' udev.info /dev/sda
salt '*' udev.info /sys/class/net/eth0
```

salt.modules.udev.**links**(*dev*)

Return all udev-created device symlinks

CLI Example:

```
salt '*' udev.links /dev/sda
salt '*' udev.links /sys/class/net/eth0
```

salt.modules.udev.**name**(*dev*)

Return the actual dev name(s?) according to udev for dev

CLI Example:

```
salt '*' udev.dev /dev/sda
salt '*' udev.dev /sys/class/net/eth0
```

salt.modules.udev.**path**(*dev*)

Return the physical device path(s?) according to udev for dev

CLI Example:

```
salt '*' udev.path /dev/sda
salt '*' udev.path /sys/class/net/eth0
```

### 13.6.327 salt.modules.upstart

Module for the management of upstart systems. The Upstart system only supports service starting, stopping and restarting.

---

**Important**: If you feel that Salt should be using this module to manage services on a minion, and it is using a different module (or gives an error similar to *`service.start' is not available*), see *here*.

---

Currently (as of Ubuntu 12.04) there is no tool available to disable Upstart services (like update-rc.d). This[1] is the recommended way to disable an Upstart service. So we assume that all Upstart services that have not been disabled in this manner are enabled.

But this is broken because we do not check to see that the dependent services are enabled. Otherwise we would have to do something like parse the output of ``initctl show-config'' to determine if all service dependencies are enabled to start on boot. For example, see the ``start on'' condition for the lightdm service below[2]. And this would be too hard. So we wait until the upstart developers have solved this problem. :) This is to say that an Upstart service that is enabled may not really be enabled.

Also, when an Upstart service is enabled, should the dependent services be enabled too? Probably not. But there should be a notice about this, at least.

[1] http://upstart.ubuntu.com/cookbook/#disabling-a-job-from-automatically-starting

[2] example upstart configuration file:

```
lightdm
emits login-session-start
emits desktop-session-start
emits desktop-shutdown
```

```
start on ((((filesystem and runlevel [!06]) and started dbus) and (drm-device-added
 ↪card0 PRIMARY_DEVICE_FOR_DISPLAY=1 or stopped udev-fallback-graphics)) or runlevel
 ↪PREVLEVEL=S)
stop on runlevel [016]
```

**Warning**: This module should not be used on Red Hat systems. For these, the *rh_service* module should be used, as it supports the hybrid upstart/sysvinit system used in RHEL/CentOS 6.

salt.modules.upstart.**available**(*name*)
Returns `True` if the specified service is available, otherwise returns `False`.

CLI Example:

```
salt '*' service.available sshd
```

salt.modules.upstart.**disable**(*name*, ***kwargs*)
Disable the named service from starting on boot

CLI Example:

```
salt '*' service.disable <service name>
```

salt.modules.upstart.**disabled**(*name*)
Check to see if the named service is disabled to start on boot

CLI Example:

```
salt '*' service.disabled <service name>
```

salt.modules.upstart.**enable**(*name*, ***kwargs*)
Enable the named service to start at boot

CLI Example:

```
salt '*' service.enable <service name>
```

salt.modules.upstart.**enabled**(*name*, ***kwargs*)
Check to see if the named service is enabled to start on boot

CLI Example:

```
salt '*' service.enabled <service name>
```

salt.modules.upstart.**force_reload**(*name*)
Force-reload the named service

CLI Example:

```
salt '*' service.force_reload <service name>
```

salt.modules.upstart.**full_restart**(*name*)
Do a full restart (stop/start) of the named service

CLI Example:

```
salt '*' service.full_restart <service name>
```

salt.modules.upstart.**get_all**()
Return all installed services

CLI Example:

```
salt '*' service.get_all
```

salt.modules.upstart.**get_disabled**()
Return the disabled services

CLI Example:

```
salt '*' service.get_disabled
```

salt.modules.upstart.**get_enabled**()
Return the enabled services

CLI Example:

```
salt '*' service.get_enabled
```

salt.modules.upstart.**missing**(*name*)
The inverse of service.available. Returns `True` if the specified service is not available, otherwise returns `False`.

CLI Example:

```
salt '*' service.missing sshd
```

salt.modules.upstart.**reload**(*name*)
Reload the named service

CLI Example:

```
salt '*' service.reload <service name>
```

salt.modules.upstart.**restart**(*name*)
Restart the named service

CLI Example:

```
salt '*' service.restart <service name>
```

salt.modules.upstart.**start**(*name*)
Start the specified service

CLI Example:

```
salt '*' service.start <service name>
```

salt.modules.upstart.**status**(*name*, *sig=None*)
Return the status for a service, returns a bool whether the service is running.

CLI Example:

```
salt '*' service.status <service name>
```

salt.modules.upstart.**stop**(*name*)
Stop the specified service

CLI Example:

```
salt '*' service.stop <service name>
```

### 13.6.328 salt.modules.uptime

#### Wrapper around uptime API

salt.modules.uptime.**check_exists**(*name*)
Check if a given URL is in being monitored by uptime

CLI Example:

```
salt '*' uptime.check_exists http://example.org
```

salt.modules.uptime.**checks_list**()
List URL checked by uptime

CLI Example:

```
salt '*' uptime.checks_list
```

salt.modules.uptime.**create**(*name*, ***params*)
Create a check on a given URL.

Additional parameters can be used and are passed to API (for example interval, maxTime, etc). See the documentation https://github.com/fzaninotto/uptime for a full list of the parameters.

CLI Example:

```
salt '*' uptime.create http://example.org
```

salt.modules.uptime.**delete**(*name*)
Delete a check on a given URL

CLI Example:

```
salt '*' uptime.delete http://example.org
```

### 13.6.329 salt.modules.useradd

Manage users with the useradd command

---

**Important**: If you feel that Salt should be using this module to manage users on a minion, and it is using a different module (or gives an error similar to *`user.info' is not available*), see *here*.

---

salt.modules.useradd.**add**(*name*, *uid=None*, *gid=None*, *groups=None*, *home=None*, *shell=None*, *unique=True*, *system=False*, *fullname=''*, *roomnumber=''*, *workphone=''*, *homephone=''*, *createhome=True*, *loginclass=None*, *root=None*)
Add a user to the minion

CLI Example:

```
salt '*' user.add name <uid> <gid> <groups> <home> <shell>
```

salt.modules.useradd.**chfullname**(*name*, *fullname*)
Change the user's Full Name

CLI Example:

```
salt '*' user.chfullname foo "Foo Bar"
```

salt.modules.useradd.**chgid**(*name*, *gid*, *root=None*)
Change the default group of the user

CLI Example:

```
salt '*' user.chgid foo 4376
```

salt.modules.useradd.**chgroups**(*name*, *groups*, *append=False*, *root=None*)
Change the groups to which this user belongs
**name** User to modify
**groups** Groups to set for the user
**append** [False] If `True`, append the specified group(s). Otherwise, this function will replace the user's groups with the specified group(s).
CLI Examples:

```
salt '*' user.chgroups foo wheel,root
salt '*' user.chgroups foo wheel,root append=True
```

salt.modules.useradd.**chhome**(*name*, *home*, *persist=False*, *root=None*)
Change the home directory of the user, pass True for persist to move files to the new home directory if the old home directory exist.

CLI Example:

```
salt '*' user.chhome foo /home/users/foo True
```

salt.modules.useradd.**chhomephone**(*name*, *homephone*)
Change the user's Home Phone

CLI Example:

```
salt '*' user.chhomephone foo 7735551234
```

salt.modules.useradd.**chloginclass**(*name*, *loginclass*, *root=None*)
Change the default login class of the user

**Note:** This function only applies to OpenBSD systems.

CLI Example:

```
salt '*' user.chloginclass foo staff
```

salt.modules.useradd.**chroomnumber**(*name*, *roomnumber*)
Change the user's Room Number

CLI Example:

```
salt '*' user.chroomnumber foo 123
```

salt.modules.useradd.**chshell**(*name*, *shell*, *root=None*)
Change the default shell of the user

CLI Example:

```
salt '*' user.chshell foo /bin/zsh
```

salt.modules.useradd.**chuid**(*name*, *uid*)
Change the uid for a named user

CLI Example:

```
salt '*' user.chuid foo 4376
```

salt.modules.useradd.**chworkphone**(*name*, *workphone*)
Change the user's Work Phone

CLI Example:

```
salt '*' user.chworkphone foo 7735550123
```

salt.modules.useradd.**delete**(*name*, *remove=False*, *force=False*, *root=None*)
Remove a user from the minion

CLI Example:

```
salt '*' user.delete name remove=True force=True
```

salt.modules.useradd.**get_loginclass**(*name*)
Get the login class of the user

**Note:** This function only applies to OpenBSD systems.

CLI Example:

```
salt '*' user.get_loginclass foo
```

salt.modules.useradd.**getent**(*refresh=False*)
Return the list of all info for all users

CLI Example:

```
salt '*' user.getent
```

salt.modules.useradd.**info**(*name*)
Return user information

CLI Example:

```
salt '*' user.info root
```

salt.modules.useradd.**list_groups**(*name*)
Return a list of groups the named user belongs to

CLI Example:

```
salt '*' user.list_groups foo
```

salt.modules.useradd.**list_users**()
Return a list of all users

CLI Example:

```
salt '*' user.list_users
```

salt.modules.useradd.**primary_group**(*name*)
Return the primary group of the named user

New in version 2016.3.0.

CLI Example:

```
salt '*' user.primary_group saltadmin
```

salt.modules.useradd.**rename**(*name*, *new_name*, *root=None*)
Change the username for a named user

CLI Example:

```
salt '*' user.rename name new_name
```

### 13.6.330 salt.modules.uwsgi

uWSGI stats server http://uwsgi-docs.readthedocs.org/en/latest/StatsServer.html

**maintainer** Peter Baumgartner <pete@lincolnloop.com>

**maturity** new

**platform** all

salt.modules.uwsgi.**stats**(*socket*)
Return the data from *uwsgi --connect-and-read* as a dictionary.
**socket** The socket the uWSGI stats server is listening on
CLI Example:

```
salt '*' uwsgi.stats /var/run/mystatsserver.sock

salt '*' uwsgi.stats 127.0.0.1:5050
```

### 13.6.331 salt.modules.varnish

Support for Varnish

New in version 2014.7.0.

**Note:** These functions are designed to work with all implementations of Varnish from 3.x onwards

salt.modules.varnish.**ban**(*ban_expression*)
Add ban to the varnish cache

CLI Example:

```
salt '*' varnish.ban ban_expression
```

salt.modules.varnish.**ban_list**()
List varnish cache current bans

CLI Example:

```
salt '*' varnish.ban_list
```

salt.modules.varnish.**param_set**(*param*, *value*)
Set a param in varnish cache

CLI Example:

```
salt '*' varnish.param_set param value
```

salt.modules.varnish.**param_show**(*param=None*)
Show params of varnish cache

CLI Example:

```
salt '*' varnish.param_show param
```

salt.modules.varnish.**purge**()
Purge the varnish cache

CLI Example:

```
salt '*' varnish.purge
```

salt.modules.varnish.**version**()
Return server version from varnishd -V

CLI Example:

```
salt '*' varnish.version
```

### 13.6.332 salt.modules.vbox_guest

VirtualBox Guest Additions installer

salt.modules.vbox_guest.**additions_install**(**args*, ***kwargs*)
Install VirtualBox Guest Additions. Uses the CD, connected by VirtualBox.

To connect VirtualBox Guest Additions via VirtualBox graphical interface press `Host+D' (`Host' is usually `Right Ctrl').

See https://www.virtualbox.org/manual/ch04.html#idp52733088 for more details.

CLI Example:

```
salt '*' vbox_guest.additions_install
salt '*' vbox_guest.additions_install reboot=True
salt '*' vbox_guest.additions_install upgrade_os=True
```

**Parameters**

- **reboot** (*bool*) -- reboot computer to complete installation
- **upgrade_os** (*bool*) -- upgrade OS (to ensure the latests version of kernel and developer tools are installed)

**Returns** version of VirtualBox Guest Additions or string with error

salt.modules.vbox_guest.**additions_mount**()
Mount VirtualBox Guest Additions CD to the temp directory.

To connect VirtualBox Guest Additions via VirtualBox graphical interface press `Host+D' (`Host' is usually `Right Ctrl').

CLI Example:

```
salt '*' vbox_guest.additions_mount
```

**Returns** True or OSError exception

salt.modules.vbox_guest.**additions_remove**(***kwargs*)

Remove VirtualBox Guest Additions.

Firstly it tries to uninstall itself by executing `/opt/VBoxGuestAdditions-VERSION/uninstall.run uninstall'. It uses the CD, connected by VirtualBox if it failes.

CLI Example:

```
salt '*' vbox_guest.additions_remove
salt '*' vbox_guest.additions_remove force=True
```

**Parameters** **force** (*bool*) -- force VirtualBox Guest Additions removing
**Returns** True if VirtualBox Guest Additions were removed successfully else False

salt.modules.vbox_guest.**additions_umount**(*mount_point*)

Unmount VirtualBox Guest Additions CD from the temp directory.

CLI Example:

```
salt '*' vbox_guest.additions_umount
```

**Parameters** **mount_point** -- directory VirtualBox Guest Additions is mounted to
**Returns** True or an string with error

salt.modules.vbox_guest.**additions_version**()

Check VirtualBox Guest Additions version.

CLI Example:

```
salt '*' vbox_guest.additions_version
```

**Returns** version of VirtualBox Guest Additions or False if they are not installed

salt.modules.vbox_guest.**grant_access_to_shared_folders_to**(*name*, *users=None*)

Grant access to auto-mounted shared folders to the users.

User is specified by it's name. To grant access for several users use argument *users*. Access will be denied to the users not listed in *users* argument.

See https://www.virtualbox.org/manual/ch04.html#sf_mount_auto for more details.

CLI Example:

```
salt '*' vbox_guest.grant_access_to_shared_folders_to fred
salt '*' vbox_guest.grant_access_to_shared_folders_to users ['fred', 'roman']
```

**Parameters**

- **name** (*str*) -- name of the user to grant access to auto-mounted shared folders to
- **users** (*list of str*) -- list of names of users to grant access to auto-mounted shared folders to (if specified, *name* will not be taken into account)

**Returns** list of users who have access to auto-mounted shared folders

salt.modules.vbox_guest.**list_shared_folders_users**()
List users who have access to auto-mounted shared folders.

See https://www.virtualbox.org/manual/ch04.html#sf_mount_auto for more details.

CLI Example:

```
salt '*' vbox_guest.list_shared_folders_users
```

**Returns** list of users who have access to auto-mounted shared folders

### 13.6.333 salt.modules.vboxmanage module

Support for VirtualBox using the VBoxManage command

New in version 2016.3.0.

If the `vboxdrv` kernel module is not loaded, this module can automatically load it by configuring `autoload_vboxdrv` in `/etc/salt/minion`:

The default for this setting is `False`.

**depends** virtualbox

salt.modules.vboxmanage.**clonemedium**(*medium*, *uuid_in=None*, *file_in=None*, *uuid_out=None*, *file_out=None*, *mformat=None*, *variant=None*, *existing=False*, ***kwargs*)
Clone a new VM from an existing VM

CLI Example:

```
salt 'hypervisor' vboxmanage.clonemedium <name> <new_name>
```

salt.modules.vboxmanage.**clonevm**(*name=None*, *uuid=None*, *new_name=None*, *snapshot_uuid=None*, *snapshot_name=None*, *mode='machine'*, *options=None*, *basefolder=None*, *new_uuid=None*, *register=False*, *groups=None*, ***kwargs*)
Clone a new VM from an existing VM

CLI Example:

```
salt 'hypervisor' vboxmanage.clonevm <name> <new_name>
```

salt.modules.vboxmanage.**create**(*name*, *groups=None*, *ostype=None*, *register=True*, *basefolder=None*, *new_uuid=None*, ***kwargs*)
Create a new VM

CLI Example:

```
salt 'hypervisor' vboxmanage.create <name>
```

salt.modules.vboxmanage.**destroy**(*name*)
Unregister and destroy a VM

salt.modules.vboxmanage.**list_items**(*item*, *details=False*, *group_by='UUID'*)
Return a list of a specific type of item. The following items are available:
vms runningvms ostypes hostdvds hostfloppies intnets bridgedifs hostonlyifs natnets dhcpservers hostinfo hostcpuids hddbackends hdds dvds floppies usbhost usbfilters systemproperties extpacks groups webcams screenshotformats
CLI Example:

```
salt 'hypervisor' vboxmanage.items <item>
salt 'hypervisor' vboxmanage.items <item> details=True
salt 'hypervisor' vboxmanage.items <item> details=True group_by=Name
```

Some items do not display well, or at all, unless `details` is set to `True`. By default, items are grouped by the `UUID` field, but not all items contain that field. In those cases, another field must be specified.

`salt.modules.vboxmanage.`**`list_nodes`**`()`
Return a list of registered VMs

`salt.modules.vboxmanage.`**`list_nodes_full`**`()`
Return a list of registered VMs, with detailed information

`salt.modules.vboxmanage.`**`list_nodes_min`**`()`
Return a list of registered VMs, with minimal information

`salt.modules.vboxmanage.`**`list_ostypes`**`()`
List the available OS Types

`salt.modules.vboxmanage.`**`register`**`(`*filename*`)`
Register a VM

`salt.modules.vboxmanage.`**`start`**`(`*name*`)`
Start a VM

`salt.modules.vboxmanage.`**`stop`**`(`*name*`)`
Stop a VM

`salt.modules.vboxmanage.`**`unregister`**`(`*name*, *delete=False*`)`
Unregister a VM

`salt.modules.vboxmanage.`**`vboxcmd`**`()`
Return the location of the VBoxManage command

### 13.6.334 salt.modules.victorops

Support for VictorOps

New in version 2015.8.0.

Requires an `api_key` in `/etc/salt/minion`:

`salt.modules.victorops.`**`create_event`**`(`*message_type=None*, *routing_key='everybody'*, ***kwargs*`)`
Create an event in VictorOps. Designed for use in states.

The following parameters are required:

**Parameters** **`message_type`** -- One of the following values: INFO, WARNING, ACKNOWLEDGEMENT, CRITICAL, RECOVERY.

The following parameters are optional:

**Parameters**

- **`routing_key`** -- The key for where messages should be routed. By default, sent to `everyone' route.
- **`entity_id`** -- The name of alerting entity. If not provided, a random name will be assigned.
- **`timestamp`** -- Timestamp of the alert in seconds since epoch. Defaults to the time the alert is received at VictorOps.

:param timestamp_fmt The date format for the timestamp parameter.

**Parameters**

- **state_start_time** -- The time this entity entered its current state (seconds since epoch). Defaults to the time alert is received.
- **state_start_time_fmt** -- The date format for the timestamp parameter.
- **state_message** -- Any additional status information from the alert item.
- **entity_is_host** -- Used within VictorOps to select the appropriate display format for the incident.
- **entity_display_name** -- Used within VictorOps to display a human-readable name for the entity.
- **ack_message** -- A user entered comment for the acknowledgment.
- **ack_author** -- The user that acknowledged the incident.

**Returns** A dictionary with result, entity_id, and message if result was failure.

CLI Example:

```
salt myminion victorops.create_event message_type='CRITICAL' routing_key='everyone
↪'                  entity_id='hostname/diskspace'

salt myminion victorops.create_event message_type='ACKNOWLEDGEMENT' routing_key=
↪'everyone'                 entity_id='hostname/diskspace' ack_message=
↪'Acknowledged' ack_author='username'

salt myminion victorops.create_event message_type='RECOVERY' routing_key='everyone
↪'                  entity_id='hostname/diskspace'
```

**The following parameters are required**: message_type

### 13.6.335 salt.modules.virt

Work with virtual machines managed by libvirt

**depends** libvirt Python module

`salt.modules.virt.`**`cpu_baseline`**(*full=False*, *migratable=False*, *out='libvirt'*)

Return the optimal `custom' CPU baseline config for VM's on this minion

New in version 2016.3.0.

**Parameters**

- **full** -- Return all CPU features rather than the ones on top of the closest CPU model
- **migratable** -- Exclude CPU features that are unmigratable (libvirt 2.13+)
- **out** -- `libvirt' (default) for usable libvirt XML definition, `salt' for nice dict

CLI Example:

```
salt '*' virt.cpu_baseline
```

`salt.modules.virt.`**`create`**(*domain*)

Deprecated since version 2016.3.0: Use *`start()`* instead.

Start a defined domain

CLI Example:

```
salt '*' virt.create <domain>
```

salt.modules.virt.**create_xml_path**(*path*)
Start a domain based on the XML-file path passed to the function

CLI Example:

```
salt '*' virt.create_xml_path <path to XML file on the node>
```

salt.modules.virt.**create_xml_str**(*xml*)
Start a domain based on the XML passed to the function

CLI Example:

```
salt '*' virt.create_xml_str <XML in string format>
```

salt.modules.virt.**ctrl_alt_del**(*vm_*)
Sends CTRL+ALT+DEL to a VM

CLI Example:

```
salt '*' virt.ctrl_alt_del <domain>
```

salt.modules.virt.**define_vol_xml_path**(*path*)
Define a volume based on the XML-file path passed to the function

CLI Example:

```
salt '*' virt.define_vol_xml_path <path to XML file on the node>
```

salt.modules.virt.**define_vol_xml_str**(*xml*)
Define a volume based on the XML passed to the function

CLI Example:

```
salt '*' virt.define_vol_xml_str <XML in string format>
```

salt.modules.virt.**define_xml_path**(*path*)
Define a domain based on the XML-file path passed to the function

CLI Example:

```
salt '*' virt.define_xml_path <path to XML file on the node>
```

salt.modules.virt.**define_xml_str**(*xml*)
Define a domain based on the XML passed to the function

CLI Example:

```
salt '*' virt.define_xml_str <XML in string format>
```

salt.modules.virt.**delete_snapshots**(*name*, **names*, ***kwargs*)
Delete one or more snapshots of the given VM.

Options:
•**all**: Remove all snapshots. Values: True or False (default False).
New in version 2016.3.0.

CLI Example:

```
salt '*' virt.delete_snapshots <domain> all=True
salt '*' virt.delete_snapshots <domain> <snapshot>
salt '*' virt.delete_snapshots <domain> <snapshot1> <snapshot2> ...
```

salt.modules.virt.**destroy**(*domain*)

Deprecated since version 2016.3.0: Use *stop()* instead.

Power off a defined domain

CLI Example:

```
salt '*' virt.destroy <domain>
```

salt.modules.virt.**freecpu**()

Return an int representing the number of unallocated cpus on this hypervisor

CLI Example:

```
salt '*' virt.freecpu
```

salt.modules.virt.**freemem**()

Return an int representing the amount of memory (in MB) that has not been given to virtual machines on this node

CLI Example:

```
salt '*' virt.freemem
```

salt.modules.virt.**full_info**()

Return the node_info, vm_info and freemem

CLI Example:

```
salt '*' virt.full_info
```

salt.modules.virt.**get_disks**(*vm_*)

Return the disks of a named vm

CLI Example:

```
salt '*' virt.get_disks <domain>
```

salt.modules.virt.**get_graphics**(*vm_*)

Returns the information on vnc for a given vm

CLI Example:

```
salt '*' virt.get_graphics <domain>
```

salt.modules.virt.**get_macs**(*vm_*)

Return a list off MAC addresses from the named vm

CLI Example:

```
salt '*' virt.get_macs <domain>
```

salt.modules.virt.**get_nics**(*vm_*)

Return info about the network interfaces of a named vm

CLI Example:

```
salt '*' virt.get_nics <domain>
```

salt.modules.virt.**get_profiles**(*hypervisor=None*)
Return the virt profiles for hypervisor.

Currently there are profiles for:
- nic
- disk

CLI Example:

```
salt '*' virt.get_profiles
salt '*' virt.get_profiles hypervisor=esxi
```

salt.modules.virt.**get_xml**(*vm_*)
Returns the XML for a given vm

CLI Example:

```
salt '*' virt.get_xml <domain>
```

salt.modules.virt.**init**(*name*, *cpu*, *mem*, *image=None*, *nic='default'*, *hypervisor='kvm'*, *start=True*, *disk='default'*, *saltenv='base'*, *seed=True*, *install=True*, *pub_key=None*, *priv_key=None*, *seed_cmd='seed.apply'*, *enable_vnc=False*, ***kwargs*)
Initialize a new vm

CLI Example:

```
salt 'hypervisor' virt.init vm_name 4 512 salt://path/to/image.raw
salt 'hypervisor' virt.init vm_name 4 512 nic=profile disk=profile
```

salt.modules.virt.**is_hyper**()
Returns a bool whether or not this node is a hypervisor of any kind

CLI Example:

```
salt '*' virt.is_hyper
```

salt.modules.virt.**is_kvm_hyper**()
Returns a bool whether or not this node is a KVM hypervisor

CLI Example:

```
salt '*' virt.is_kvm_hyper
```

salt.modules.virt.**is_xen_hyper**()
Returns a bool whether or not this node is a XEN hypervisor

CLI Example:

```
salt '*' virt.is_xen_hyper
```

salt.modules.virt.**list_active_vms**()
Return a list of names for active virtual machine on the minion

CLI Example:

```
salt '*' virt.list_active_vms
```

salt.modules.virt.**list_domains**()
Return a list of available domains.

CLI Example:

```
salt '*' virt.list_domains
```

salt.modules.virt.**list_inactive_vms**()
Return a list of names for inactive virtual machine on the minion

CLI Example:

```
salt '*' virt.list_inactive_vms
```

salt.modules.virt.**list_snapshots**(*domain=None*)
List available snapshots for certain vm or for all.

New in version 2016.3.0.

CLI Example:

```
salt '*' virt.list_snapshots
salt '*' virt.list_snapshots <domain>
```

salt.modules.virt.**list_vms**()
Deprecated since version 2016.3.0: Use *list_domains()* instead.

List all virtual machines.

CLI Example:

```
salt '*' virt.list_vms <domain>
```

salt.modules.virt.**migrate**(*vm_*, *target*, *ssh=False*)
Shared storage migration

CLI Example:

```
salt '*' virt.migrate <domain> <target hypervisor>
```

salt.modules.virt.**migrate_non_shared**(*vm_*, *target*, *ssh=False*)
Attempt to execute non-shared storage ``all'' migration

CLI Example:

```
salt '*' virt.migrate_non_shared <vm name> <target hypervisor>
```

salt.modules.virt.**migrate_non_shared_inc**(*vm_*, *target*, *ssh=False*)
Attempt to execute non-shared storage ``all'' migration

CLI Example:

```
salt '*' virt.migrate_non_shared_inc <vm name> <target hypervisor>
```

salt.modules.virt.**node_info**()
Return a dict with information about this node

CLI Example:

```
salt '*' virt.node_info
```

salt.modules.virt.**pause**(*vm_*)
Pause the named vm

CLI Example:

```
salt '*' virt.pause <domain>
```

salt.modules.virt.**purge**(*vm_*, *dirs=False*)

Recursively destroy and delete a virtual machine, pass True for dir's to also delete the directories containing the virtual machine disk images - USE WITH EXTREME CAUTION!

CLI Example:

```
salt '*' virt.purge <domain>
```

salt.modules.virt.**reboot**(*name*)

Reboot a domain via ACPI request

CLI Example:

```
salt '*' virt.reboot <domain>
```

salt.modules.virt.**reset**(*vm_*)

Reset a VM by emulating the reset button on a physical machine

CLI Example:

```
salt '*' virt.reset <domain>
```

salt.modules.virt.**resume**(*vm_*)

Resume the named vm

CLI Example:

```
salt '*' virt.resume <domain>
```

salt.modules.virt.**revert_snapshot**(*name*, *snapshot=None*, *cleanup=False*)

Revert snapshot to the previous from current (if available) or to the specific.

Options:

- **cleanup**: Remove all newer than reverted snapshots. Values: True or False (default False).

New in version 2016.3.0.

CLI Example:

```
salt '*' virt.revert <domain>
salt '*' virt.revert <domain> <snapshot>
```

salt.modules.virt.**seed_non_shared_migrate**(*disks*, *force=False*)

Non shared migration requires that the disks be present on the migration destination, pass the disks information via this function, to the migration destination before executing the migration.

CLI Example:

```
salt '*' virt.seed_non_shared_migrate <disks>
```

salt.modules.virt.**set_autostart**(*vm_*, *state='on'*)

Set the autostart flag on a VM so that the VM will start with the host system on reboot.

CLI Example:

```
salt "*" virt.set_autostart <domain> <on | off>
```

salt.modules.virt.**setmem**(*vm_*, *memory*, *config=False*)

Changes the amount of memory allocated to VM. The VM must be shutdown for this to work.

memory is to be specified in MB If config is True then we ask libvirt to modify the config as well

CLI Example:

```
salt '*' virt.setmem <domain> <size>
salt '*' virt.setmem my_domain 768
```

salt.modules.virt.**setvcpus**(*vm_*, *vcpus*, *config=False*)

Changes the amount of vcpus allocated to VM. The VM must be shutdown for this to work.

vcpus is an int representing the number to be assigned If config is True then we ask libvirt to modify the config as well

CLI Example:

```
salt '*' virt.setvcpus <domain> <amount>
salt '*' virt.setvcpus my_domain 4
```

salt.modules.virt.**shutdown**(*vm_*)

Send a soft shutdown signal to the named vm

CLI Example:

```
salt '*' virt.shutdown <domain>
```

salt.modules.virt.**snapshot**(*domain*, *name=None*, *suffix=None*)

Create a snapshot of a VM.

Options:

- **name: Name of the snapshot. If the name is omitted, then will be used original domain name with** ISO 8601 time as a suffix.
- **suffix: Add suffix for the new name. Useful in states, where such snapshots** can be distinguished from manually created.

New in version 2016.3.0.

CLI Example:

```
salt '*' virt.snapshot <domain>
```

salt.modules.virt.**start**(*name*)

Start a defined domain

CLI Example:

```
salt '*' virt.start <domain>
```

salt.modules.virt.**stop**(*name*)

Hard power down the virtual machine, this is equivalent to pulling the power.

CLI Example:

```
salt '*' virt.stop <domain>
```

salt.modules.virt.**undefine**(*vm_*)

Remove a defined vm, this does not purge the virtual machine image, and this only works if the vm is powered down

CLI Example:

```
salt '*' virt.undefine <domain>
```

salt.modules.virt.**virt_type**()

Returns the virtual machine type as a string

CLI Example:

```
salt '*' virt.virt_type
```

salt.modules.virt.**vm_cputime**(*vm_=None*)

Return cputime used by the vms on this hyper in a list of dicts:

```
[
    'your-vm': {
        'cputime' <int>
        'cputime_percent' <int>
        },
    ...
    ]
```

If you pass a VM name in as an argument then it will return info for just the named VM, otherwise it will return all VMs.

CLI Example:

```
salt '*' virt.vm_cputime
```

salt.modules.virt.**vm_diskstats**(*vm_=None*)

Return disk usage counters used by the vms on this hyper in a list of dicts:

```
[
    'your-vm': {
        'rd_req'   : 0,
        'rd_bytes' : 0,
        'wr_req'   : 0,
        'wr_bytes' : 0,
        'errs'     : 0
        },
    ...
    ]
```

If you pass a VM name in as an argument then it will return info for just the named VM, otherwise it will return all VMs.

CLI Example:

```
salt '*' virt.vm_blockstats
```

salt.modules.virt.**vm_info**(*vm_=None*)

Return detailed information about the vms on this hyper in a list of dicts:

```
[
    'your-vm': {
        'cpu': <int>,
        'maxMem': <int>,
        'mem': <int>,
        'state': '<state>',
        'cputime' <int>
```

```
        },
    ...
    ]
```

If you pass a VM name in as an argument then it will return info for just the named VM, otherwise it will return all VMs.

CLI Example:

```
salt '*' virt.vm_info
```

salt.modules.virt.**vm_netstats**(*vm_=None*)

Return combined network counters used by the vms on this hyper in a list of dicts:

```
[
    'your-vm': {
        'rx_bytes'   : 0,
        'rx_packets' : 0,
        'rx_errs'    : 0,
        'rx_drop'    : 0,
        'tx_bytes'   : 0,
        'tx_packets' : 0,
        'tx_errs'    : 0,
        'tx_drop'    : 0
        },
    ...
    ]
```

If you pass a VM name in as an argument then it will return info for just the named VM, otherwise it will return all VMs.

CLI Example:

```
salt '*' virt.vm_netstats
```

salt.modules.virt.**vm_state**(*vm_=None*)

Return list of all the vms and their state.

If you pass a VM name in as an argument then it will return info for just the named VM, otherwise it will return all VMs.

CLI Example:

```
salt '*' virt.vm_state <domain>
```

### 13.6.336 salt.modules.virtualenv

Create virtualenv environments.

New in version 0.17.0.

salt.modules.virtualenv_mod.**create**(*path*, *venv_bin=None*, *system_site_packages=False*, *distribute=False*, *clear=False*, *python=None*, *extra_search_dir=None*, *never_download=None*, *prompt=None*, *pip=False*, *symlinks=None*, *upgrade=None*, *user=None*, *use_vt=False*, *saltenv='base'*)

Create a virtualenv

**path** The path to the virtualenv to be created

**venv_bin** The name (and optionally path) of the virtualenv command. This can also be set globally in the minion config file as `virtualenv.venv_bin`. Defaults to `virtualenv`.
**system_site_packages** [False] Passthrough argument given to virtualenv or pyvenv
**distribute** [False] Passthrough argument given to virtualenv
**pip** [False] Install pip after creating a virtual environment. Implies `distribute=True`
**clear** [False] Passthrough argument given to virtualenv or pyvenv
**python** [None (default)] Passthrough argument given to virtualenv
**extra_search_dir** [None (default)] Passthrough argument given to virtualenv
**never_download** [None (default)] Passthrough argument given to virtualenv if True
**prompt** [None (default)] Passthrough argument given to virtualenv if not None
**symlinks** [None] Passthrough argument given to pyvenv if True
**upgrade** [None] Passthrough argument given to pyvenv if True
**user** [None] Set ownership for the virtualenv
**runas** [None] Set ownership for the virtualenv

Deprecated since version 2014.1.0: `user` should be used instead
**use_vt** [False] Use VT terminal emulation (see output while installing)

New in version 2015.5.0.
**saltenv** [`base'] Specify a different environment. The default environment is `base`.

New in version 2014.1.0.

---

**Note:** The `runas` argument is deprecated as of 2014.1.0. `user` should be used instead.

---

CLI Example:

```
salt '*' virtualenv.create /path/to/new/virtualenv
```

`salt.modules.virtualenv_mod.`**`get_distribution_path`**(*venv*, *distribution*)
Return the path to a distribution installed inside a virtualenv

New in version 2016.3.0.
**venv** Path to the virtualenv.
**distribution** Name of the distribution. Note, all non-alphanumeric characters will be converted to dashes.
CLI Example:

```
salt '*' virtualenv.get_distribution_path /path/to/my/venv my_distribution
```

`salt.modules.virtualenv_mod.`**`get_resource_content`**(*venv*, *package_or_requirement=None*, *resource_name=None*, *package=None*, *resource=None*)
Return the content of a package resource installed inside a virtualenv
**venv** Path to the virtualenv
**package** Name of the package in which the resource resides

New in version 2016.3.0.
**package_or_requirement** Name of the package in which the resource resides

Deprecated since version 2016.3.0: Use `package` instead.
**resource** Name of the resource of which the content is to be returned

New in version 2016.3.0.
**resource_name** Name of the resource of which the content is to be returned

Deprecated since version 2016.3.0.
New in version 2015.5.0.
**venv** Path to the virtualenv.

**package_or_requirement** Name of the package where the resource resides in.
**resource_name** Name of the resource of which the content is to be returned.
CLI Example:

```
salt '*' virtualenv.get_resource_content /path/to/my/venv my_package my/resource.
↪xml
```

salt.modules.virtualenv_mod.**get_resource_path**(*venv*, *package_or_requirement=None*, *resource_name=None*, *package=None*, *resource=None*)

Return the path to a package resource installed inside a virtualenv
**venv** Path to the virtualenv
**package** Name of the package in which the resource resides

New in version 2016.3.0.

**package_or_requirement** Name of the package in which the resource resides

Deprecated since version 2016.3.0: Use `package` instead.

**resource** Name of the resource of which the path is to be returned

New in version 2016.3.0.

**resource_name** Name of the resource of which the path is to be returned

Deprecated since version 2016.3.0.

New in version 2015.5.0.
**venv** Path to the virtualenv.
**package_or_requirement** Name of the package where the resource resides in.
**resource_name** Name of the resource of which the path is to be returned.
CLI Example:

```
salt '*' virtualenv.get_resource_path /path/to/my/venv my_package my/resource.xml
```

salt.modules.virtualenv_mod.**get_site_packages**(*venv*)

Return the path to the site-packages directory of a virtualenv
**venv** Path to the virtualenv.
CLI Example:

```
salt '*' virtualenv.get_site_packages /path/to/my/venv
```

### 13.6.337 salt.modules.vsphere

Manage VMware vCenter servers and ESXi hosts.

New in version 2015.8.4.

#### Dependencies

- pyVmomi Python Module
- ESXCLI

#### pyVmomi

PyVmomi can be installed via pip:

```
pip install pyVmomi
```

**Note:** Version 6.0 of pyVmomi has some problems with SSL error handling on certain versions of Python. If using version 6.0 of pyVmomi, Python 2.6, Python 2.7.9, or newer must be present. This is due to an upstream dependency in pyVmomi 6.0 that is not supported in Python versions 2.7 to 2.7.8. If the version of Python is not in the supported range, you will need to install an earlier version of pyVmomi. See Issue #29537 for more information.

Based on the note above, to install an earlier version of pyVmomi than the version currently listed in PyPi, run the following:

```
pip install pyVmomi==5.5.0.2014.1.1
```

The 5.5.0.2014.1.1 is a known stable version that this original vSphere Execution Module was developed against.

### ESXCLI

Currently, about a third of the functions used in the vSphere Execution Module require the ESXCLI package be installed on the machine running the Proxy Minion process.

The ESXCLI package is also referred to as the VMware vSphere CLI, or vCLI. VMware provides vCLI package installation instructions for vSphere 5.5 and vSphere 6.0.

Once all of the required dependencies are in place and the vCLI package is installed, you can check to see if you can connect to your ESXi host or vCenter server by running the following command:

```
esxcli -s <host-location> -u <username> -p <password> system syslog config get
```

If the connection was successful, ESXCLI was successfully installed on your system. You should see output related to the ESXi host's syslog configuration.

**Note:** Be aware that some functionality in this execution module may depend on the type of license attached to a vCenter Server or ESXi host(s).

For example, certain services are only available to manipulate service state or policies with a VMware vSphere Enterprise or Enterprise Plus license, while others are available with a Standard license. The `ntpd` service is restricted to an Enterprise Plus license, while `ssh` is available via the Standard license.

Please see the vSphere Comparison page for more information.

### About

This execution module was designed to be able to handle connections both to a vCenter Server, as well as to an ESXi host. It utilizes the pyVmomi Python library and the ESXCLI package to run remote execution functions against either the defined vCenter server or the ESXi host.

Whether or not the function runs against a vCenter Server or an ESXi host depends entirely upon the arguments passed into the function. Each function requires a `host` location, `username`, and `password`. If the credentials provided apply to a vCenter Server, then the function will be run against the vCenter Server. For example, when listing hosts using vCenter credentials, you'll get a list of hosts associated with that vCenter Server:

```
# salt my-minion vsphere.list_hosts <vcenter-ip> <vcenter-user> <vcenter-password>
my-minion:
- esxi-1.example.com
- esxi-2.example.com
```

However, some functions should be used against ESXi hosts, not vCenter Servers. Functionality such as getting a host's coredump network configuration should be performed against a host and not a vCenter server. If the authentication information you're using is against a vCenter server and not an ESXi host, you can provide the host name that is associated with the vCenter server in the command, as a list, using the `host_names` or `esxi_host` kwarg. For example:

```
# salt my-minion vsphere.get_coredump_network_config <vcenter-ip> <vcenter-user>
 ↪  <vcenter-password> esxi_hosts='[esxi-1.example.com, esxi-2.example.com]'
my-minion:
----------
    esxi-1.example.com:
        ----------
        Coredump Config:
            ----------
            enabled:
                False
    esxi-2.example.com:
        ----------
        Coredump Config:
            ----------
            enabled:
                True
            host_vnic:
                vmk0
            ip:
                coredump-location.example.com
            port:
                6500
```

You can also use these functions against an ESXi host directly by establishing a connection to an ESXi host using the host's location, username, and password. If ESXi connection credentials are used instead of vCenter credentials, the `host_names` and `esxi_hosts` arguments are not needed.

```
# salt my-minion vsphere.get_coredump_network_config esxi-1.example.com root <host-
 ↪password>
local:
----------
    10.4.28.150:
        ----------
        Coredump Config:
            ----------
            enabled:
                True
            host_vnic:
                vmk0
            ip:
                coredump-location.example.com
            port:
                6500
```

salt.modules.vsphere.**add_host_to_dvs**(*host*, *username*, *password*, *vmknic_name*, *vmnic_name*, *dvs_name*, *target_portgroup_name*, *uplink_portgroup_name*, *protocol=None*, *port=None*, *host_names=None*)

Adds an ESXi host to a vSphere Distributed Virtual Switch and migrates the desired adapters to the DVS from the standard switch.

**host** The location of the vCenter server.

**username** The username used to login to the vCenter server.

**password** The password used to login to the vCenter server.

**vmknic_name** The name of the virtual NIC to migrate.

**vmnic_name** The name of the physical NIC to migrate.

**dvs_name** The name of the Distributed Virtual Switch.

**target_portgroup_name** The name of the distributed portgroup in which to migrate the virtual NIC.

**uplink_portgroup_name** The name of the uplink portgroup in which to migrate the physical NIC.

**protocol** Optionally set to alternate protocol if the vCenter server or ESX/ESXi host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the vCenter server or ESX/ESXi host is not using the default port. Default port is `443`.

**host_names**: An array of VMware host names to migrate

CLI Example:

```
salt some_host vsphere.add_host_to_dvs host='vsphere.corp.com'
    username='administrator@vsphere.corp.com' password='vsphere_password'
    vmknic_name='vmk0' vmnic_name='vnmic0' dvs_name='DSwitch'
    target_portgroup_name='DPortGroup' uplink_portgroup_name='DSwitch1-DVUplinks-
↪181'
    protocol='https' port='443', host_names="['esxi1.corp.com','esxi2.corp.com',
↪'esxi3.corp.com']"
```

Return Example:

```
somehost:
    ----------
    esxi1.corp.com:
        ----------
        dvs:
            DSwitch
        portgroup:
            DPortGroup
        status:
            True
        uplink:
            DSwitch-DVUplinks-181
        vmknic:
            vmk0
        vmnic:
            vmnic0
    esxi2.corp.com:
        ----------
        dvs:
            DSwitch
        portgroup:
            DPortGroup
        status:
            True
        uplink:
            DSwitch-DVUplinks-181
```

```
        vmknic:
            vmk0
        vmnic:
            vmnic0
    esxi3.corp.com:
        ----------
        dvs:
            DSwitch
        portgroup:
            DPortGroup
        status:
            True
        uplink:
            DSwitch-DVUplinks-181
        vmknic:
            vmk0
        vmnic:
            vmnic0
    message:
    success:
        True
```

This was very difficult to figure out. VMware's PyVmomi documentation at

https://github.com/vmware/pyvmomi/blob/master/docs/vim/DistributedVirtualSwitch.rst (which is a copy of the official documentation here: https://www.vmware.com/support/developer/converter-sdk/conv60_apireference/vim.DistributedVirtualSwitch.html)

says to create the DVS, create distributed portgroups, and then add the host to the DVS specifying which physical NIC to use as the port backing. However, if the physical NIC is in use as the only link from the host to vSphere, this will fail with an unhelpful ``busy'' error.

There is, however, a Powershell PowerCLI cmdlet called Add-VDSwitchPhysicalNetworkAdapter that does what we want. I used Onyx (https://labs.vmware.com/flings/onyx) to sniff the SOAP stream from Powershell to our vSphere server and got this snippet out:

**<UpdateNetworkConfig xmlns="urn:vim25``>** <_this type="HostNetworkSystem">networkSystem-187</_this> <config>

**<vswitch>** <changeOperation>edit</changeOperation> <name>vSwitch0</name> <spec>

<numPorts>7812</numPorts>

</spec>

</vswitch> <proxySwitch>

<changeOperation>edit</changeOperation> <uuid>73 a4 05 50 b0 d2 7e b9-38 80 5d 24 65 8f da 70</uuid> <spec> <backing xsi:type="DistributedVirtualSwitchHostMemberPnicBacking">

<pnicSpec><pnicDevice>vmnic0</pnicDevice></pnicSpec>

</backing> </spec>

</proxySwitch> <portgroup>

<changeOperation>remove</changeOperation> <spec>

<name>Management Network</name><vlanId>-1</vlanId><vswitchName /><policy />

</spec>

```
</portgroup> <vnic>
    <changeOperation>edit</changeOperation> <device>vmk0</device> <port-
    group /> <spec>
        <distributedVirtualPort> <switchUuid>73 a4 05 50 b0
            d2 7e b9-38 80 5d 24 65 8f da 70</switchUuid>
            <portgroupKey>dvportgroup-191</portgroupKey>
        </distributedVirtualPort>
    </spec>
</vnic>
</config> <changeMode>modify</changeMode>
</UpdateNetworkConfig>
```

The SOAP API maps closely to PyVmomi, so from there it was (relatively) easy to figure out what Python to write.

`salt.modules.vsphere.`**`coredump_network_enable`**(*host*, *username*, *password*, *enabled*, *protocol=None*, *port=None*, *esxi_hosts=None*)

Enable or disable ESXi core dump collection. Returns `True` if coredump is enabled and returns `False` if core dump is not enabled. If there was an error, the error will be the value printed in the `Error` key dictionary for the given host.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**enabled** Python True or False to enable or disable coredumps.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**esxi_hosts** If `host` is a vCenter host, then use esxi_hosts to execute this function on a list of one or more ESXi machines.

CLI Example:

```
# Used for ESXi host connection information
salt '*' vsphere.coredump_network_enable my.esxi.host root bad-password True

# Used for connecting to a vCenter Server
salt '*' vsphere.coredump_network_enable my.vcenter.location root bad-password
 ↪True             esxi_hosts='[esxi-1.host.com, esxi-2.host.com]'
```

`salt.modules.vsphere.`**`enable_firewall_ruleset`**(*host*, *username*, *password*, *ruleset_enable*, *ruleset_name*, *protocol=None*, *port=None*, *esxi_hosts=None*)

Enable or disable an ESXi firewall rule set.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**ruleset_enable** True to enable the ruleset, false to disable.

**ruleset_name** Name of ruleset to target.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**esxi_hosts** If `host` is a vCenter host, then use esxi_hosts to execute this function on a list of one or more ESXi machines.

**Returns** A standard cmd.run_all dictionary, per host.

CLI Example:

```
# Used for ESXi host connection information
salt '*' vsphere.enable_firewall_ruleset my.esxi.host root bad-password True
 ↪'syslog'

# Used for connecting to a vCenter Server
salt '*' vsphere.enable_firewall_ruleset my.vcenter.location root bad-password
 ↪True 'syslog'             esxi_hosts='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**esxcli_cmd**(*host*, *username*, *password*, *cmd_str*, *protocol=None*, *port=None*, *esxi_hosts=None*)

Run an ESXCLI command directly on the host or list of hosts.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**cmd_str** The ESXCLI command to run. Note: This should not include the `-s`, `-u`, `-p`, `-h`, `--protocol`, or `--portnumber` arguments that are frequently passed when using a bare ESXCLI command from the command line. Those arguments are handled by this function via the other args and kwargs.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**esxi_hosts** If `host` is a vCenter host, then use esxi_hosts to execute this function on a list of one or more ESXi machines.

CLI Example:

```
# Used for ESXi host connection information
salt '*' vsphere.esxcli_cmd my.esxi.host root bad-password              'system
 ↪coredump network get'

# Used for connecting to a vCenter Server
salt '*' vsphere.esxcli_cmd my.vcenter.location root bad-password
 ↪'system coredump network get' esxi_hosts='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**get_coredump_network_config**(*host*, *username*, *password*, *protocol=None*, *port=None*, *esxi_hosts=None*)

Retrieve information on ESXi or vCenter network dump collection and format it into a dictionary.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**esxi_hosts** If `host` is a vCenter host, then use esxi_hosts to execute this function on a list of one or more ESXi machines.

**Returns** A dictionary with the network configuration, or, if getting the network config failed, a an error message retrieved from the standard cmd.run_all dictionary, per host.

CLI Example:

```
# Used for ESXi host connection information
salt '*' vsphere.get_coredump_network_config my.esxi.host root bad-password

# Used for connecting to a vCenter Server
salt '*' vsphere.get_coredump_network_config my.vcenter.location root bad-
 ↪password             esxi_hosts='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**get_firewall_status**(*host*, *username*, *password*, *protocol=None*, *port=None*, *esxi_hosts=None*)

Show status of all firewall rule sets.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**esxi_hosts** If `host` is a vCenter host, then use esxi_hosts to execute this function on a list of one or more ESXi machines.

**Returns** Nested dictionary with two toplevel keys `rulesets` and `success` `success` will be True or False depending on query success `rulesets` will list the rulesets and their statuses if `success` was true, per host.

CLI Example:

```
# Used for ESXi host connection information
salt '*' vsphere.get_firewall_status my.esxi.host root bad-password

# Used for connecting to a vCenter Server
salt '*' vsphere.get_firewall_status my.vcenter.location root bad-password
 ↪    esxi_hosts='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**get_host_datetime**(*host*, *username*, *password*, *protocol=None*, *port=None*, *host_names=None*)

Get the date/time information for a given host or list of host_names.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter the hosts for which to get date/time information.

If host_names is not provided, the date/time information will be retrieved for the `host` location instead. This is useful for when service instance connection information is used for a single ESXi host.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.get_host_datetime my.esxi.host root bad-password

# Used for connecting to a vCenter Server
salt '*' vsphere.get_host_datetime my.vcenter.location root bad-password
 ↪host_names='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**get_ntp_config**(*host*, *username*, *password*, *protocol=None*, *port=None*, *host_names=None*)

Get the NTP configuration information for a given host or list of host_names.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter the hosts for which to get ntp configuration information.

If host_names is not provided, the NTP configuration will be retrieved for the `host` location instead. This is useful for when service instance connection information is used for a single ESXi host.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.get_ntp_config my.esxi.host root bad-password

# Used for connecting to a vCenter Server
salt '*' vsphere.get_ntp_config my.vcenter.location root bad-password         host_
 ↪names='[esxi-1.host.com, esxi-2.host.com]'
```

`salt.modules.vsphere.`**`get_service_policy`**(*host*, *username*, *password*, *service_name*, *protocol=None*, *port=None*, *host_names=None*)

Get the service name's policy for a given host or list of hosts.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**service_name**

**The name of the service for which to retrieve the policy. Supported service names are:**

- DCUI
- TSM
- SSH
- lbtd
- lsassd
- lwiod
- netlogond
- ntpd
- sfcbd-watchdog
- snmpd
- vprobed
- vpxa
- xorg

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter the hosts for which to get service policy information.

If host_names is not provided, the service policy information will be retrieved for the `host` location instead. This is useful for when service instance connection information is used for a single ESXi host.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.get_service_policy my.esxi.host root bad-password 'ssh'

# Used for connecting to a vCenter Server
salt '*' vsphere.get_service_policy my.vcenter.location root bad-password 'ntpd' ↪
    host_names='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**get_service_running**(*host*, *username*, *password*, *service_name*, *protocol=None*, *port=None*, *host_names=None*)

Get the service name's running state for a given host or list of hosts.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**service_name**

**The name of the service for which to retrieve the policy. Supported service names are:**

- DCUI
- TSM
- SSH
- lbtd
- lsassd
- lwiod
- netlogond
- ntpd
- sfcbd-watchdog
- snmpd
- vprobed
- vpxa
- xorg

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter the hosts for which to get the service's running state.

If host_names is not provided, the service's running state will be retrieved for the `host` location instead. This is useful for when service instance connection information is used for a single ESXi host.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.get_service_running my.esxi.host root bad-password 'ssh'

# Used for connecting to a vCenter Server
salt '*' vsphere.get_service_running my.vcenter.location root bad-password 'ntpd' ↪
    host_names='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**get_ssh_key**(*host*, *username*, *password*, *protocol=None*, *port=None*, *certificate_verify=False*)

Retrieve the authorized_keys entry for root. This function only works for ESXi, not vCenter.

**Parameters**

- **host** -- The location of the ESXi Host
- **username** -- Username to connect as
- **password** -- Password for the ESXi web endpoint
- **protocol** -- defaults to https, can be http if ssl is disabled on ESXi
- **port** -- defaults to 443 for https
- **certificate_verify** -- If true require that the SSL connection present a valid certificate

**Returns** True if upload is successful

CLI Example:

```
salt '*' vsphere.get_ssh_key my.esxi.host root bad-password certificate_verify=True
```

salt.modules.vsphere.**get_syslog_config**(*host*, *username*, *password*, *protocol=None*, *port=None*, *esxi_hosts=None*)

Retrieve the syslog configuration.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**esxi_hosts** If `host` is a vCenter host, then use esxi_hosts to execute this function on a list of one or more ESXi machines.

**Returns** Dictionary with keys and values corresponding to the syslog configuration, per host.

CLI Example:

```
# Used for ESXi host connection information
salt '*' vsphere.get_syslog_config my.esxi.host root bad-password

# Used for connecting to a vCenter Server
salt '*' vsphere.get_syslog_config my.vcenter.location root bad-password
 ↪  esxi_hosts='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**get_vmotion_enabled**(*host*, *username*, *password*, *protocol=None*, *port=None*, *host_names=None*)

Get the VMotion enabled status for a given host or a list of host_names. Returns `True` if VMotion is enabled, `False` if it is not enabled.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter which hosts to check if VMotion is enabled.

If host_names is not provided, the VMotion status will be retrieved for the `host` location instead. This is useful for when service instance connection information is used for a single ESXi host.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.get_vmotion_enabled my.esxi.host root bad-password

# Used for connecting to a vCenter Server
salt '*' vsphere.get_vmotion_enabled my.vcenter.location root bad-password
 ↪host_names='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**get_vsan_eligible_disks**(*host*, *username*, *password*, *protocol=None*, *port=None*, *host_names=None*)

Returns a list of VSAN-eligible disks for a given host or list of host_names.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter which hosts to check if any VSAN-eligible disks are available.

If host_names is not provided, the VSAN-eligible disks will be retrieved for the `host` location instead. This is useful for when service instance connection information is used for a single ESXi host.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.get_vsan_eligible_disks my.esxi.host root bad-password

# Used for connecting to a vCenter Server
salt '*' vsphere.get_vsan_eligible_disks my.vcenter.location root bad-password
 ↪     host_names='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**get_vsan_enabled**(*host*, *username*, *password*, *protocol=None*, *port=None*, *host_names=None*)

Get the VSAN enabled status for a given host or a list of host_names. Returns `True` if VSAN is enabled, `False` if it is not enabled, and `None` if a VSAN Host Config is unset, per host.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter which hosts to check if VSAN enabled.

If host_names is not provided, the VSAN status will be retrieved for the `host` location instead. This is useful for when service instance connection information is used for a single ESXi host.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.get_vsan_enabled my.esxi.host root bad-password

# Used for connecting to a vCenter Server
salt '*' vsphere.get_vsan_enabled my.vcenter.location root bad-password
 ↪host_names='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**list_clusters**(*host*, *username*, *password*, *protocol=None*, *port=None*)

Returns a list of clusters for the the specified host.
**host** The location of the host.
**username** The username used to login to the host, such as `root`.
**password** The password used to login to the host.
**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.
**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

```
salt '*' vsphere.list_clusters 1.2.3.4 root bad-password
```

salt.modules.vsphere.**list_datacenters**(*host*, *username*, *password*, *protocol=None*, *port=None*)
Returns a list of datacenters for the the specified host.
**host** The location of the host.
**username** The username used to login to the host, such as `root`.
**password** The password used to login to the host.
**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.
**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

```
salt '*' vsphere.list_datacenters 1.2.3.4 root bad-password
```

salt.modules.vsphere.**list_datastore_clusters**(*host*, *username*, *password*, *protocol=None*, *port=None*)
Returns a list of datastore clusters for the the specified host.
**host** The location of the host.
**username** The username used to login to the host, such as `root`.
**password** The password used to login to the host.
**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.
**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

```
salt '*' vsphere.list_datastore_clusters 1.2.3.4 root bad-password
```

salt.modules.vsphere.**list_datastores**(*host*, *username*, *password*, *protocol=None*, *port=None*)
Returns a list of datastores for the the specified host.
**host** The location of the host.
**username** The username used to login to the host, such as `root`.
**password** The password used to login to the host.
**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.
**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

```
salt '*' vsphere.list_datastores 1.2.3.4 root bad-password
```

salt.modules.vsphere.**list_dvs**(*host*, *username*, *password*, *protocol=None*, *port=None*)
Returns a list of distributed virtual switches for the the specified host.
**host** The location of the host.
**username** The username used to login to the host, such as `root`.
**password** The password used to login to the host.
**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.
**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

```
salt '*' vsphere.list_dvs 1.2.3.4 root bad-password
```

salt.modules.vsphere.**list_folders**(*host*, *username*, *password*, *protocol=None*, *port=None*)

Returns a list of folders for the the specified host.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

```
salt '*' vsphere.list_folders 1.2.3.4 root bad-password
```

salt.modules.vsphere.**list_hosts**(*host*, *username*, *password*, *protocol=None*, *port=None*)

Returns a list of hosts for the the specified VMware environment.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

```
salt '*' vsphere.list_hosts 1.2.3.4 root bad-password
```

salt.modules.vsphere.**list_networks**(*host*, *username*, *password*, *protocol=None*, *port=None*)

Returns a list of networks for the the specified host.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

```
salt '*' vsphere.list_networks 1.2.3.4 root bad-password
```

salt.modules.vsphere.**list_non_ssds**(*host*, *username*, *password*, *protocol=None*, *port=None*, *host_names=None*)

Returns a list of Non-SSD disks for the given host or list of host_names.

---

**Note:** In the pyVmomi StorageSystem, ScsiDisks may, or may not have an `ssd` attribute. This attribute indicates if the ScsiDisk is SSD backed. As this option is optional, if a relevant disk in the StorageSystem does not have `ssd = true`, it will end up in the `non_ssds` list here.

---

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter the hosts for which to retrieve Non-SSD disks.

If host_names is not provided, Non-SSD disks will be retrieved for the `host` location instead. This is useful for when service instance connection information is used for a single ESXi host.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.list_non_ssds my.esxi.host root bad-password

# Used for connecting to a vCenter Server
salt '*' vsphere.list_non_ssds my.vcenter.location root bad-password         host_
 ↪names='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**list_resourcepools**(*host*, *username*, *password*, *protocol=None*, *port=None*)

Returns a list of resource pools for the the specified host.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

```
salt '*' vsphere.list_resourcepools 1.2.3.4 root bad-password
```

salt.modules.vsphere.**list_ssds**(*host*, *username*, *password*, *protocol=None*, *port=None*, *host_names=None*)

Returns a list of SSDs for the given host or list of host_names.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter the hosts for which to retrieve SSDs.

If host_names is not provided, SSDs will be retrieved for the `host` location instead. This is useful for when service instance connection information is used for a single ESXi host.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.list_ssds my.esxi.host root bad-password

# Used for connecting to a vCenter Server
salt '*' vsphere.list_ssds my.vcenter.location root bad-password         host_
 ↪names='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**list_vapps**(*host*, *username*, *password*, *protocol=None*, *port=None*)

Returns a list of vApps for the the specified host.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

```
salt '*' vsphere.list_vapps 1.2.3.4 root bad-password
```

salt.modules.vsphere.**list_vms**(*host*, *username*, *password*, *protocol=None*, *port=None*)

Returns a list of VMs for the the specified host.

**host** The location of the host.
**username** The username used to login to the host, such as `root`.
**password** The password used to login to the host.
**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.
**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

```
salt '*' vsphere.list_vms 1.2.3.4 root bad-password
```

salt.modules.vsphere.**reset_syslog_config**(*host*, *username*, *password*, *protocol=None*, *port=None*, *syslog_config=None*, *esxi_hosts=None*)

Reset the syslog service to its default settings.

Valid syslog_config values are `logdir`, `loghost`, `logdir-unique`, `default-rotate`, `default-size`, `default-timeout`, or `all` for all of these.
**host** The location of the host.
**username** The username used to login to the host, such as `root`.
**password** The password used to login to the host.
**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.
**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.
**syslog_config** List of parameters to reset, provided as a comma-delimited string, or `all' to reset all syslog configuration parameters. Required.
**esxi_hosts** If `host` is a vCenter host, then use esxi_hosts to execute this function on a list of one or more ESXi machines.

**Returns** Dictionary with a top-level key of `success' which indicates if all the parameters were reset, and individual keys for each parameter indicating which succeeded or failed, per host.

CLI Example:

`syslog_config` can be passed as a quoted, comma-separated string, e.g.

```
# Used for ESXi host connection information
salt '*' vsphere.reset_syslog_config my.esxi.host root bad-password
 ↪syslog_config='logdir,loghost'

# Used for connecting to a vCenter Server
salt '*' vsphere.reset_syslog_config my.vcenter.location root bad-password
 ↪    syslog_config='logdir,loghost' esxi_hosts='[esxi-1.host.com, esxi-2.host.
 ↪com]'
```

salt.modules.vsphere.**service_restart**(*host*, *username*, *password*, *service_name*, *protocol=None*, *port=None*, *host_names=None*)

Restart the named service for the given host or list of hosts.
**host** The location of the host.
**username** The username used to login to the host, such as `root`.
**password** The password used to login to the host.
**service_name**
**The name of the service for which to set the policy. Supported service names are:**

- DCUI
- TSM
- SSH
- lbtd

- lsassd
- lwiod
- netlogond
- ntpd
- sfcbd-watchdog
- snmpd
- vprobed
- vpxa
- xorg

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter the hosts for which to restart the service.

If host_names is not provided, the service will be restarted for the `host` location instead. This is useful for when service instance connection information is used for a single ESXi host.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.service_restart my.esxi.host root bad-password 'ntpd'

# Used for connecting to a vCenter Server
salt '*' vsphere.service_restart my.vcenter.location root bad-password 'ntpd'
 ↪    host_names='[esxi-1.host.com, esxi-2.host.com]'
```

`salt.modules.vsphere.`**`service_start`**(*host*, *username*, *password*, *service_name*, *protocol=None*, *port=None*, *host_names=None*)

Start the named service for the given host or list of hosts.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**service_name**

**The name of the service for which to set the policy. Supported service names are:**

- DCUI
- TSM
- SSH
- lbtd
- lsassd
- lwiod
- netlogond
- ntpd
- sfcbd-watchdog
- snmpd
- vprobed

- vpxa
- xorg

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter the hosts for which to start the service.

If host_names is not provided, the service will be started for the `host` location instead. This is useful for when service instance connection information is used for a single ESXi host.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.service_start my.esxi.host root bad-password 'ntpd'

# Used for connecting to a vCenter Server
salt '*' vsphere.service_start my.vcenter.location root bad-password 'ntpd'
 ↪ host_names='[esxi-1.host.com, esxi-2.host.com]'
```

`salt.modules.vsphere.`**`service_stop`**(*host*, *username*, *password*, *service_name*, *protocol=None*, *port=None*, *host_names=None*)

Stop the named service for the given host or list of hosts.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**service_name**

**The name of the service for which to set the policy. Supported service names are:**

- DCUI
- TSM
- SSH
- lbtd
- lsassd
- lwiod
- netlogond
- ntpd
- sfcbd-watchdog
- snmpd
- vprobed
- vpxa
- xorg

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter the hosts for which to stop the service.

If host_names is not provided, the service will be stopped for the `host` location instead. This is useful for when service instance connection information is used for a single ESXi host.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.service_stop my.esxi.host root bad-password 'ssh'

# Used for connecting to a vCenter Server
salt '*' vsphere.service_stop my.vcenter.location root bad-password 'ssh'
 ↪host_names='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**set_coredump_network_config**(*host*, *username*, *password*, *dump_ip*, *protocol=None*, *port=None*, *host_vnic='vmk0'*, *dump_port=6500*, *esxi_hosts=None*)

Set the network parameters for a network coredump collection. Note that ESXi requires that the dumps first be enabled (see *coredump_network_enable*) before these parameters may be set.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**dump_ip** IP address of host that will accept the dump.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**esxi_hosts** If `host` is a vCenter host, then use esxi_hosts to execute this function on a list of one or more ESXi machines.

**host_vnic** Host VNic port through which to communicate. Defaults to `vmk0`.

**dump_port** TCP port to use for the dump, defaults to `6500`.

**Returns** A standard cmd.run_all dictionary with a *success* key added, per host. *success* will be True if the set succeeded, False otherwise.

CLI Example:

```
# Used for ESXi host connection information
salt '*' vsphere.set_coredump_network_config my.esxi.host root bad-password 'dump_
 ↪ip.host.com'

# Used for connecting to a vCenter Server
salt '*' vsphere.set_coredump_network_config my.vcenter.location root bad-password
 ↪'dump_ip.host.com'             esxi_hosts='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**set_ntp_config**(*host*, *username*, *password*, *ntp_servers*, *protocol=None*, *port=None*, *host_names=None*)

Set NTP configuration for a given host of list of host_names.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**ntp_servers** A list of servers that should be added to and configured for the specified host's NTP configuration.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter which hosts to configure ntp servers.

If host_names is not provided, the NTP servers will be configured for the `host` location instead. This

is useful for when service instance connection information is used for a single ESXi host.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.ntp_configure my.esxi.host root bad-password '[192.174.1.100,
↪192.174.1.200]'

# Used for connecting to a vCenter Server
salt '*' vsphere.ntp_configure my.vcenter.location root bad-password '[192.174.1.
↪100, 192.174.1.200]'         host_names='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**set_service_policy**(*host*, *username*, *password*, *service_name*, *service_policy*, *protocol=None*, *port=None*, *host_names=None*)

Set the service name's policy for a given host or list of hosts.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**service_name**

**The name of the service for which to set the policy. Supported service names are:**

- DCUI
- TSM
- SSH
- lbtd
- lsassd
- lwiod
- netlogond
- ntpd
- sfcbd-watchdog
- snmpd
- vprobed
- vpxa
- xorg

**service_policy** The policy to set for the service. For example, `automatic'.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter the hosts for which to set the service policy.

If host_names is not provided, the service policy information will be retrieved for the `host` location instead. This is useful for when service instance connection information is used for a single ESXi host.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.set_service_policy my.esxi.host root bad-password 'ntpd'
↪'automatic'
```

```
# Used for connecting to a vCenter Server
salt '*' vsphere.set_service_policy my.vcenter.location root bad-password 'ntpd'
 ↪'automatic'         host_names='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**set_syslog_config**(*host*, *username*, *password*, *syslog_config*, *config_value*, *protocol=None*, *port=None*, *firewall=True*, *reset_service=True*, *esxi_hosts=None*)

Set the specified syslog configuration parameter. By default, this function will reset the syslog service after the configuration is set.

**host** ESXi or vCenter host to connect to.

**username** User to connect as, usually root.

**password** Password to connect with.

**syslog_config** Name of parameter to set (corresponds to the command line switch for esxcli without the double dashes (--))

Valid syslog_config values are `logdir`, `loghost`, `default-rotate`,``default-size`, `default-timeout`, and `logdir-unique`.

**config_value** Value for the above parameter. For `loghost`, URLs or IP addresses to use for logging. Multiple log servers can be specified by listing them, comma-separated, but without spaces before or after commas.

(reference: https://blogs.vmware.com/vsphere/2012/04/configuring-multiple-syslog-servers-for-esxi-5.html)

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**firewall** Enable the firewall rule set for syslog. Defaults to `True`.

**reset_service** After a successful parameter set, reset the service. Defaults to `True`.

**esxi_hosts** If `host` is a vCenter host, then use esxi_hosts to execute this function on a list of one or more ESXi machines.

**Returns** Dictionary with a top-level key of `success' which indicates if all the parameters were reset, and individual keys for each parameter indicating which succeeded or failed, per host.

CLI Example:

```
# Used for ESXi host connection information
salt '*' vsphere.set_syslog_config my.esxi.host root bad-password
 ↪loghost ssl://localhost:5432,tcp://10.1.0.1:1514

# Used for connecting to a vCenter Server
salt '*' vsphere.set_syslog_config my.vcenter.location root bad-password
 ↪  loghost ssl://localhost:5432,tcp://10.1.0.1:1514             esxi_hosts=
 ↪'[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**syslog_service_reload**(*host*, *username*, *password*, *protocol=None*, *port=None*, *esxi_hosts=None*)

Reload the syslog service so it will pick up any changes.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**esxi_hosts** If `host` is a vCenter host, then use esxi_hosts to execute this function on a list of one or more ESXi machines.

**Returns** A standard cmd.run_all dictionary. This dictionary will at least have a *retcode* key. If *retcode* is 0 the command was successful.

CLI Example:

```
# Used for ESXi host connection information
salt '*' vsphere.syslog_service_reload my.esxi.host root bad-password

# Used for connecting to a vCenter Server
salt '*' vsphere.syslog_service_reload my.vcenter.location root bad-password
 ↪       esxi_hosts='[esxi-1.host.com, esxi-2.host.com]'
```

`salt.modules.vsphere.`**`system_info`**(*host*, *username*, *password*, *protocol=None*, *port=None*)

Return system information about a VMware environment.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

CLI Example:

```
salt '*' vsphere.system_info 1.2.3.4 root bad-password
```

`salt.modules.vsphere.`**`update_host_datetime`**(*host*, *username*, *password*, *protocol=None*, *port=None*, *host_names=None*)

Update the date/time on the given host or list of host_names. This function should be used with caution since network delays and execution delays can result in time skews.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter which hosts should update their date/time.

If host_names is not provided, the date/time will be updated for the `host` location instead. This is useful for when service instance connection information is used for a single ESXi host.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.update_date_time my.esxi.host root bad-password

# Used for connecting to a vCenter Server
salt '*' vsphere.update_date_time my.vcenter.location root bad-password
 ↪host_names='[esxi-1.host.com, esxi-2.host.com]'
```

`salt.modules.vsphere.`**`update_host_password`**(*host*, *username*, *password*, *new_password*, *protocol=None*, *port=None*)

Update the password for a given host.

**Note**: Currently only works with connections to ESXi hosts. Does not work with vCenter servers.

**host** The location of the ESXi host.

**username** The username used to login to the ESXi host, such as `root`.
**password** The password used to login to the ESXi host.
**new_password** The new password that will be updated for the provided username on the ESXi host.
**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.
**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

CLI Example:

```
salt '*' vsphere.update_host_password my.esxi.host root original-bad-password new-
↪bad-password
```

salt.modules.vsphere.**upload_ssh_key**(*host*, *username*, *password*, *ssh_key=None*, *ssh_key_file=None*, *protocol=None*, *port=None*, *certificate_verify=False*)

Upload an ssh key for root to an ESXi host via http PUT. This function only works for ESXi, not vCenter. Only one ssh key can be uploaded for root. Uploading a second key will replace any existing key.

**Parameters**

- **host** -- The location of the ESXi Host
- **username** -- Username to connect as
- **password** -- Password for the ESXi web endpoint
- **ssh_key** -- Public SSH key, will be added to authorized_keys on ESXi
- **ssh_key_file** -- File containing the SSH key. Use `ssh_key' or ssh_key_file, but not both.
- **protocol** -- defaults to https, can be http if ssl is disabled on ESXi
- **port** -- defaults to 443 for https
- **certificate_verify** -- If true require that the SSL connection present a valid certificate

**Returns** Dictionary with a `status' key, True if upload is successful. If upload is unsuccessful, `status' key will be False and an `Error' key will have an informative message.

CLI Example:

```
salt '*' vsphere.upload_ssh_key my.esxi.host root bad-password ssh_key_file='/etc/
↪salt/my_keys/my_key.pub'
```

salt.modules.vsphere.**vmotion_disable**(*host*, *username*, *password*, *protocol=None*, *port=None*, *host_names=None*)

Disable vMotion for a given host or list of host_names.
**host** The location of the host.
**username** The username used to login to the host, such as `root`.
**password** The password used to login to the host.
**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.
**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.
**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter which hosts should disable VMotion.

If host_names is not provided, VMotion will be disabled for the `host` location instead. This is useful for when service instance connection information is used for a single ESXi host.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.vmotion_disable my.esxi.host root bad-password

# Used for connecting to a vCenter Server
salt '*' vsphere.vmotion_disable my.vcenter.location root bad-password
 ↪host_names='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**vmotion_enable**(*host*, *username*, *password*, *protocol=None*, *port=None*, *host_names=None*, *device='vmk0'*)

Enable vMotion for a given host or list of host_names.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter which hosts should enable VMotion.

If host_names is not provided, VMotion will be enabled for the `host` location instead. This is useful for when service instance connection information is used for a single ESXi host.

**device** The device that uniquely identifies the VirtualNic that will be used for VMotion for each host. Defaults to `vmk0`.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.vmotion_enable my.esxi.host root bad-password

# Used for connecting to a vCenter Server
salt '*' vsphere.vmotion_enable my.vcenter.location root bad-password
 ↪names='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**vsan_add_disks**(*host*, *username*, *password*, *protocol=None*, *port=None*, *host_names=None*)

Add any VSAN-eligible disks to the VSAN System for the given host or list of host_names.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter which hosts need to add any VSAN-eligible disks to the host's VSAN system.

If host_names is not provided, VSAN-eligible disks will be added to the hosts's VSAN system for the `host` location instead. This is useful for when service instance connection information is used for a single ESXi host.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.vsan_add_disks my.esxi.host root bad-password

# Used for connecting to a vCenter Server
salt '*' vsphere.vsan_add_disks my.vcenter.location root bad-password
 ↪names='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**vsan_disable**(*host*, *username*, *password*, *protocol=None*, *port=None*, *host_names=None*)

Disable VSAN for a given host or list of host_names.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter which hosts should disable VSAN.

If host_names is not provided, VSAN will be disabled for the `host` location instead. This is useful for when service instance connection information is used for a single ESXi host.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.vsan_disable my.esxi.host root bad-password

# Used for connecting to a vCenter Server
salt '*' vsphere.vsan_disable my.vcenter.location root bad-password          host_
 ↪names='[esxi-1.host.com, esxi-2.host.com]'
```

salt.modules.vsphere.**vsan_enable**(*host*, *username*, *password*, *protocol=None*, *port=None*, *host_names=None*)

Enable VSAN for a given host or list of host_names.

**host** The location of the host.

**username** The username used to login to the host, such as `root`.

**password** The password used to login to the host.

**protocol** Optionally set to alternate protocol if the host is not using the default protocol. Default protocol is `https`.

**port** Optionally set to alternate port if the host is not using the default port. Default port is `443`.

**host_names** List of ESXi host names. When the host, username, and password credentials are provided for a vCenter Server, the host_names argument is required to tell vCenter which hosts should enable VSAN.

If host_names is not provided, VSAN will be enabled for the `host` location instead. This is useful for when service instance connection information is used for a single ESXi host.

CLI Example:

```
# Used for single ESXi host connection information
salt '*' vsphere.vsan_enable my.esxi.host root bad-password

# Used for connecting to a vCenter Server
salt '*' vsphere.vsan_enable my.vcenter.location root bad-password          host_
 ↪names='[esxi-1.host.com, esxi-2.host.com]'
```

### 13.6.338 salt.modules.win_autoruns

Module for listing programs that automatically run on startup (very alpha...not tested on anything but my Win 7x64)

salt.modules.win_autoruns.**list**()

Get a list of automatically running programs

CLI Example:

```
salt '*' autoruns.list
```

### 13.6.339 salt.modules.win_certutil module

This module allows you to install certificates into the windows certificate manager.

```
salt '*' certutil.add_store salt://cert.cer "TrustedPublisher"
```

salt.modules.win_certutil.**add_store**(*source*, *store*, *saltenv='base'*)

Add the given cert into the given Certificate Store

**source** The source certificate file this can be in the form salt://path/to/file

**store** The certificate store to add the certificate to

**saltenv** The salt environment to use this is ignored if the path is local

CLI Example:

```
salt '*' certutil.add_store salt://cert.cer TrustedPublisher
```

salt.modules.win_certutil.**del_store**(*source*, *store*, *saltenv='base'*)

Delete the given cert into the given Certificate Store

**source** The source certificate file this can be in the form salt://path/to/file

**store** The certificate store to delete the certificate from

**saltenv** The salt environment to use this is ignored if the path is local

CLI Example:

```
salt '*' certutil.del_store salt://cert.cer TrustedPublisher
```

salt.modules.win_certutil.**get_cert_serial**(*cert_file*)

Get the serial number of a certificate file

**cert_file** The certificate file to find the serial for

salt.modules.win_certutil.**get_stored_cert_serials**(*store*)

Get all of the certificate serials in the specified store

**store** The store to get all the certificate serials from

### 13.6.340 salt.modules.win_dacl

Manage DACLs on Windows

**depends**

- winreg Python module

salt.modules.win_dacl.**add_ace**(*path*, *objectType*, *user*, *permission*, *acetype*, *propagation*)

add an ace to an object

path: path to the object (i.e. c:\temp\file, HKEY_LOCAL_MACHINE\SOFTWARE\KEY, etc) user: user to add permission: permissions for the user acetype: either allow/deny for each user/permission (ALLOW, DENY) propagation: how the ACE applies to children for Registry Keys and Directories(KEY, KEY&SUBKEYS, SUBKEYS)

CLI Example:

```
allow domain\fakeuser full control on HKLM\\SOFTWARE\\somekey, propagate to this
↪key and subkeys
   salt 'myminion' win_dacl.add_ace 'HKEY_LOCAL_MACHINE\\SOFTWARE\\somekey'
↪'Registry' 'domain\fakeuser' 'FULLCONTROL' 'ALLOW' 'KEY&SUBKEYS'
```

salt.modules.win_dacl.**check_ace**(*path*, *objectType*, *user*, *permission=None*, *acetype=None*, *propagation=None*, *exactPermissionMatch=False*)
checks a path to verify the ACE (access control entry) specified exists returns `Exists' true if the ACE exists, false if it does not

path: path to the file/reg key user: user that the ACL is for permission: permission to test for (READ, FULLCONTROl, etc) acetype: the type of ACE (ALLOW or DENY) propagation: the propagation type of the ACE (FILES, FOLDERS, KEY, KEY&SUBKEYS, SUBKEYS, etc) exactPermissionMatch: the ACL must match exactly, IE if READ is specified, the user must have READ exactly and not FULLCONTROL (which also has the READ permission obviously)

salt.modules.win_dacl.**check_inheritance**(*path*, *objectType*, *user=None*)
check a specified path to verify if inheritance is enabled returns `Inheritance' of True/False

path: path of the registry key or file system object to check user: if provided, will consider only the ACEs for that user

**class** salt.modules.win_dacl.**daclConstants**
dacl constants used throughout the module

**getAceTypeBit**(*t*)
returns the acetype bit of a text value

**getAceTypeText**(*t*)
returns the textual representation of a acetype bit

**getObjectTypeBit**(*t*)
returns the bit value of the string object type

**getPermissionBit**(*t*, *m*)
returns a permission bit of the string permission value for the specified object type

**getPermissionText**(*t*, *m*)
returns the permission textual representation of a specified permission bit/object type

**getPropagationBit**(*t*, *p*)
returns the propagation bit of a text value

**getPropagationText**(*t*, *p*)
returns the textual representation of a propagation bit

**getSecurityHkey**(*s*)
returns the necessary string value for an HKEY for the win32security module

**processPath**(*path*, *objectType*)
**processes a path/object type combo and returns**: registry types with the correct HKEY text representation files/directories with environment variables expanded

salt.modules.win_dacl.**disable_inheritance**(*path*, *objectType*, *copy=True*)
disable inheritance on an object

copy = True will copy the Inerhited ACEs to the DACL before disabling inheritance

salt.modules.win_dacl.**enable_inheritance**(*path*, *objectType*, *clear=False*)
enable/disable inheritance on an object

clear = True will remove non-Inherited ACEs from the ACL

salt.modules.win_dacl.**get**(*path*, *objectType*, *user=None*)
Get the acl of an object. Will filter by user if one is provided.

salt.modules.win_dacl.**rm_ace**(*path*, *objectType*, *user*, *permission=None*, *acetype=None*, *propagation=None*)

remove an ace to an object

path: path to the object (i.e. c:\temp\file, HKEY_LOCAL_MACHINE\SOFTWARE\KEY, etc) user: user to remove permission: permissions for the user acetypes: either allow/deny for each user/permission (ALLOW, DENY) propagation: how the ACE applies to children for Registry Keys and Directories(KEY, KEY&SUBKEYS, SUBKEYS)

If any of the optional parameters are omitted (or set to None) they act as wildcards.

CLI Example:

```
remove allow domain\fakeuser full control on HKLM\\SOFTWARE\\somekey propagated
↪to this key and subkeys
    salt 'myminion' win_dacl.rm_ace 'Registry' 'HKEY_LOCAL_
↪MACHINE\\SOFTWARE\\somekey' 'domain\fakeuser' 'FULLCONTROL' 'ALLOW' 'KEY&SUBKEYS
↪'
```

### 13.6.341 salt.modules.win_disk

Module for gathering disk information on Windows

**depends**

- win32api Python module

salt.modules.win_disk.**usage**()

Return usage information for volumes mounted on this minion

CLI Example:

```
salt '*' disk.usage
```

### 13.6.342 salt.modules.win_dism module

Install features/packages for Windows using DISM, which is useful for minions not running server versions of Windows. Some functions are only available on Windows 10.

salt.modules.win_dism.**add_capability**(*capability*, *source=None*, *limit_access=False*, *image=None*, *restart=False*)

Install a capability

**Args**: capability (str): The capability to install source (Optional[str]): The optional source of the capability. Default
is set by group policy and can be Windows Update.

**limit_access (Optional[bool])**: **Prevent DISM from contacting Windows** Update for the source package

**image (Optional[str])**: **The path to the root directory of an offline** Windows image. If *None* is passed, the running operating system is targeted. Default is None.

restart (Optional[bool]): Reboot the machine if required by the install

**Raises**: NotImplementedError: For all versions of Windows that are not Windows 10 and later. Server editions of Windows use ServerManager instead.

**Returns**: dict: A dictionary containing the results of the command

CLI Example:

```
salt '*' dism.add_capability Tools.Graphics.DirectX~~~~0.0.1.0
```

salt.modules.win_dism.**add_feature**(*feature*, *package=None*, *source=None*, *limit_access=False*, *enable_parent=False*, *image=None*, *restart=False*)

Install a feature using DISM

**Args**: feature (str): The feature to install package (Optional[str]): The parent package for the feature. You do not have to specify the package if it is the Windows Foundation Package. Otherwise, use package to specify the parent package of the feature

**source (Optional[str])**: **The optional source of the capability. Default** is set by group policy and can be Windows Update

**limit_access (Optional[bool])**: **Prevent DISM from contacting Windows** Update for the source package

**enable_parent (Optional[bool])**: **True will enable all parent features of** the specified feature

**image (Optional[str])**: **The path to the root directory of an offline** Windows image. If *None* is passed, the running operating system is targeted. Default is None.

restart (Optional[bool]): Reboot the machine if required by the install

**Returns**: dict: A dictionary containing the results of the command

CLI Example:

```
salt '*' dism.add_feature NetFx3
```

salt.modules.win_dism.**add_package**(*package*, *ignore_check=False*, *prevent_pending=False*, *image=None*, *restart=False*)

Install a package using DISM

**Args**:

**package (str)**: **The package to install. Can be a .cab file, a .msu file,** or a folder

**ignore_check (Optional[bool])**: **Skip installation of the package if the** applicability checks fail

**prevent_pending (Optional[bool])**: **Skip the installation of the package** if there are pending online actions

**image (Optional[str])**: **The path to the root directory of an offline** Windows image. If *None* is passed, the running operating system is targeted. Default is None.

restart (Optional[bool]): Reboot the machine if required by the install

**Returns**: dict: A dictionary containing the results of the command

CLI Example:

```
salt '*' dism.add_package C:\Packages\package.cab
```

salt.modules.win_dism.**available_capabilities**(*image=None*)

List the capabilities available on the system

**Args**:

**image (Optional[str])**: **The path to the root directory of an offline** Windows image. If *None* is passed, the running operating system is targeted. Default is None.

**Raises**: NotImplementedError: For all versions of Windows that are not Windows 10 and later. Server editions of Windows use ServerManager instead.

**Returns**: list: A list of available capabilities

CLI Example:

```
salt '*' dism.installed_capabilities
```

salt.modules.win_dism.**available_features**(*image=None*)

List the features available on the system

**Args**:

**image (Optional[str])**: **The path to the root directory of an offline** Windows image. If *None* is passed, the running operating system is targeted. Default is None.

**Returns**: list: A list of available features

CLI Example:

```
salt '*' dism.available_features
```

salt.modules.win_dism.**get_capabilities**(*image=None*)

List all capabilities on the system

**Args**:

**image (Optional[str])**: **The path to the root directory of an offline** Windows image. If *None* is passed, the running operating system is targeted. Default is None.

**Raises**: NotImplementedError: For all versions of Windows that are not Windows 10 and later. Server editions of Windows use ServerManager instead.

**Returns**: list: A list of capabilities

CLI Example:

```
salt '*' dism.get_capabilities
```

salt.modules.win_dism.**get_features**(*package=None*, *image=None*)

List features on the system or in a package

**Args**:

**package (Optional[str])**: **The full path to the package. Can be either a** .cab file or a folder. Should point to the original source of the package, not to where the file is installed. You cannot use this command to get package information for .msu files

This can also be the name of a package as listed in `dism.installed_packages`

**image (Optional[str])**: **The path to the root directory of an offline** Windows image. If *None* is passed, the running operating system is targeted. Default is None.

**Returns**: list: A list of features

CLI Example:

```
# Return all features on the system
salt '*' dism.get_features

# Return all features in package.cab
salt '*' dism.get_features C:\packages\package.cab

# Return all features in the calc package
salt '*' dism.get_features Microsoft.Windows.Calc.Demo~6595b6144ccf1df~
 ↪x86~en~1.0.0.0
```

salt.modules.win_dism.**installed_capabilities**(*image=None*)

List the capabilities installed on the system

**Args**:

**image (Optional[str])**: **The path to the root directory of an offline** Windows image. If *None* is passed, the running operating system is targeted. Default is None.

**Raises**: NotImplementedError: For all versions of Windows that are not Windows 10 and later. Server editions of Windows use ServerManager instead.

**Returns**: list: A list of installed capabilities

CLI Example:

```
salt '*' dism.installed_capabilities
```

salt.modules.win_dism.**installed_features**(*image=None*)

List the features installed on the system

**Args**:

**image (Optional[str])**: **The path to the root directory of an offline** Windows image. If *None* is passed, the running operating system is targeted. Default is None.

**Returns**: list: A list of installed features

CLI Example:

```
salt '*' dism.installed_features
```

salt.modules.win_dism.**installed_packages**(*image=None*)

List the packages installed on the system

**Args**:

**image (Optional[str])**: **The path to the root directory of an offline** Windows image. If *None* is passed, the running operating system is targeted. Default is None.

**Returns**: list: A list of installed packages

CLI Example:

```
salt '*' dism.installed_packages
```

salt.modules.win_dism.**package_info**(*package*, *image=None*)

Display information about a package

**Args**:

**package (str)**: **The full path to the package. Can be either a .cab file** or a folder. Should point to the original source of the package, not to where the file is installed. You cannot use this command to get package information for .msu files

**image (Optional[str])**: **The path to the root directory of an offline** Windows image. If *None* is passed, the running operating system is targeted. Default is None.

**Returns**: dict: A dictionary containing the results of the command

CLI Example:

```
salt '*' dism. package_info C:\packages\package.cab
```

salt.modules.win_dism.**remove_capability**(*capability*, *image=None*, *restart=False*)

Uninstall a capability

**Args**: capability(str): The capability to be removed image (Optional[str]): The path to the root directory of an offline

Windows image. If *None* is passed, the running operating system is targeted. Default is None.

restart (Optional[bool]): Reboot the machine if required by the install

**Raises**: NotImplementedError: For all versions of Windows that are not Windows 10 and later. Server editions of Windows use ServerManager instead.

**Returns**: dict: A dictionary containing the results of the command

CLI Example:

```
salt '*' dism.remove_capability Tools.Graphics.DirectX~~~~0.0.1.0
```

salt.modules.win_dism.**remove_feature**(*feature*, *remove_payload=False*, *image=None*, *restart=False*)

Disables the feature.

**Args**: feature (str): The feature to uninstall remove_payload (Optional[bool]): Remove the feature's payload. Must

supply source when enabling in the future.

**image (Optional[str])**: **The path to the root directory of an offline** Windows image. If *None* is passed, the running operating system is targeted. Default is None.

restart (Optional[bool]): Reboot the machine if required by the install

**Returns**: dict: A dictionary containing the results of the command
CLI Example:

```
salt '*' dism.remove_feature NetFx3
```

salt.modules.win_dism.**remove_package**(*package*, *image=None*, *restart=False*)
Uninstall a package
**Args**:
**package (str)**: **The full path to the package. Can be either a .cab file** or a folder. Should point to the original source of the package, not to where the file is installed. This can also be the name of a package as listed in `dism.installed_packages`
**image (Optional[str])**: **The path to the root directory of an offline** Windows image. If *None* is passed, the running operating system is targeted. Default is None.
restart (Optional[bool]): Reboot the machine if required by the install
**Returns**: dict: A dictionary containing the results of the command
CLI Example:

```
# Remove the Calc Package
salt '*' dism.remove_package Microsoft.Windows.Calc.Demo~6595b6144ccf1df~x86~en~1.
 ↪0.0.0

# Remove the package.cab (does not remove C:\packages\package.cab)
salt '*' dism.remove_package C:\packages\package.cab
```

### 13.6.343 salt.modules.win_dns_client

Module for configuring DNS Client on Windows systems

salt.modules.win_dns_client.**add_dns**(*ip*, *interface='Local Area Connection'*, *index=1*)
Add the DNS server to the network interface (index starts from 1)

Note: if the interface DNS is configured by DHCP, all the DNS servers will be removed from the interface and the requested DNS will be the only one

CLI Example:

```
salt '*' win_dns_client.add_dns <ip> <interface> <index>
```

salt.modules.win_dns_client.**dns_dhcp**(*interface='Local Area Connection'*)
Configure the interface to get its DNS servers from the DHCP server

CLI Example:

```
salt '*' win_dns_client.dns_dhcp <interface>
```

salt.modules.win_dns_client.**get_dns_config**(*interface='Local Area Connection'*)
Get the type of DNS configuration (dhcp / static)

CLI Example:

```
salt '*' win_dns_client.get_dns_config 'Local Area Connection'
```

salt.modules.win_dns_client.**get_dns_servers**(*interface='Local Area Connection'*)
Return a list of the configured DNS servers of the specified interface

CLI Example:

```
salt '*' win_dns_client.get_dns_servers 'Local Area Connection'
```

salt.modules.win_dns_client.**rm_dns**(*ip*, *interface='Local Area Connection'*)

Remove the DNS server from the network interface

CLI Example:

```
salt '*' win_dns_client.rm_dns <ip> <interface>
```

### 13.6.344 salt.modules.win_dsc

Module for managing PowerShell modules

**depends**

- PowerShell 5.0

Support for PowerShell

salt.modules.win_dsc.**apply_config**(*path*, *source=None*, *salt_env='base'*)

Run an compiled DSC configuration (a folder containing a .mof file). The folder can be cached from the salt master using the `source` option.

**Parameters** **path** (*str*) -- Local path to the directory that contains the .mof configuration file to apply. Required.

**Parameters** **source** (*str*) -- Path to the directory that contains the .mof file on the `file_roots`. The source directory will be copied to the path directory and then executed. If the path and source directories differ, the source directory will be applied. If source is not passed, the config located at `path` will be applied. Optional.

**Parameters** **salt_env** (*str*) -- The salt environment to use when copying your source. Default is `base'

**Returns** True if successful, otherwise False

**Return type** bool

CLI Example:

To apply a config that already exists on the the system

```
salt '*' dsc.run_config C:\\DSC\\WebSiteConfiguration
```

To cache a configuration from the master and apply it:

```
salt '*' dsc.run_config C:\\DSC\\WebSiteConfiguration salt://dsc/configs/
 ↪WebSiteConfiguration
```

salt.modules.win_dsc.**avail_modules**(*desc=False*)

List available modules in registered Powershell module repositories.

**desc** [False] If `True`, the verbose description will be returned.

CLI Example:

```
salt 'win01' dsc.avail_modules
salt 'win01' dsc.avail_modules desc=True
```

salt.modules.win_dsc.**bootstrap**()

Make sure that nuget-anycpu.exe is installed. This will download the official nuget-anycpu.exe from the internet.

CLI Example:

```
salt 'win01' dsc.bootstrap
```

salt.modules.win_dsc.**compile_config**(*path*, *source=None*, *config=None*, *salt_env='base'*)

Compile a config from a powershell script (`.ps1`)

**Parameters** **path** (*str*) -- Path (local) to the script that will create the `.mof` configuration file. If no source is passed, the file must exist locally. Required.

**Parameters** **source** (*str*) -- Path to the script on `file_roots` to cache at the location specified by `path`. The source file will be cached locally and then executed. If source is not passed, the config script located at `path` will be compiled. Optional.

**Parameters** **config** (*str*) -- The name of the Configuration within the script to apply. If the script contains multiple configurations within the file a config must be specified. If the config is not specified, the name of the file will be used as the config to run. Optional.

**Parameters** **salt_env** (*str*) -- The salt environment to use when copying the source. Default is `base'

**Returns** A dictionary containing the results of the compilation

**Return type** dict

CLI Example:

To compile a config from a script that already exists on the system:

```
salt '*' dsc.compile_config C:\\DSC\\WebsiteConfig.ps1
```

To cache a config script to the system from the master and compile it:

```
salt '*' dsc.compile_config C:\\DSC\\WebsiteConfig.ps1 salt://dsc/configs/
↪WebsiteConfig.ps1
```

salt.modules.win_dsc.**enable_scripts**()

Enable Powershell Scripts

Allows all Powershell scripts to be run. Executes ``Set-ExecutionPolicy Unrestricted'' on the system.

CLI Example:

```
salt 'win01' dsc.enable_scripts
```

salt.modules.win_dsc.**get_config**()

Get the current DSC Configuration

**Returns** A dictionary representing the DSC Configuration on the machine

**Return type** dict

CLI Example:

```
salt '*' dsc.get_config
```

salt.modules.win_dsc.**get_config_status**()

Get the status of the current DSC Configuration

**Returns** A dictionary representing the status of the current DSC Configuration on the machine :rtype: dict

CLI Example:

```
salt '*' dsc.get_config_status
```

salt.modules.win_dsc.**get_lcm_config**()

Get the current Local Configuration Manager settings

**Returns** A dictionary representing the Local Configuration Manager settings on the machine

**Return type** dict

CLI Example:

```
salt '*' dsc.get_lcm_config
```

salt.modules.win_dsc.**install**(*name*)

Install a Powershell DSC module on the system.

**name** Name of a Powershell DSC module

CLI Example:

```
salt 'win01' dsc.install PowerPlan
```

salt.modules.win_dsc.**list_modules**(*desc=False*)

List currently installed DSC Modules on the system.

**desc** [False] If `True`, the verbose description will be returned.

CLI Example:

```
salt 'win01' dsc.list_modules
salt 'win01' dsc.list_modules desc=True
```

salt.modules.win_dsc.**psversion**()

Returns the Powershell version

CLI Example:

```
salt 'win01' dsc.psversion
```

salt.modules.win_dsc.**remove**(*name*)

Remove a Powershell DSC module from the system.

**name** Name of a Powershell DSC module

CLI Example:

```
salt 'win01' dsc.remove PowerPlan
```

salt.modules.win_dsc.**run_config**(*path*, *source=None*, *config=None*, *salt_env='base'*)

Compile a DSC Configuration in the form of a powershell script (.ps1) and apply it. The powershell script can be cached from the master using the `source` option. If there is more than one config within the powershell script, the desired configuration can be applied by passing the name in the `config` option.

This command would be the equivalent of running `dsc.compile_config` and `dsc.apply_config` separately.

**Parameters** **path** (*str*) -- The local path to the powershell script that contains the DSC Configuration. Required.

**Parameters** **source** (*str*) -- The path to the script on `file_roots` to cache at the location specified by `path`. The source file will be cached locally and then executed. If source is not passed, the config script located at `path` will be compiled. Optional.

**Parameters** **config** (*str*) -- The name of the Configuration within the script to apply. If the script contains multiple configurations within the file a config must be specified. If the config is not specified, the name of the file will be used as the config to run. Optional.

**Parameters** **salt_env** (*str*) -- The salt environment to use when copying the source. Default is `base'

**Returns** True if successfully compiled and applied, False if not

**Return type** bool

CLI Example

To compile a config from a script that already exists on the system:

```
salt '*' dsc.compile_apply_config C:\\DSC\\WebsiteConfig.ps1
```

To cache a config script to the system from the master and compile it:

```
salt '*' dsc.compile_apply_config C:\\DSC\\WebsiteConfig.ps1 salt://dsc/configs/
↪WebsiteConfig.ps1
```

salt.modules.win_dsc.**set_lcm_config**(*config_mode=None*, *config_mode_freq=None*, *refresh_freq=None*, *reboot_if_needed=None*, *action_after_reboot=None*, *refresh_mode=None*, *certificate_id=None*, *configuration_id=None*, *allow_module_overwrite=None*, *debug_mode=False*, *status_retention_days=None*)

For detailed descriptions of the parameters see: https://msdn.microsoft.com/en-us/PowerShell/DSC/metaConfig

**Parameters** **config_mode** (*str*) -- How the LCM applies the configuration. Valid values are: - ApplyOnly - ApplyAndMonitor - ApplyAndAutoCorrect

**Parameters** **config_mode_freq** (*int*) -- How often, in minutes, the current configuration is checked and applied. Ignored if config_mode is set to ApplyOnly. Default is 15.

**Parameters** **refresh_mode** (*str*) -- How the LCM gets configurations. Valid values are:

- Disabled
- Push
- Pull

**Parameters** **refresh_freq** (*int*) -- How often, in minutes, the LCM checks for updated configurations. (pull mode only) Default is 30.

---

**Note:** Either *config_mode_freq* or *refresh_freq* needs to be a multiple

---

of the other. See documentation on MSDN for more details.

**Parameters** **reboot_if_needed** (*bool*) -- Reboot the machine if needed after a configuration is applied. Default is False.

**Parameters** **action_after_reboot** (*str*) -- Action to take after reboot. Valid values are: - ContinueConfiguration - StopConfiguration

**Parameters** **certificate_id** (*guid*) -- A GUID that specifies a certificate used to access the configuration: (pull mode)

**Parameters** **configuration_id** (*guid*) -- A GUID that identifies the config file to get from a pull server. (pull mode)

**Parameters** **allow_module_overwrite** (*bool*) -- New configs are allowed to overwrite old ones on the target node.

**Parameters** **debug_mode** (*str*) -- Sets the debug level. Valid values are:

- None
- ForceModuleImport
- All

**Parameters** **status_retention_days** (*int*) -- Number of days to keep status of the current config.

Returns:

salt.modules.win_dsc.**test_config**()

Tests the current applied DSC Configuration

**Returns** True if successfully applied, otherwise False

**Return type** bool

CLI Example:

```
salt '*' dsc.test_config
```

### 13.6.345 salt.modules.win_file

Manage information about files on the minion, set/read user, group data

**depends**

- win32api
- win32file
- win32security

`salt.modules.win_file.`**`chgrp`**(*path*, *group*)

Change the group of a file

Under Windows, this will do nothing.

While a file in Windows does have a `primary group', this rarely used attribute generally has no bearing on permissions unless intentionally configured and is only used to support Unix compatibility features (e.g. Services For Unix, NFS services).

Salt, therefore, remaps this function to do nothing while still being compatible with Unix behavior. When managing Windows systems, this function is superfluous and will generate an info level log entry if used directly.

If you do actually want to set the `primary group' of a file, use *file .chpgrp*.

CLI Example:

```
salt '*' file.chpgrp c:\temp\test.txt administrators
```

`salt.modules.win_file.`**`chown`**(*path*, *user*, *group=None*, *pgroup=None*, *follow_symlinks=True*)

Chown a file, pass the file the desired user and group

Under Windows, the group parameter will be ignored.

This is because while files in Windows do have a `primary group' property, this is rarely used. It generally has no bearing on permissions unless intentionally configured and is most commonly used to provide Unix compatibility (e.g. Services For Unix, NFS services).

If you do want to change the `primary group' property and understand the implications, pass the Windows only parameter, pgroup, instead.

To set the primary group to `None', it must be specified in quotes. Otherwise Salt will interpret it as the Python value of None and no primary group changes will occur. See the example below.

CLI Example:

```
salt '*' file.chown c:\temp\test.txt myusername
salt '*' file.chown c:\temp\test.txt myusername pgroup=Administrators
salt '*' file.chown c:\temp\test.txt myusername "pgroup='None'"
```

`salt.modules.win_file.`**`chpgrp`**(*path*, *group*)

Change the group of a file

Under Windows, this will set the rarely used primary group of a file. This generally has no bearing on permissions unless intentionally configured and is most commonly used to provide Unix compatibility (e.g. Services For Unix, NFS services).

Ensure you know what you are doing before using this function.

To set the primary group to `None', it must be specified in quotes. Otherwise Salt will interpret it as the Python value of None and no primary group changes will occur. See the example below.

CLI Example:

```
salt '*' file.chpgrp c:\temp\test.txt Administrators
salt '*' file.chpgrp c:\temp\test.txt "'None'"
```

salt.modules.win_file.**get_attributes**(*path*)

Return a dictionary object with the Windows file attributes for a file.

CLI Example:

```
salt '*' file.get_attributes c:\temp\a.txt
```

salt.modules.win_file.**get_gid**(*path*, *follow_symlinks=True*)

Return the id of the group that owns a given file

Under Windows, this will return the uid of the file.

While a file in Windows does have a `primary group', this rarely used attribute generally has no bearing on permissions unless intentionally configured and is only used to support Unix compatibility features (e.g. Services For Unix, NFS services).

Salt, therefore, remaps this function to provide functionality that somewhat resembles Unix behavior for API compatibility reasons. When managing Windows systems, this function is superfluous and will generate an info level log entry if used directly.

If you do actually want to access the `primary group' of a file, use *file.get_pgid*.

CLI Example:

```
salt '*' file.get_gid c:\temp\test.txt
```

salt.modules.win_file.**get_group**(*path*, *follow_symlinks=True*)

Return the group that owns a given file

Under Windows, this will return the user (owner) of the file.

While a file in Windows does have a `primary group', this rarely used attribute generally has no bearing on permissions unless intentionally configured and is only used to support Unix compatibility features (e.g. Services For Unix, NFS services).

Salt, therefore, remaps this function to provide functionality that somewhat resembles Unix behavior for API compatibility reasons. When managing Windows systems, this function is superfluous and will generate an info level log entry if used directly.

If you do actually want to access the `primary group' of a file, use *file.get_pgroup*.

CLI Example:

```
salt '*' file.get_group c:\temp\test.txt
```

salt.modules.win_file.**get_mode**(*path*)

Return the mode of a file

Right now we're just returning None because Windows' doesn't have a mode like Linux

CLI Example:

```
salt '*' file.get_mode /etc/passwd
```

salt.modules.win_file.**get_pgid**(*path*, *follow_symlinks=True*)
Return the id of the primary group that owns a given file (Windows only)

This function will return the rarely used primary group of a file. This generally has no bearing on permissions unless intentionally configured and is most commonly used to provide Unix compatibility (e.g. Services For Unix, NFS services).

Ensure you know what you are doing before using this function.

CLI Example:

```
salt '*' file.get_pgid c:\temp\test.txt
```

salt.modules.win_file.**get_pgroup**(*path*, *follow_symlinks=True*)
Return the name of the primary group that owns a given file (Windows only)

This function will return the rarely used primary group of a file. This generally has no bearing on permissions unless intentionally configured and is most commonly used to provide Unix compatibility (e.g. Services For Unix, NFS services).

Ensure you know what you are doing before using this function.

The return value may be `None', e.g. if the user is not on a domain. This is a valid group - do not confuse this with the Salt/Python value of None which means no value was returned. To be certain, use the *get_pgid* function which will return the SID, including for the system `None' group.

CLI Example:

```
salt '*' file.get_pgroup c:\temp\test.txt
```

salt.modules.win_file.**get_uid**(*path*, *follow_symlinks=True*)
Return the id of the user that owns a given file

Symlinks are followed by default to mimic Unix behavior. Specify *follow_symlinks=False* to turn off this behavior.

CLI Example:

```
salt '*' file.get_uid c:\temp\test.txt
salt '*' file.get_uid c:\temp\test.txt follow_symlinks=False
```

salt.modules.win_file.**get_user**(*path*, *follow_symlinks=True*)
Return the user that owns a given file

Symlinks are followed by default to mimic Unix behavior. Specify *follow_symlinks=False* to turn off this behavior.

CLI Example:

```
salt '*' file.get_user c:\temp\test.txt
salt '*' file.get_user c:\temp\test.txt follow_symlinks=False
```

salt.modules.win_file.**gid_to_group**(*gid*)
Convert the group id to the group name on this system

Under Windows, because groups are just another ACL entity, this function behaves the same as uid_to_user.

For maintaining Windows systems, this function is superfluous and only exists for API compatibility with Unix. Use the uid_to_user function instead; an info level log entry will be generated if this function is used directly.

CLI Example:

```
salt '*' file.gid_to_group S-1-5-21-626487655-2533044672-482107328-1010
```

salt.modules.win_file.**group_to_gid**(*group*)

Convert the group to the gid on this system

Under Windows, because groups are just another ACL entity, this function behaves the same as user_to_uid, except if None is given, `' is returned.

For maintaining Windows systems, this function is superfluous and only exists for API compatibility with Unix. Use the user_to_uid function instead; an info level log entry will be generated if this function is used directly.

CLI Example:

```
salt '*' file.group_to_gid administrators
```

salt.modules.win_file.**is_link**(*path*)

Check if the path is a symlink

This is only supported on Windows Vista or later.

Inline with Unix behavior, this function will raise an error if the path is not a symlink, however, the error raised will be a SaltInvocationError, not an OSError.

CLI Example:

```
salt '*' file.is_link /path/to/link
```

salt.modules.win_file.**lchown**(*path*, *user*, *group=None*, *pgroup=None*)

Chown a file, pass the file the desired user and group without following any symlinks.

Under Windows, the group parameter will be ignored.

This is because while files in Windows do have a `primary group' property, this is rarely used. It generally has no bearing on permissions unless intentionally configured and is most commonly used to provide Unix compatibility (e.g. Services For Unix, NFS services).

If you do want to change the `primary group' property and understand the implications, pass the Windows only parameter, pgroup, instead.

To set the primary group to `None', it must be specified in quotes. Otherwise Salt will interpret it as the Python value of None and no primary group changes will occur. See the example below.

CLI Example:

```
salt '*' file.lchown c:\temp\test.txt myusername
salt '*' file.lchown c:\temp\test.txt myusername pgroup=Administrators
salt '*' file.lchown c:\temp\test.txt myusername "pgroup='None'"
```

salt.modules.win_file.**readlink**(*path*)

Return the path that a symlink points to

This is only supported on Windows Vista or later.

Inline with Unix behavior, this function will raise an error if the path is not a symlink, however, the error raised will be a SaltInvocationError, not an OSError.

CLI Example:

```
salt '*' file.readlink /path/to/link
```

salt.modules.win_file.**remove**(*path*, *force=False*)

Remove the named file or directory

**Parameters**

- **path** (*str*) -- The path to the file or directory to remove.
- **force** (*bool*) -- Remove even if marked Read-Only

**Returns** True if successful, False if unsuccessful

**Return type** bool

CLI Example:

```
salt '*' file.remove C:\Temp
```

salt.modules.win_file.**set_attributes**(*path*, *archive=None*, *hidden=None*, *normal=None*, *notIndexed=None*, *readonly=None*, *system=None*, *temporary=None*)

Set file attributes for a file. Note that the normal attribute means that all others are false. So setting it will clear all others.

CLI Example:

```
salt '*' file.set_attributes c:\temp\a.txt normal=True
salt '*' file.set_attributes c:\temp\a.txt readonly=True hidden=True
```

salt.modules.win_file.**set_mode**(*path*, *mode*)

Set the mode of a file

This just calls get_mode, which returns None because we don't use mode on Windows

CLI Example:

```
salt '*' file.set_mode /etc/passwd 0644
```

salt.modules.win_file.**stats**(*path*, *hash_type='sha256'*, *follow_symlinks=True*)

Return a dict containing the stats for a given file

Under Windows, *gid* will equal *uid* and *group* will equal *user*.

While a file in Windows does have a `primary group', this rarely used attribute generally has no bearing on permissions unless intentionally configured and is only used to support Unix compatibility features (e.g. Services For Unix, NFS services).

Salt, therefore, remaps these properties to keep some kind of compatibility with Unix behavior. If the `primary group' is required, it can be accessed in the *pgroup* and *pgid* properties.

CLI Example:

```
salt '*' file.stats /etc/passwd
```

salt.modules.win_file.**symlink**(*src*, *link*)

Create a symbolic link to a file

This is only supported with Windows Vista or later and must be executed by a user with the SeCreateSymbolicLink privilege.

The behavior of this function matches the Unix equivalent, with one exception - invalid symlinks cannot be created. The source path must exist. If it doesn't, an error will be raised.

CLI Example:

```
salt '*' file.symlink /path/to/file /path/to/link
```

salt.modules.win_file.**uid_to_user**(*uid*)
Convert a uid to a user name

CLI Example:

```
salt '*' file.uid_to_user S-1-5-21-626487655-2533044672-482107328-1010
```

salt.modules.win_file.**user_to_uid**(*user*)
Convert user name to a uid

CLI Example:

```
salt '*' file.user_to_uid myusername
```

### 13.6.346 salt.modules.win_firewall

Module for configuring Windows Firewall

salt.modules.win_firewall.**add_rule**(*name*, *localport*, *protocol='tcp'*, *action='allow'*, *dir='in'*)
New in version 2015.5.0.

Add a new firewall rule

CLI Example:

```
salt '*' firewall.add_rule 'test' '8080' 'tcp'
salt '*' firewall.add_rule 'test' '1' 'icmpv4'
```

salt.modules.win_firewall.**delete_rule**(*name*, *localport*, *protocol='tcp'*, *dir='in'*)
New in version 2015.8.0.

Delete an existing firewall rule

CLI Example:

```
salt '*' firewall.delete_rule 'test' '8080' 'tcp' 'in'
```

salt.modules.win_firewall.**disable**(*profile='allprofiles'*)
Disable firewall profile :param profile: (default: allprofiles)

CLI Example:

```
salt '*' firewall.disable
```

salt.modules.win_firewall.**enable**(*profile='allprofiles'*)
Enable firewall profile :param profile: (default: allprofiles)

New in version 2015.5.0.

CLI Example:

```
salt '*' firewall.enable
```

salt.modules.win_firewall.**get_config**()
Get the status of all the firewall profiles

CLI Example:

```
salt '*' firewall.get_config
```

salt.modules.win_firewall.**get_rule**(*name='all'*)
New in version 2015.5.0.

Get firewall rule(s) info

CLI Example:

```
salt '*' firewall.get_rule 'MyAppPort'
```

### 13.6.347 salt.modules.win_groupadd

Manage groups on Windows

**Important:** If you feel that Salt should be using this module to manage groups on a minion, and it is using a different module (or gives an error similar to *`group.info' is not available*), see *here*.

salt.modules.win_groupadd.**add**(*name*, *gid=None*, *system=False*)
Add the specified group

CLI Example:

```
salt '*' group.add foo
```

salt.modules.win_groupadd.**adduser**(*name*, *username*)
add a user to a group

CLI Example:

```
salt '*' group.adduser foo username
```

salt.modules.win_groupadd.**delete**(*name*)
Remove the named group

CLI Example:

```
salt '*' group.delete foo
```

salt.modules.win_groupadd.**deluser**(*name*, *username*)
remove a user from a group

CLI Example:

```
salt '*' group.deluser foo username
```

salt.modules.win_groupadd.**getent**(*refresh=False*)
Return info on all groups

CLI Example:

```
salt '*' group.getent
```

salt.modules.win_groupadd.**info**(*name*)
Return information about a group

CLI Example:

```
salt '*' group.info foo
```

salt.modules.win_groupadd.**members**(*name*, *members_list*)
remove a user from a group

CLI Example:

```
salt '*' group.members foo 'user1,user2,user3'
```

### 13.6.348 salt.modules.win_iis module

Microsoft IIS site management via WebAdministration powershell module

**platform** Windows

New in version 2016.3.0.

salt.modules.win_iis.**create_apppool**(*name*)
Create IIS Application pools

CLI Example:

```
salt '*' win_iis.create_apppool name='MyTestPool'
```

salt.modules.win_iis.**create_site**(*name*, *protocol*, *sourcepath*, *port*, *apppool=''*, *hostheader=''*, *ipaddress=''*)
Create a basic website in IIS

CLI Example:

```
salt '*' win_iis.create_site name='My Test Site' protocol='http' sourcepath='c:
↪\stage' port='80' apppool='TestPool'
```

salt.modules.win_iis.**list_apppools**()
List all configured IIS Application pools

CLI Example:

```
salt '*' win_iis.list_apppools
```

salt.modules.win_iis.**list_sites**()
List all the currently deployed websites

CLI Example:

```
salt '*' win_iis.list_sites
```

salt.modules.win_iis.**remove_apppool**(*name*)
Removes IIS Application pools

CLI Example:

```
salt '*' win_iis.remove_apppool name='MyTestPool'
```

salt.modules.win_iis.**remove_site**(*name*)
Delete website from IIS

CLI Example:

```
salt '*' win_iis.remove_site name='My Test Site'
```

### 13.6.349 salt.modules.win_ip

The networking module for Windows based systems

salt.modules.win_ip.**disable**(*iface*)
Disable an interface

CLI Example:

```
salt -G 'os_family:Windows' ip.disable 'Local Area Connection #2'
```

salt.modules.win_ip.**enable**(*iface*)
Enable an interface

CLI Example:

```
salt -G 'os_family:Windows' ip.enable 'Local Area Connection #2'
```

salt.modules.win_ip.**get_all_interfaces**()
Return configs for all interfaces

CLI Example:

```
salt -G 'os_family:Windows' ip.get_all_interfaces
```

salt.modules.win_ip.**get_default_gateway**()
Set DNS source to DHCP on Windows

CLI Example:

```
salt -G 'os_family:Windows' ip.get_default_gateway
```

salt.modules.win_ip.**get_interface**(*iface*)
Return the configuration of a network interface

CLI Example:

```
salt -G 'os_family:Windows' ip.get_interface 'Local Area Connection'
```

salt.modules.win_ip.**get_subnet_length**(*mask*)
Convenience function to convert the netmask to the CIDR subnet length

CLI Example:

```
salt -G 'os_family:Windows' ip.get_subnet_length 255.255.255.0
```

salt.modules.win_ip.**is_disabled**(*iface*)
Returns `True` if interface is disabled, otherwise `False`

CLI Example:

```
salt -G 'os_family:Windows' ip.is_disabled 'Local Area Connection #2'
```

salt.modules.win_ip.**is_enabled**(*iface*)

Returns `True` if interface is enabled, otherwise `False`

CLI Example:

```
salt -G 'os_family:Windows' ip.is_enabled 'Local Area Connection #2'
```

salt.modules.win_ip.**raw_interface_configs**()

Return raw configs for all interfaces

CLI Example:

```
salt -G 'os_family:Windows' ip.raw_interface_configs
```

salt.modules.win_ip.**set_dhcp_all**(*iface*)

Set both IP Address and DNS to DHCP

CLI Example:

```
salt -G 'os_family:Windows' ip.set_dhcp_all 'Local Area Connection'
```

salt.modules.win_ip.**set_dhcp_dns**(*iface*)

Set DNS source to DHCP on Windows

CLI Example:

```
salt -G 'os_family:Windows' ip.set_dhcp_dns 'Local Area Connection'
```

salt.modules.win_ip.**set_dhcp_ip**(*iface*)

Set Windows NIC to get IP from DHCP

CLI Example:

```
salt -G 'os_family:Windows' ip.set_dhcp_ip 'Local Area Connection'
```

salt.modules.win_ip.**set_static_dns**(*iface*, **addrs*)

Set static DNS configuration on a Windows NIC

CLI Example:

```
salt -G 'os_family:Windows' ip.set_static_dns 'Local Area Connection' '192.168.1.1'
salt -G 'os_family:Windows' ip.set_static_dns 'Local Area Connection' '192.168.1.
↪252' '192.168.1.253'
```

salt.modules.win_ip.**set_static_ip**(*iface*, *addr*, *gateway=None*, *append=False*)

Set static IP configuration on a Windows NIC

**iface** The name of the interface to manage

**addr** IP address with subnet length (ex. `10.1.2.3/24`). The *`ip.get_subnet_length`* function can be used to calculate the subnet length from a netmask.

**gateway** [None] If specified, the default gateway will be set to this value.

**append** [False] If `True`, this IP address will be added to the interface. Default is `False`, which overrides any existing configuration for the interface and sets `addr` as the only address on the interface.

CLI Example:

```
salt -G 'os_family:Windows' ip.set_static_ip 'Local Area Connection' 10.1.2.3/24
↪gateway=10.1.2.1
salt -G 'os_family:Windows' ip.set_static_ip 'Local Area Connection' 10.1.2.4/24
↪append=True
```

### 13.6.350 salt.modules.win_license module

This module allows you to manage windows licensing via slmgr.vbs

```
salt '*' license.install XXXXX-XXXXX-XXXXX-XXXXX-XXXXX
```

salt.modules.win_license.**activate**()
Attempt to activate the current machine via Windows Activation

CLI Example:

```
salt '*' license.activate
```

salt.modules.win_license.**info**()
Return information about the license, if the license is not correctly activated this will return None.

CLI Example:

```
salt '*' license.info
```

salt.modules.win_license.**install**(*product_key*)
Install the given product key

CLI Example:

```
salt '*' license.install XXXXX-XXXXX-XXXXX-XXXXX-XXXXX
```

salt.modules.win_license.**installed**(*product_key*)
Check to see if the product key is already installed.
**Note: This is not 100% accurate as we can only see the last** 5 digits of the license.
CLI Example:

```
salt '*' license.installed XXXXX-XXXXX-XXXXX-XXXXX-XXXXX
```

salt.modules.win_license.**licensed**()
Return true if the current machine is licensed correctly

CLI Example:

```
salt '*' license.licensed
```

salt.modules.win_license.**uninstall**()
Uninstall the current product key

CLI Example:

```
salt '*' license.uninstall
```

### 13.6.351 salt.modules.win_network

Module for gathering and managing network information

salt.modules.win_network.**connect**(*host*, *port=None*, ***kwargs*)
Test connectivity to a host using a particular port from the minion.

New in version 2016.3.0.

CLI Example:

```
salt '*' network.connect archlinux.org 80

salt '*' network.connect archlinux.org 80 timeout=3

salt '*' network.connect archlinux.org 80 timeout=3 family=ipv4

salt '*' network.connect google-public-dns-a.google.com port=53 proto=udp timeout=3
```

salt.modules.win_network.**dig**(*host*)

Performs a DNS lookup with dig

Note: dig must be installed on the Windows minion

CLI Example:

```
salt '*' network.dig archlinux.org
```

salt.modules.win_network.**hw_addr**(*iface*)

Return the hardware address (a.k.a. MAC address) for a given interface

CLI Example:

```
salt '*' network.hw_addr 'Wireless Connection #1'
```

salt.modules.win_network.**hwaddr**(*iface*)

This function is an alias of hw_addr.

Return the hardware address (a.k.a. MAC address) for a given interface

CLI Example:

```
salt '*' network.hw_addr 'Wireless Connection #1'
```

salt.modules.win_network.**in_subnet**(*cidr*)

Returns True if host is within specified subnet, otherwise False

CLI Example:

```
salt '*' network.in_subnet 10.0.0.0/16
```

salt.modules.win_network.**interfaces**()

Return a dictionary of information about all the interfaces on the minion

CLI Example:

```
salt '*' network.interfaces
```

salt.modules.win_network.**interfaces_names**()

Return a list of all the interfaces names

CLI Example:

```
salt '*' network.interfaces_names
```

salt.modules.win_network.**ip_addrs**(*interface=None*, *include_loopback=False*)

Returns a list of IPv4 addresses assigned to the host. 127.0.0.1 is ignored, unless `include_loopback=True' is indicated. If `interface' is provided, then only IP addresses from that interface will be returned.

CLI Example:

```
salt '*' network.ip_addrs
```

salt.modules.win_network.**ip_addrs6**(*interface=None*, *include_loopback=False*)

Returns a list of IPv6 addresses assigned to the host. ::1 is ignored, unless `include_loopback=True' is indicated. If `interface' is provided, then only IP addresses from that interface will be returned.

CLI Example:

```
salt '*' network.ip_addrs6
```

salt.modules.win_network.**ipaddrs**(*interface=None*, *include_loopback=False*)

This function is an alias of `ip_addrs`.

Returns a list of IPv4 addresses assigned to the host. 127.0.0.1 is ignored, unless `include_loopback=True' is indicated. If `interface' is provided, then only IP addresses from that interface will be returned.

CLI Example:

```
salt '*' network.ip_addrs
```

salt.modules.win_network.**ipaddrs6**(*interface=None*, *include_loopback=False*)

This function is an alias of `ip_addrs6`.

Returns a list of IPv6 addresses assigned to the host. ::1 is ignored, unless `include_loopback=True' is indicated. If `interface' is provided, then only IP addresses from that interface will be returned.

CLI Example:

```
salt '*' network.ip_addrs6
```

salt.modules.win_network.**netstat**()

Return information on open ports and states

CLI Example:

```
salt '*' network.netstat
```

salt.modules.win_network.**nslookup**(*host*)

Query DNS for information about a domain or ip address

CLI Example:

```
salt '*' network.nslookup archlinux.org
```

salt.modules.win_network.**ping**(*host*)

Performs a ping to a host

CLI Example:

```
salt '*' network.ping archlinux.org
```

salt.modules.win_network.**subnets**()

Returns a list of subnets to which the host belongs

CLI Example:

```
salt '*' network.subnets
```

salt.modules.win_network.**traceroute**(*host*)
Performs a traceroute to a 3rd party host

CLI Example:

```
salt '*' network.traceroute archlinux.org
```

### 13.6.352 salt.modules.win_ntp

Management of NTP servers on Windows

New in version 2014.1.0.

salt.modules.win_ntp.**get_servers**()
Get list of configured NTP servers

CLI Example:

```
salt '*' ntp.get_servers
```

salt.modules.win_ntp.**set_servers**(**servers*)
Set Windows to use a list of NTP servers

CLI Example:

```
salt '*' ntp.set_servers 'pool.ntp.org' 'us.pool.ntp.org'
```

### 13.6.353 salt.modules.win_path

Manage the Windows System PATH

Note that not all Windows applications will rehash the PATH environment variable, Only the ones that listen to the WM_SETTINGCHANGE message http://support.microsoft.com/kb/104011

salt.modules.win_path.**add**(*path*, *index=0*)
Add the directory to the SYSTEM path in the index location
**Returns**: boolean True if successful, False if unsuccessful
CLI Example:

```
# Will add to the beginning of the path
salt '*' win_path.add 'c:\python27' 0

# Will add to the end of the path
salt '*' win_path.add 'c:\python27' index='-1'
```

salt.modules.win_path.**exists**(*path*)
Check if the directory is configured in the SYSTEM path Case-insensitive and ignores trailing backslash
**Returns**: boolean True if path exists, False if not
CLI Example:

```
salt '*' win_path.exists 'c:\python27'
salt '*' win_path.exists 'c:\python27\'
salt '*' win_path.exists 'C:\pyThon27'
```

salt.modules.win_path.**get_path**()
Returns a list of items in the SYSTEM path

CLI Example:

```
salt '*' win_path.get_path
```

salt.modules.win_path.**rehash**()
Send a WM_SETTINGCHANGE Broadcast to Windows to refresh the Environment variables

CLI Example:

... code-block:: bash
salt `*' win_path.rehash

salt.modules.win_path.**remove**(*path*)
Remove the directory from the SYSTEM path
**Returns**: boolean True if successful, False if unsuccessful
CLI Example:

```
# Will remove C:\Python27 from the path
salt '*' win_path.remove 'c:\\python27'
```

### 13.6.354 salt.modules.win_pkg

A module to manage software on Windows

---

**Important**: If you feel that Salt should be using this module to manage packages on a minion, and it is using a different module (or gives an error similar to *`pkg.install' is not available*), see *here*.

---

salt.modules.win_pkg.**compare_versions**(*ver1='`*, *oper='==*', *ver2='`*)
Compare software package versions

salt.modules.win_pkg.**genrepo**(*saltenv='base'*)
Generate winrepo_cachefile based on sls files in the winrepo

CLI Example:

```
salt-run winrepo.genrepo
```

salt.modules.win_pkg.**get_name_map**()

salt.modules.win_pkg.**get_repo_data**(*saltenv='base'*)
Returns the cached winrepo data

CLI Example:

```
salt '*' pkg.get_repo_data
```

salt.modules.win_pkg.**install**(*name=None*, *refresh=False*, *pkgs=None*, *saltenv='base'*, ***kwargs*)
Install the passed package(s) on the system using winrepo

**Parameters**

- **name** (*str, list, or None*) -- The name of a single package, or a comma-separated list of packages to install. (no spaces after the commas)
- **refresh** (*bool*) -- Boolean value representing whether or not to refresh the winrepo db
- **pkgs** (*list or None*) -- A list of packages to install from a software repository. All packages listed under `pkgs` will be installed via a single command.

- **saltenv** (*str*) -- The salt environment to use. Default is `base`.

*Keyword Arguments (kwargs)*

**Parameters**

- **version** (*str*) -- The specific version to install. If omitted, the latest version will be installed. If passed with multiple install, the version will apply to all packages. Recommended for single installation only.
- **cache_file** (*str*) -- A single file to copy down for use with the installer. Copied to the same location as the installer. Use this over `cache_dir` if there are many files in the directory and you only need a specific file and don't want to cache additional files that may reside in the installer directory. Only applies to files on `salt://`
- **cache_dir** (*bool*) -- True will copy the contents of the installer directory. This is useful for installations that are not a single file. Only applies to directories on `salt://`

**Returns** Return a dict containing the new package names and versions:

**Return type**

dict

If the package is installed by `pkg.install`:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

If the package is already installed:

```
{'<package>': {'current': '<current-version>'}}
```

The following example will refresh the winrepo and install a single package, 7zip.

CLI Example:

```
salt '*' pkg.install 7zip refresh=True
```

CLI Example:

```
salt '*' pkg.install 7zip
salt '*' pkg.install 7zip,filezilla
salt '*' pkg.install pkgs='["7zip","filezilla"]'
```

WinRepo Definition File Examples:

The following example demonstrates the use of `cache_file`. This would be used if you have multiple installers in the same directory that use the same `install.ini` file and you don't want to download the additional installers.

```
ntp:
  4.2.8:
    installer: 'salt://win/repo/ntp/ntp-4.2.8-win32-setup.exe'
    full_name: Meinberg NTP Windows Client
    locale: en_US
    reboot: False
    cache_file: 'salt://win/repo/ntp/install.ini'
    install_flags: '/USEFILE=C:
↪\salt\var\cache\salt\minion\files\base\win\repo\ntp\install.ini'
    uninstaller: 'NTP/uninst.exe'
```

The following example demonstrates the use of `cache_dir`. It assumes a file named `install.ini` resides in the same directory as the installer.

```
ntp:
  4.2.8:
    installer: 'salt://win/repo/ntp/ntp-4.2.8-win32-setup.exe'
    full_name: Meinberg NTP Windows Client
    locale: en_US
    reboot: False
    cache_dir: True
    install_flags: '/USEFILE=C:
↪\salt\var\cache\salt\minion\files\base\win\repo\ntp\install.ini'
    uninstaller: 'NTP/uninst.exe'
```

salt.modules.win_pkg.**latest_version**(**names*, ***kwargs*)

Return the latest version of the named package available for upgrade or installation. If more than one package name is specified, a dict of name/version pairs is returned.

If the latest version of a given package is already installed, an empty string will be returned for that package.

CLI Example:

```
salt '*' pkg.latest_version <package name>
salt '*' pkg.latest_version <package1> <package2> <package3> ...
```

salt.modules.win_pkg.**list_available**(**names*)

Return a list of available versions of the specified package.

CLI Example:

```
salt '*' pkg.list_available <package name>
salt '*' pkg.list_available <package name01> <package name02>
```

salt.modules.win_pkg.**list_pkgs**(*versions_as_list=False*, ***kwargs*)

List the packages currently installed in a dict:

```
{'<package_name>': '<version>'}
```

CLI Example:

```
salt '*' pkg.list_pkgs
salt '*' pkg.list_pkgs versions_as_list=True
```

salt.modules.win_pkg.**list_upgrades**(*refresh=True*, ***kwargs*)

List all available package upgrades on this system

CLI Example:

```
salt '*' pkg.list_upgrades
```

salt.modules.win_pkg.**purge**(*name=None*, *pkgs=None*, *version=None*, ***kwargs*)

Package purges are not supported, this function is identical to `remove()`.

**name** The name of the package to be deleted.

**version** The version of the package to be deleted. If this option is used in combination with the `pkgs` option below, then this version will be applied to all targeted packages.

Multiple Package Options:

**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.purge <package name>
salt '*' pkg.purge <package1>,<package2>,<package3>
salt '*' pkg.purge pkgs='["foo", "bar"]'
```

salt.modules.win_pkg.**refresh_db**(*saltenv='base'*)

Just recheck the repository and return a dict:

```
{'<database name>': Bool}
```

CLI Example:

```
salt '*' pkg.refresh_db
```

salt.modules.win_pkg.**remove**(*name=None*, *pkgs=None*, *version=None*, ***kwargs*)

Remove the passed package(s) from the system using winrepo

**Parameters**

- **name** (*str, list, or None*) -- The name of the package to be uninstalled.
- **version** (*str*) -- The version of the package to be uninstalled. If this option is used to to uninstall multiple packages, then this version will be applied to all targeted packages. Recommended using only when uninstalling a single package. If this parameter is omitted, the latest version will be uninstalled.

Multiple Package Options:

**Parameters** **pkgs** (*list or None*) -- A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

New in version 0.16.0.

**Returns** Returns a dict containing the changes.

**Return type**

dict

If the package is removed by `pkg.remove`:

{`<package>': {`old': `<old-version>', `new': `<new-version>'}}

If the package is already uninstalled:

{`<package>': {`current': `not installed'}}

CLI Example:

```
salt '*' pkg.remove <package name>
salt '*' pkg.remove <package1>,<package2>,<package3>
salt '*' pkg.remove pkgs='["foo", "bar"]'
```

salt.modules.win_pkg.**upgrade**(*refresh=True*)

Run a full system upgrade

Return a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

CLI Example:

```
salt '*' pkg.upgrade
```

salt.modules.win_pkg.**upgrade_available**(*name*)
Check whether or not an upgrade is available for a given package

CLI Example:

```
salt '*' pkg.upgrade_available <package name>
```

salt.modules.win_pkg.**version**(**names*, ***kwargs*)
Returns a version if the package is installed, else returns an empty string

CLI Example:

```
salt '*' pkg.version <package name>
```

### 13.6.355 salt.modules.win_powercfg

This module allows you to control the power settings of a windows minion via powercfg.

New in version 2015.8.0.

```
salt '*' powercfg.set_monitor_timeout 0 power=dc
salt '*' powercfg.set_disk_timeout 120 power=ac
```

salt.modules.win_powercfg.**get_disk_timeout**()
Get the current disk timeout of the current scheme

CLI Example:

```
salt '*' powercfg.get_disk_timeout
```

salt.modules.win_powercfg.**get_hibernate_timeout**()
Get the current hibernate timeout of the current scheme

CLI Example:

```
salt '*' powercfg.get_hibernate_timeout
```

salt.modules.win_powercfg.**get_monitor_timeout**()
Get the current monitor timeout of the current scheme

CLI Example:

```
salt '*' powercfg.get_monitor_timeout
```

salt.modules.win_powercfg.**get_standby_timeout**()
Get the current standby timeout of the current scheme

CLI Example:

```
salt '*' powercfg.get_standby_timeout
```

salt.modules.win_powercfg.**set_disk_timeout**(*timeout*, *power='ac'*)
Set the disk timeout in minutes for the current power scheme

CLI Example:

```
salt '*' powercfg.set_disk_timeout 30 power=dc
```

**timeout** The amount of time in minutes before the disk will timeout

**power** Should we set the value for AC or DC (battery)? Valid options ac,dc.

salt.modules.win_powercfg.**set_hibernate_timeout**(*timeout*, *power='ac'*)
Set the hibernate timeout in minutes for the current power scheme

CLI Example:

```
salt '*' powercfg.set_hibernate_timeout 30 power=pc
```

**timeout** The amount of time in minutes before the computer hibernates
**power** Should we set the value for AC or DC (battery)? Valid options ac,dc.

salt.modules.win_powercfg.**set_monitor_timeout**(*timeout*, *power='ac'*)
Set the monitor timeout in minutes for the current power scheme

CLI Example:

```
salt '*' powercfg.set_monitor_timeout 30 power=ac
```

**timeout** The amount of time in minutes before the monitor will timeout
**power** Should we set the value for AC or DC (battery)? Valid options ac,dc.

salt.modules.win_powercfg.**set_standby_timeout**(*timeout*, *power='ac'*)
Set the standby timeout in minutes for the current power scheme

CLI Example:

```
salt '*' powercfg.set_standby_timeout 30 power=dc
```

**timeout** The amount of time in minutes before the computer sleeps
**power** Should we set the value for AC or DC (battery)? Valid options ac,dc.

### 13.6.356 salt.modules.win_repo

Module to manage Windows software repo on a Standalone Minion

`file_client: local` must be set in the minion config file.

For documentation on Salt's Windows Repo feature, see *here*.

salt.modules.win_repo.**genrepo**()
Generate winrepo_cachefile based on sls files in the winrepo_dir

CLI Example:

```
salt-call winrepo.genrepo
```

salt.modules.win_repo.**show_sls**(*name*, *saltenv='base'*)
New in version 2015.8.0.

Display the rendered software definition from a specific sls file in the local winrepo cache. This will parse all Jinja. Run pkg.refresh_db to pull the latest software definitions from the master.

---

**Note:** This function does not ask a master for an sls file to render. Instead it directly processes the file specified in *name*

---

**Args:** name str: The name/path of the package you want to view. This can be the full path to a file on the minion file system or a file on the local minion cache.

saltenv str: The default environment is `base`

**Returns**: dict: Returns a dictionary containing the rendered data structure

---

**Note**: To use a file from the minion cache start from the local winrepo root (`C:\salt\var\cache\salt\minion\files\base\win\repo-ng`). If you have `.sls` files organized in subdirectories you'll have to denote them with `.`. For example, if you have a `test` directory in the winrepo root with a `gvim.sls` file inside, would target that file like so: `test.gvim`. Directories can be targeted as well as long as they contain an `init.sls` inside. For example, if you have a `node` directory with an `init.sls` inside, target that like so: `node`.

---

CLI Example:

```
salt '*' winrepo.show_sls gvim
salt '*' winrepo.show_sls test.npp
salt '*' winrepo.show_sls C:\test\gvim.sls
```

`salt.modules.win_repo.`**`update_git_repos`**(*clean=False*)

Checkout git repos containing *Windows Software Package Definitions*.

---

**Important**: This function requires Git for Windows to be installed in order to work. When installing, make sure to select an installation option which permits the git executable to be run from the Command Prompt.

---

**clean** [False] Clean repo cachedirs which are not configured under *`winrepo_remotes`*.

---

**Note**: This option only applies if either pygit2 or GitPython is installed into Salt's bundled Python.

---

**Warning**: This argument should not be set to `True` if a mix of git and non-git repo definitions are being used, as it will result in the non-git repo definitions being removed.

New in version 2015.8.0.

CLI Example:

```
salt-call winrepo.update_git_repos
```

### 13.6.357 salt.modules.win_servermanager

Manage Windows features via the ServerManager powershell module

`salt.modules.win_servermanager.`**`install`**(*feature*, *recurse=False*, *source=None*, *restart=False*, *exclude=None*)

Install a feature

---

**Note**: Some features require reboot after un/installation, if so until the server is restarted other features can not be installed!

---

---

**Note**: Some features take a long time to complete un/installation, set -t with a long timeout

---

**Parameters**

- **feature** (*str*) -- The name of the feature to install
- **recurse** (*bool*) -- Install all sub-features. Default is False
- **source** (*str*) -- Path to the source files if missing from the target system. None means that the system will use windows update services to find the required files. Default is None
- **restart** (*bool*) -- Restarts the computer when installation is complete, if required by the role/feature installed. Default is False
- **exclude** (*str*) -- The name of the feature to exclude when installing the named feature.

---

**Note:** As there is no exclude option for the `Add-WindowsFeature` command, the feature will be installed with other sub-features and will then be removed.

---

**Returns** A dictionary containing the results of the install
**Return type** dict

CLI Example:

```
salt '*' win_servermanager.install Telnet-Client
salt '*' win_servermanager.install SNMP-Service True
salt '*' win_servermanager.install TFTP-Client source=d:\side-by-side
```

salt.modules.win_servermanager.**list_available**()

List available features to install

**Returns** A list of available features
**Return type** *list*

CLI Example:

```
salt '*' win_servermanager.list_available
```

salt.modules.win_servermanager.**list_installed**()

List installed features. Supported on Windows Server 2008 and Windows 8 and newer.

**Returns** A list of installed features
**Return type** *list*

CLI Example:

```
salt '*' win_servermanager.list_installed
```

salt.modules.win_servermanager.**remove**(*feature*, *remove_payload=False*, *restart=False*)

Remove an installed feature

---

**Note:** Some features require a reboot after installation/uninstallation. If one of these features are modified, then other features cannot be installed until the server is restarted. Additionally, some features take a while to complete installation/uninstallation, so it is a good idea to use the `-t` option to set a longer timeout.

---

**Parameters**

- **feature** (*str*) -- The name of the feature to remove
- **remove_payload** (*bool*) -- True will cause the feature to be removed from the side-by-side store (`%SystemDrive%:\Windows\WinSxS`). Default is False

- **restart** (*bool*) -- Restarts the computer when uninstall is complete, if required by the role/feature removed. Default is False

**Returns** A dictionary containing the results of the uninstall

**Return type** dict

CLI Example:

```
salt -t 600 '*' win_servermanager.remove Telnet-Client
```

### 13.6.358 salt.modules.win_service

Windows Service module.

salt.modules.win_service.**available**(*name*)

Returns `True` if the specified service is available, otherwise returns `False`.

CLI Example:

```
salt '*' service.available <service name>
```

salt.modules.win_service.**config**(*name*, *bin_path=None*, *display_name=None*, *svc_type=None*, *start_type=None*, *error=None*, *group=None*, *tag=None*, *depend=None*, *obj=None*, *password=None*, ***kwargs*)

Modify the named service.

New in version 2015.8.8.

Required parameters:

**Parameters** **name** (*str*) -- Specifies the service name returned by the getkeyname operation

Optional parameters:

**Parameters** **bin_path** (*str*) -- Specifies the path to the service binary file, backslashes must be escaped - eg: C:\path\to\binary.exe

**Parameters** **display_name** (*str*) -- the name to be displayed in the service manager Specifies a more descriptive name for identifying the service in user interface programs.

**Parameters**

- **svc_type** (*str*) -- Specifies the service type. Acceptable values are: - own (default): Service runs in its own process - share: Service runs as a shared process - interact: Service can interact with the desktop - kernel: Service is a driver - filesys: Service is a system driver - rec: Service is a file system-recognized driver that identifies

  filesystems on the computer

  - adapt: Service is an adapter driver that identifies hardware such as keyboards, mice and disk drives

- **start_type** (*str*) -- Specifies the start type for the service.

**Acceptable values are**:

- boot: Device driver that is loaded by the boot loader
- system: Device driver that is started during kernel initialization
- auto: Service that automatically starts
- demand (default): Service must be started manually
- disabled: Service cannot be started
- delayed-auto: Service starts automatically after other auto-services start

**Parameters** **error** (*str*) -- Specifies the severity of the error if the service

fails to start. Acceptable values are:

- normal (default): Error is logged and a message box is displayed
- severe: Error is logged and computer attempts a restart with last known good configuration
- critical: Error is logged, computer attempts to restart with last known good configuration, system halts on failure
- ignore: Error is logged and startup continues, no notification is given to the user

**Parameters** **group** (*str*) -- Specifies the name of the group of which this service is a

member. The list of groups is stored in the registry, in the HKLMSystemCurrentControlSetControlService-GroupOrder subkey. The default is null.

**Parameters** **tag** (*str*) -- Specifies whether or not to obtain a TagID from the CreateService call. For boot-start and system-start drivers only. Acceptable values are:

•yes/no

**Parameters** **depend** (*str*) -- Specifies the names of services or groups that must start

before this service. The names are separated by forward slashes.

**Parameters** **obj** (*str*) -- Specifies th name of an account in which a service will run or specifies a name of the Windows driver object in which the driver will run. Default is LocalSystem

**Parameters** **password** (*str*) -- Specifies a password. Required if other than LocalSystem account is used.

**Returns** True if successful, False if not

**Return type** bool

CLI Example:

```
salt '*' service.config <service name> <path to exe> display_name='<display name>'
```

salt.modules.win_service.**create**(*name*, *binpath*, *DisplayName=None*, *type='own'*, *start='demand'*, *error='normal'*, *group=None*, *tag='no'*, *depend=None*, *obj=None*, *password=None*, ***kwargs*)

Create the named service.

New in version 2015.8.0.

Required parameters:

**Parameters**

- **name** -- Specifies the service name returned by the getkeyname operation
- **binpath** -- Specifies the path to the service binary file, backslashes must be escaped - eg: C:\path\to\binary.exe

Optional parameters:

**Parameters**

- **DisplayName** -- the name to be displayed in the service manager
- **type** -- Specifies the service type, default is own - own (default): Service runs in its own process - share: Service runs as a shared process - interact: Service can interact with the desktop - kernel: Service is a driver - filesys: Service is a system driver - rec: Service is a file system-recognized driver that identifies filesystems on the computer
- **start** -- Specifies the start type for the service - boot: Device driver that is loaded by the boot loader - system: Device driver that is started during kernel initialization - auto: Service that automatically starts - demand (default): Service must be started manually - disabled: Service cannot be started - delayed-auto: Service starts automatically after other auto-services start

- **error** -- Specifies the severity of the error - normal (default): Error is logged and a message box is displayed - severe: Error is logged and computer attempts a restart with last known good configuration - critical: Error is logged, computer attempts to restart with last known good configuration, system halts on failure - ignore: Error is logged and startup continues, no notification is given to the user
- **group** -- Specifies the name of the group of which this service is a member
- **tag** -- Specifies whether or not to obtain a TagID from the CreateService call. For boot-start and system-start drivers - yes/no
- **depend** -- Specifies the names of services or groups that myust start before this service. The names are separated by forward slashes.
- **obj** -- Specifies th ename of an account in which a service will run. Default is LocalSystem
- **password** -- Specifies a password. Required if other than LocalSystem account is used.

CLI Example:

```
salt '*' service.create <service name> <path to exe> display_name='<display name>'
```

salt.modules.win_service.**create_win_salt_restart_task**()
Create a task in Windows task scheduler to enable restarting the salt-minion

CLI Example:

```
salt '*' service.create_win_salt_restart_task()
```

salt.modules.win_service.**delete**(*name*)
Delete the named service

CLI Example:

```
salt '*' service.delete <service name>
```

salt.modules.win_service.**disable**(*name*, ***kwargs*)
Disable the named service to start at boot

CLI Example:

```
salt '*' service.disable <service name>
```

salt.modules.win_service.**disabled**(*name*)
Check to see if the named service is disabled to start on boot

CLI Example:

```
salt '*' service.disabled <service name>
```

salt.modules.win_service.**enable**(*name*, ***kwargs*)
Enable the named service to start at boot

CLI Example:

```
salt '*' service.enable <service name>
```

salt.modules.win_service.**enabled**(*name*, ***kwargs*)
Check to see if the named service is enabled to start on boot

CLI Example:

```
salt '*' service.enabled <service name>
```

salt.modules.win_service.**execute_salt_restart_task**()
Run the Windows Salt restart task

CLI Example:

```
salt '*' service.execute_salt_restart_task()
```

salt.modules.win_service.**get_all**()
Return all installed services

CLI Example:

```
salt '*' service.get_all
```

salt.modules.win_service.**get_disabled**()
Return the disabled services

CLI Example:

```
salt '*' service.get_disabled
```

salt.modules.win_service.**get_enabled**()
Return the enabled services

CLI Example:

```
salt '*' service.get_enabled
```

salt.modules.win_service.**get_service_name**(**args*)
The Display Name is what is displayed in Windows when services.msc is executed. Each Display Name has an associated Service Name which is the actual name of the service. This function allows you to discover the Service Name by returning a dictionary of Display Names and Service Names, or filter by adding arguments of Display Names.

If no args are passed, return a dict of all services where the keys are the service Display Names and the values are the Service Names.

If arguments are passed, create a dict of Display Names and Service Names

CLI Example:

```
salt '*' service.get_service_name
salt '*' service.get_service_name 'Google Update Service (gupdate)' 'DHCP Client'
```

salt.modules.win_service.**getsid**(*name*)
Return the sid for this windows service

CLI Example:

```
salt '*' service.getsid <service name>
```

salt.modules.win_service.**missing**(*name*)
The inverse of service.available. Returns `True` if the specified service is not available, otherwise returns `False`.

CLI Example:

```
salt '*' service.missing <service name>
```

salt.modules.win_service.**restart**(*name*)
Restart the named service

CLI Example:

```
salt '*' service.restart <service name>
```

salt.modules.win_service.**start**(*name*)
Start the specified service.

> **Warning**: You cannot start a disabled service in Windows. If the service is disabled, it will be changed to `Manual` start.

Args:
name (str): The name of the service to start

**Returns**: bool: True if successful, otherwise False

CLI Example:

```
salt '*' service.start <service name>
```

salt.modules.win_service.**status**(*name*, *sig=None*)
Return the status for a service, returns the PID or an empty string if the service is running or not, pass a signature to use to find the service via ps

CLI Example:

```
salt '*' service.status <service name> [service signature]
```

salt.modules.win_service.**stop**(*name*)
Stop the specified service

CLI Example:

```
salt '*' service.stop <service name>
```

### 13.6.359 salt.modules.win_shadow

Manage the shadow file

---

**Important**: If you feel that Salt should be using this module to manage passwords on a minion, and it is using a different module (or gives an error similar to *`shadow.info' is not available*), see *here*.

---

salt.modules.win_shadow.**info**(*name*)
Return information for the specified user This is just returns dummy data so that salt states can work.
**Parameters** **name** (*str*) -- The name of the user account to show.
CLI Example:

```
salt '*' shadow.info root
```

salt.modules.win_shadow.**require_password_change**(*name*)
Require the user to change their password the next time they log in.
**Parameters** **name** -- The name of the user account to require a password change.
**Returns** True if successful. False if unsuccessful.
**Return type** bool

salt.modules.win_shadow.**set_expire**(*name*, *expire*)
Set the expiration date for a user account.
**Parameters**
- **name** -- The name of the user account to edit.
- **expire** -- The date the account will expire.

**Returns** True if successful. False if unsuccessful.
**Return type** bool

salt.modules.win_shadow.**set_password**(*name*, *password*)
Set the password for a named user.
**Parameters**
- **name** (*str*) -- The name of the user account
- **password** (*str*) -- The new password

**Returns** True if successful. False if unsuccessful.
**Return type** bool
CLI Example:

```
salt '*' shadow.set_password root mysecretpassword
```

salt.modules.win_shadow.**unlock_account**(*name*)
Unlocks a user account.
**Parameters** **name** -- The name of the user account to unlock.
**Returns** True if successful. False if unsuccessful.
**Return type** bool

### 13.6.360 salt.modules.win_status

Module for returning various status data about a minion. These data can be useful for compiling into stats later, or for problem solving if your minion is having problems.

New in version 0.12.0.

**depends**
- pythoncom
- wmi

salt.modules.win_status.**cpuload**()
New in version 2015.8.0.

Return the processor load as a percentage

CLI Example:

```
salt '*' status.cpuload
```

salt.modules.win_status.**diskusage**(*human_readable=False*, *path=None*)
New in version 2015.8.0.

Return the disk usage for this minion

**human_readable** [False] If `True`, usage will be in KB/MB/GB etc.
CLI Example:

```
salt '*' status.diskusage path=c:/salt
```

`salt.modules.win_status.`**`master`**(*master=None*, *connected=True*)
New in version 2015.5.0.

Fire an event if the minion gets disconnected from its master. This function is meant to be run via a scheduled job from the minion. If master_ip is an FQDN/Hostname, is must be resolvable to a valid IPv4 address.

CLI Example:

```
salt '*' status.master
```

`salt.modules.win_status.`**`procs`**(*count=False*)
Return the process data
**count** [False] If `True`, this function will simply return the number of processes.

New in version 2015.8.0.

CLI Example:

```
salt '*' status.procs
salt '*' status.procs count
```

`salt.modules.win_status.`**`saltmem`**(*human_readable=False*)
New in version 2015.8.0.

Returns the amount of memory that salt is using
**human_readable** [False] return the value in a nicely formatted number
CLI Example:

```
salt '*' status.saltmem
salt '*' status.saltmem human_readable=True
```

`salt.modules.win_status.`**`uptime`**(*human_readable=False*)
New in version 2015.8.0.

Return the system uptime for this machine in seconds
**human_readable** [False] If `True`, then return uptime in years, days, and seconds.
CLI Example:

```
salt '*' status.uptime
salt '*' status.uptime human_readable=True
```

### 13.6.361 salt.modules.win_system

Module for managing windows systems.

**depends**

- win32net

Support for reboot, shutdown, etc

`salt.modules.win_system.`**`get_computer_desc`**()
Get the Windows computer description
**Returns** Returns the computer description if found. Otherwise returns False

CLI Example:

```
salt 'minion-id' system.get_computer_desc
```

salt.modules.win_system.**get_computer_name**()

Get the Windows computer name

**Returns** Returns the computer name if found. Otherwise returns False

CLI Example:

```
salt 'minion-id' system.get_computer_name
```

salt.modules.win_system.**get_domain_workgroup**()

Get the domain or workgroup the computer belongs to.

New in version 2015.5.7.

New in version 2015.8.2.

**Returns** The name of the domain or workgroup

**Return type** str

salt.modules.win_system.**get_hostname**()

New in version 2016.3.0.

Get the hostname of the windows minion

**Returns** Returns the hostname of the windows minion

CLI Example:

```
salt 'minion-id' system.get_hostname
```

salt.modules.win_system.**get_pending_computer_name**()

Get a pending computer name. If the computer name has been changed, and the change is pending a system reboot, this function will return the pending computer name. Otherwise, `None` will be returned. If there was an error retrieving the pending computer name, `False` will be returned, and an error message will be logged to the minion log.

**Returns** Returns the pending name if pending restart. Returns none if not pending restart.

CLI Example:

```
salt 'minion-id' system.get_pending_computer_name
```

salt.modules.win_system.**get_system_date**()

Get the Windows system date

**Returns** Returns the system date.

**Return type** str

CLI Example:

```
salt '*' system.get_system_date
```

salt.modules.win_system.**get_system_info**()

Get system information.

**Returns** Returns a Dictionary containing information about the system to include name, description, version, etc...

**Return type** dict

salt.modules.win_system.**get_system_time**()

Get the system time.

**Returns** Returns the system time in HH:MM AM/PM format.

**Return type** str

salt.modules.win_system.**halt**(*timeout=5*, *in_seconds=False*)

Halt a running system.

**Parameters** **timeout** (*int*) -- Number of seconds before halting the system. Default is 5 seconds.

**Returns** True is successful.

**Return type** bool

**timeout** The wait time before the system will be shutdown.

**in_seconds** Whether to treat timeout as seconds or minutes.

New in version 2015.8.0.

CLI Example:

```
salt '*' system.halt 5
```

salt.modules.win_system.**init**(*runlevel*)

Change the system runlevel on sysV compatible systems

CLI Example:

```
salt '*' system.init 3
```

salt.modules.win_system.**join_domain**(*domain*, *username=None*, *password=None*, *account_ou=None*, *account_exists=False*, *restart=False*)

Join a computer to an Active Directory domain. Requires reboot.

**Parameters**

- **domain** (*str*) -- The domain to which the computer should be joined, e.g. `example.com`
- **username** (*str*) -- Username of an account which is authorized to join computers to the specified domain. Need to be either fully qualified like `user@domain.tld` or simply `user`
- **password** (*str*) -- Password of the specified user
- **account_ou** (*str*) -- The DN of the OU below which the account for this computer should be created when joining the domain, e.g. `ou=computers,ou=departm_432,dc=my-company,dc=com`
- **account_exists** (*bool*) -- If set to `True` the computer will only join the domain if the account already exists. If set to `False` the computer account will be created if it does not exist, otherwise it will use the existing account. Default is False
- **restart** (*bool*) -- Restarts the computer after a successful join

  New in version 2015.8.2/2015.5.7.

**Returns** Returns a dictionary if successful. False if unsuccessful.

**Return type** dict, bool

CLI Example:

```
salt 'minion-id' system.join_domain domain='domain.tld' \
                 username='joinuser' password='joinpassword' \
                 account_ou='ou=clients,ou=org,dc=domain,dc=tld' \
                 account_exists=False, restart=True
```

salt.modules.win_system.**lock**()

Lock the workstation.

**Returns** True if successful

**Return type** bool

salt.modules.win_system.**poweroff**(*timeout=5*, *in_seconds=False*)

Power off a running system.

**Parameters** **timeout** (*int*) -- Number of seconds before powering off the system. Default is 5 seconds.

**Returns** True if successful

**Return type** bool

**timeout** The wait time before the system will be shutdown.

**in_seconds** Whether to treat timeout as seconds or minutes.

New in version 2015.8.0.

CLI Example:

```
salt '*' system.poweroff 5
```

salt.modules.win_system.**reboot**(*timeout=5*, *in_seconds=False*, *wait_for_reboot=False*)

Reboot a running system.

**Parameters**

- **timeout** (*int*) -- Number of minutes/seconds before rebooting the system. Minutes vs seconds depends on the value of `in_seconds`. Default is 5 minutes.
- **in_seconds** (*bool*) -- Whether to treat timeout as seconds or minutes.

  New in version 2015.8.0.
- **wait_for_reboot** (*bool*) -- Sleeps for timeout + 30 seconds after reboot has been initiated. This is useful for use in a highstate for example where you have many states that could be ran after this one. Which you don't want to start until after the restart i.e You could end up with a half finished state.

  New in version 2015.8.0.

**Returns** True if successful

**Return type** bool

CLI Example:

```
salt '*' system.reboot 5
salt '*' system.reboot 5 True
```

salt.modules.win_system.**set_computer_desc**(*desc=None*)

Set the Windows computer description

**Parameters** **desc** (*str*) -- The computer description

**Returns** False if it fails. Description if successful.

CLI Example:

```
salt 'minion-id' system.set_computer_desc 'This computer belongs to Dave!'
```

salt.modules.win_system.**set_computer_name**(*name*)

Set the Windows computer name

**Parameters** **name** (*str*) -- The new name to give the computer. Requires a reboot to take effect.

**Returns** Returns a dictionary containing the old and new names if successful. False if not.

CLI Example:

```
salt 'minion-id' system.set_computer_name 'DavesComputer'
```

salt.modules.win_system.**set_hostname**(*hostname*)

New in version 2016.3.0.

Set the hostname of the windows minion, requires a restart before this will be updated.

**Parameters** **hostname** (*str*) -- The hostname to set

CLI Example:

```
salt 'minion-id' system.set_hostname newhostname
```

salt.modules.win_system.**set_system_date**(*newdate*)

Set the Windows system date. Use <mm-dd-yy> format for the date.

**Parameters** **newdate** (*str*) -- The date to set. Can be any of the following formats - YYYY-MM-DD - MM-DD-YYYY - MM-DD-YY - MM/DD/YYYY - MM/DD/YY - YYYY/MM/DD

CLI Example:

```
salt '*' system.set_system_date '03-28-13'
```

salt.modules.win_system.**set_system_date_time**(*years=None*, *months=None*, *days=None*, *hours=None*, *minutes=None*, *seconds=None*)

Set the system date and time. Each argument is an element of the date, but not required. If an element is not passed, the current system value for that element will be used. For example, if you don't pass the year, the current system year will be used. (Used by set_system_date and set_system_time)

**Parameters**

- **years** (*int*) -- Years digit, ie: 2015
- **months** (*int*) -- Months digit: 1 - 12
- **days** (*int*) -- Days digit: 1 - 31
- **hours** (*int*) -- Hours digit: 0 - 23
- **minutes** (*int*) -- Minutes digit: 0 - 59
- **seconds** (*int*) -- Seconds digit: 0 - 59

**Returns** True if successful. Otherwise False.

**Return type** bool

CLI Example:

```
salt '*' system.set_system_date_ time 2015 5 12 11 37 53
```

salt.modules.win_system.**set_system_time**(*newtime*)

Set the system time.

**Parameters** **newtime** (*str*) -- The time to set. Can be any of the following formats. - HH:MM:SS AM/PM - HH:MM AM/PM - HH:MM:SS (24 hour) - HH:MM (24 hour)

**Returns** Returns True if successful. Otherwise False.

**Return type** bool

salt.modules.win_system.**shutdown**(*message=None*, *timeout=5*, *force_close=True*, *reboot=False*, *in_seconds=False*)

Shutdown a running system.

**Parameters**

- **message** (*str*) -- A message to display to the user before shutting down.
- **timeout** (*int*) -- The length of time that the shutdown dialog box should be displayed, in seconds. While this dialog box is displayed, the shutdown can be stopped by the shutdown_abort function.

  If timeout is not zero, InitiateSystemShutdown displays a dialog box on the specified computer. The dialog box displays the name of the user who called the function, displays the message specified by the lpMessage parameter, and prompts the user to log off. The dialog box beeps when it is created and remains on top of other windows

in the system. The dialog box can be moved but not closed. A timer counts down the remaining time before a forced shutdown.

If timeout is zero, the computer shuts down without displaying the dialog box, and the shutdown cannot be stopped by shutdown_abort.

Default is 5 minutes

- **in_seconds** (*bool*) -- Whether to treat timeout as seconds or minutes.

  New in version 2015.8.0.

- **force_close** (*bool*) -- True to force close all open applications. False displays a dialog box instructing the user to close the applications.

- **reboot** (*bool*) -- True restarts the computer immediately after shutdown. False caches to disk and safely powers down the system.

**Returns** True if successful

**Return type** bool

CLI Example:

```
salt '*' system.shutdown 5
```

salt.modules.win_system.**shutdown_abort**()

Abort a shutdown. Only available while the dialog box is being displayed to the user. Once the shutdown has initiated, it cannot be aborted

**Returns** True if successful

**Return type** bool

salt.modules.win_system.**shutdown_hard**()

Shutdown a running system with no timeout or warning.

**Returns** True if successful

**Return type** bool

CLI Example:

```
salt '*' system.shutdown_hard
```

salt.modules.win_system.**start_time_service**()

Start the Windows time service

**Returns** True if successful. Otherwise False

**Return type** bool

CLI Example:

```
salt '*' system.start_time_service
```

salt.modules.win_system.**stop_time_service**()

Stop the Windows time service

**Returns** True if successful. Otherwise False

**Return type** bool

CLI Example:

```
salt '*' system.stop_time_service
```

salt.modules.win_system.**unjoin_domain**(*username=None*, *password=None*, *domain=None*, *workgroup='WORKGROUP'*, *disable=False*, *restart=False*)

Unjoin a computer from an Active Directory Domain. Requires restart.

**Parameters**

- **username** -- Username of an account which is authorized to manage computer accounts on the domain. Need to be fully qualified like `user@domain.tld` or `domain.tld\user`. If domain not specified, the passed domain will be used. If computer account doesn't need to be disabled, can be None.
- **password** (*str*) -- Password of the specified user
- **domain** (*str*) -- The domain from which to unjoin the computer. Can be None
- **workgroup** (*str*) -- The workgroup to join the computer to. Default is

`WORKGROUP`

New in version 2015.8.2/2015.5.7.

**Parameters**

- **disable** (*bool*) -- Disable the computer account in Active Directory. True to disable. Default is False
- **restart** (*bool*) -- Restart the computer after successful unjoin

New in version 2015.8.2/2015.5.7.

**Returns** Returns a dictionary if successful. False if unsuccessful.

**Return type** dict, bool

CLI Example:

```
salt 'minion-id' system.unjoin_domain restart=True

salt 'minion-id' system.unjoin_domain username='unjoinuser' \\
                 password='unjoinpassword' disable=True \\
                 restart=True
```

### 13.6.362 salt.modules.win_task module

Windows Task Scheduler Module .. versionadded:: 2016.3.0

A module for working with the Windows Task Scheduler. You can add and edit existing tasks. You can add and clear triggers and actions. You can list all tasks, folders, triggers, and actions.

`salt.modules.win_task.`**`add_action`**(*name=None*, *location='\\'*, *action_type='Execute'*, ***kwargs*)

Add an action to a task.

**Parameters**

- **name** (*str*) -- The name of the task to which to add the action.
- **location** (*str*) -- A string value representing the location of the task.

Default is `\' which is the root for the task scheduler (C:WindowsSystem32tasks).

**Parameters** **action_type** (*str*) -- The type of action to add. There are three action types. Each one requires its own set of Keyword Arguments (kwargs). Valid values are: - Execute - Email - Message

**kwargs**

Required kwargs for each value:

*Execute* Execute a command or an executable.

**Parameters**

- **cmd** (*str*) -- (required) The command / executable to run.
- **arguments** (*str*) -- (optional) Arguments to be passed to the command /

executable. To launch a script the first command will need to be the interpreter for the script. For example, to run a vbscript you would pass *cscript.exe* in the *cmd* parameter and pass the script in the *arguments* parameter as follows:

•`cmd='cscript.exe' arguments='c:\scripts\myscript.vbs'`

Batch files do not need an interpreter and may be passed to the cmd parameter directly.

**Parameters** **start_in** (*str*) -- (optional) The current working directory for the command.

*Email* Send and email. Requires `server`, `from`, and `to` or `cc`.

**Parameters**

- **from** (*str*) -- The sender
- **reply_to** (*str*) -- Who to reply to
- **to** (*str*) -- The recipient
- **cc** (*str*) -- The CC recipient
- **bcc** (*str*) -- The BCC recipient
- **subject** (*str*) -- The subject of the email
- **body** (*str*) -- The Message Body of the email
- **server** (*str*) -- The server used to send the email
- **attachments** (*list*) -- A list of attachments. These will be the paths to the files to attach. ie: attachments=['C:attachment1.txt', `C:attachment2.txt']

*Message* Display a dialog box. The task must be set to ``Run only when user is logged on'' in order for the dialog box to display. Both parameters are required.

**Parameters**

- **title** (*str*) -- The dialog box title.
- **message** (*str*) -- The dialog box message body

**Returns** True if successful, False if unsuccessful

**Return type** bool

salt.modules.win_task.**add_trigger**(*name=None*, *location='\\'*, *trigger_type=None*, *trigger_enabled=True*, *start_date=None*, *start_time=None*, *end_date=None*, *end_time=None*, *random_delay=None*, *repeat_interval=None*, *repeat_duration=None*, *repeat_stop_at_duration_end=False*, *execution_time_limit=None*, ***kwargs*)

**Parameters**

- **name** (*str*) -- The name of the task to which to add the trigger.
- **location** (*str*) -- A string value representing the location of the task. Default is `\' which is the root for the task scheduler (C:WindowsSystem32tasks).

**Parameters** **trigger_type** (*str*) -- The type of trigger to create. This is defined when the trigger is created and cannot be changed later. Options are as follows: - Event - Once - Daily - Weekly - Monthly - MonthlyDay - OnIdle - OnTaskCreation - OnBoot - OnLogon - OnSessionChange

**Parameters** **trigger_enabled** (*bool*) -- Boolean value that indicates whether the trigger is enabled.

**Parameters** **start_date** (*str*) -- The date when the trigger is activated. If no value is passed, the current date will be used. Can be one of the following formats: - %Y-%m-%d - %m-%d-%y - %m-%d-%Y - %m/%d/%y - %m/%d/%Y - %Y/%m/%d

**Parameters** **start_time** (*str*) -- The time when the trigger is activated. If no value

is passed, midnight will be used. Can be one of the following formats: - %I:%M:%S %p - %I:%M %p - %H:%M:%S - %H:%M

**Parameters** **end_date** (*str*) -- The date when the trigger is deactivated. The trigger cannot start the task after it is deactivated. Can be one of the following formats: - %Y-%m-%d - %m-%d-%y - %m-%d-%Y - %m/%d/%y - %m/%d/%Y - %Y/%m/%d

**Parameters** **end_time** (*str*) -- The time when the trigger is deactivated. If the this is not passed with `end_date` it will be set to midnight. Can be one of the following formats: - %I:%M:%S %p - %I:%M %p - %H:%M:%S - %H:%M

**Parameters** **random_delay** (*str*) -- The delay time that is randomly added to the start time of the trigger. Valid values are: - 30 seconds = 1 minute - 30 minutes = 1 hour - 8 hours - 1 day

**Parameters** **repeat_interval** (*str*) -- The amount of time between each restart of the task. Valid values are: - 5 minutes - 10 minutes - 15 minutes - 30 minutes - 1 hour

**Parameters** **repeat_duration** (*str*) -- How long the pattern is repeated. Valid values are: - Indefinitely - 15 minutes - 30 minutes - 1 hour - 12 hours - 1 day

**Parameters** **repeat_stop_at_duration_end** (*bool*) -- Boolean value that indicates if a running instance of the task is stopped at the end of the repetition pattern duration.

**Parameters** **execution_time_limit** (*str*) -- The maximum amount of time that the task launched by the trigger is allowed to run. Valid values are: - 30 minutes - 1 hour - 2 hours - 4 hours - 8 hours - 12 hours - 1 day - 3 days (default)

**kwargs**

There are optional keyword arguments determined by the type of trigger being defined. They are as follows:

*Event* :param str subscription: An event definition in xml format that fires the trigger. The easiest way to get this would is to create an event in windows task scheduler and then copy the xml text.

*Once* No special parameters required.

*Daily* :param int days_interval: The interval between days in the schedule. An interval of 1 produces a daily schedule. An interval of 2 produces an every-other day schedule. If no interval is specified, 1 is used. Valid entries are 1 - 999.

*Weekly* :param int weeks_interval: The interval between weeks in the schedule. An interval of 1 produces a weekly schedule. An interval of 2 produces an every-other week schedule. If no interval is specified, 1 is used. Valid entries are 1 - 52.

param list days_of_week: Sets the days of the week on which the task runs. Should be a list. ie: ['Monday','Wednesday','Friday']. Valid entries are the names of the days of the week.

*Monthly* :param list months_of_year: Sets the months of the year during which the task runs. Should be a list. ie: ['January','July']. Valid entries are the full names of all the months.

**Parameters** **days_of_month** (*list*) -- Sets the days of the month during which the task runs. Should be a list. ie: [1, 15, `Last']. Options are all days of the month 1 - 31 and the word `Last' to indicate the last day of the month.

**Parameters** **last_day_of_month** (*bool*) -- Boolean value that indicates that the task runs on the last day of the month regardless of the actual date of that day.

You can set the task to run on the last day of the month by either including the word `Last' in the list of days, or setting the parameter `last_day_of_month` equal to True.

*MonthlyDay* :param list months_of_year: Sets the months of the year during which the task runs. Should be a list. ie: ['January','July']. Valid entries are the full names of all the months.

**Parameters** **weeks_of_month** (*list*) -- Sets the weeks of the month during which the task runs. Should be a list. ie: ['First','Third']. Valid options are: - First - Second - Third - Fourth

**Parameters** **last_week_of_month** (*bool*) -- Boolean value that indicates that the task runs on the last week of the month.

**Parameters** **days_of_week** (*list*) -- Sets the days of the week during which the

task runs. Should be a list. ie: ['Monday','Wednesday','Friday']. Valid entries are the names of the days of the week.

*OnIdle* No special parameters required.

*OnTaskCreation* No special parameters required.

*OnBoot* No special parameters required.

*OnLogon* No special parameters required.

*OnSessionChange* :param str session_user_name: Sets the user for the Terminal Server session. When a session state change is detected for this user, a task is started. To detect session status change for any user, do not pass this parameter.

**Parameters** **state_change** (*str*) -- Sets the kind of Terminal Server session change that would trigger a task launch. Valid options are: - ConsoleConnect: When you connect to a user session (switch users) - ConsoleDisconnect: When you disconnect a user session (switch users) - RemoteConnect: When a user connects via Remote Desktop - RemoteDisconnect: When a user disconnects via Remote Desktop - SessionLock: When the workstation is locked - SessionUnlock: When the workstation is unlocked

**Returns** True if successful, False if unsuccessful

**Return type** bool

salt.modules.win_task.**clear_triggers**(*name*, *location='\\'*)

Remove all triggers from the task.

**Parameters**

- **name** (*str*) -- The name of the task from which to clear all triggers.
- **location** (*str*) -- A string value representing the location of the task. Default is `\' which is the root for the task scheduler (C:WindowsSystem32tasks).

**Returns** True if successful, False if unsuccessful

**Return type** bool

salt.modules.win_task.**create_folder**(*name*, *location='\\'*)

Create a folder in which to create tasks.

**Parameters** **name** (*str*) -- The name of the folder. This will be displayed in the task scheduler.

**Parameters** **location** (*str*) -- A string value representing the location in which to create the folder. Default is `\' which is the root for the task scheduler (C:WindowsSystem32tasks).

**Returns** True if successful, False if unsuccessful

**Return type** bool

salt.modules.win_task.**create_task**(*name*, *location='\\'*, *user_name='System'*, *password=None*, *force=False*, ***kwargs*)

Create a new task in the designated location. This function has many keyword arguments that are not listed here. For additional arguments see:

•py:function::*edit_task*
•py:function::*add_action*
•py:function::*add_trigger*

**Parameters** **name** (*str*) -- The name of the task. This will be displayed in the task scheduler.

**Parameters** **location** (*str*) -- A string value representing the location in which to create the task. Default is `\' which is the root for the task scheduler (C:WindowsSystem32tasks).

**Parameters** **user_name** (*str*) -- The user account under which to run the task. To specify the `System' account, use `System'. The password will be ignored.

**Parameters** **password** (*str*) -- The password to use for authentication. This should set the task to run whether the user is logged in or not, but is currently not working.

**Parameters** **force** (*bool*) -- If the task exists, overwrite the existing task.

**Returns** True if successful, False if unsuccessful
**Return type** bool

salt.modules.win_task.**create_task_from_xml**(*name*, *location='\\'*, *xml_text=None*, *xml_path=None*, *user_name='System'*, *password=None*)

Create a task based on XML. Source can be a file or a string of XML.

**Parameters** **name** (*str*) -- The name of the task. This will be displayed in the task scheduler.

**Parameters** **location** (*str*) -- A string value representing the location in which to create the task. Default is `\' which is the root for the task scheduler (C:WindowsSystem32tasks).

**Parameters** **xml_text** (*str*) -- A string of xml representing the task to be created. This will be overridden by *xml_path* if passed.

**Parameters** **xml_path** (*str*) -- The path to an XML file on the local system containing the xml that defines the task. This will override *xml_text*

**Parameters** **user_name** (*str*) -- The user account under which to run the task. To specify the `System' account, use `System'. The password will be ignored.

**Parameters** **password** (*str*) -- The password to use for authentication. This should set the task to run whether the user is logged in or not, but is currently not working.

**Returns** True if successful, False if unsuccessful
**Return type** bool

salt.modules.win_task.**delete_folder**(*name*, *location='\\'*)

Delete a folder from the task scheduler.

**Parameters**

- **name** (*str*) -- The name of the folder to delete.
- **location** (*str*) -- A string value representing the location of the folder. Default is `\' which is the root for the task scheduler (C:WindowsSystem32tasks).

**Returns** True if successful, False if unsuccessful
**Return type** bool

salt.modules.win_task.**delete_task**(*name*, *location='\\'*)

Delete a task from the task scheduler.

**Parameters**

- **name** (*str*) -- The name of the task to delete.
- **location** (*str*) -- A string value representing the location of the task. Default is `\' which is the root for the task scheduler (C:WindowsSystem32tasks).

**Returns** True if successful, False if unsuccessful
**Return type** bool

salt.modules.win_task.**edit_task**(*name=None*, *location='\\'*, *user_name=None*, *password=None*, *description=None*, *enabled=None*, *hidden=None*, *run_if_idle=None*, *idle_duration=None*, *idle_wait_timeout=None*, *idle_stop_on_end=None*, *idle_restart=None*, *ac_only=None*, *stop_if_on_batteries=None*, *wake_to_run=None*, *run_if_network=None*, *network_id=None*, *network_name=None*, *allow_demand_start=None*, *start_when_available=None*, *restart_every=None*, *restart_count=3*, *execution_time_limit=None*, *force_stop=None*, *delete_after=None*, *multiple_instances=None*, ***kwargs*)

Edit the parameters of a task. Triggers and Actions cannot be edited yet.

**Parameters** **name** (*str*) -- The name of the task. This will be displayed in the task scheduler.

**Parameters** **location** (*str*) -- A string value representing the location in which to

create the task. Default is `\' which is the root for the task scheduler (C:WindowsSystem32tasks).

**Parameters** **user_name** (*str*) -- The user account under which to run the task. To specify the `System' account, use `System'. The password will be ignored.

**Parameters** **password** (*str*) -- The password to use for authentication. This should set the task to run whether the user is logged in or not, but is currently not working.

---

**Note:** The combination of user_name and password determine how the task

---

runs. For example, if a username is passed without at password the task will only run when the user is logged in. If a password is passed as well the task will run whether the user is logged on or not. If you pass `System' as the username the task will run as the system account (the password parameter is ignored.

**Parameters** **description** (*str*) -- A string representing the text that will be displayed in the description field in the task scheduler.

**Parameters** **enabled** (*bool*) -- A boolean value representing whether or not the task is enabled.

**Parameters** **hidden** (*bool*) -- A boolean value representing whether or not the task is hidden.

**Parameters** **run_if_idle** (*bool*) -- Boolean value that indicates that the Task Scheduler will run the task only if the computer is in an idle state.

**Parameters** **idle_duration** (*str*) -- A value that indicates the amount of time that the computer must be in an idle state before the task is run. Valid values are: - 1 minute - 5 minutes - 10 minutes - 15 minutes - 30 minutes - 1 hour

**Parameters** **idle_wait_timeout** (*str*) -- A value that indicates the amount of time that the Task Scheduler will wait for an idle condition to occur. Valid values are: - Do not wait - 1 minute - 5 minutes - 10 minutes - 15 minutes - 30 minutes - 1 hour - 2 hours

**Parameters** **idle_stop_on_end** (*bool*) -- Boolean value that indicates that the Task Scheduler will terminate the task if the idle condition ends before the task is completed.

**Parameters** **idle_restart** (*bool*) -- Boolean value that indicates whether the task is restarted when the computer cycles into an idle condition more than once.

**Parameters** **ac_only** (*bool*) -- Boolean value that indicates that the Task Scheduler will launch the task only while on AC power.

**Parameters** **stop_if_on_batteries** (*bool*) -- Boolean value that indicates that the task will be stopped if the computer begins to run on battery power.

**Parameters** **wake_to_run** (*bool*) -- Boolean value that indicates that the Task Scheduler will wake the computer when it is time to run the task.

**Parameters** **run_if_network** (*bool*) -- Boolean value that indicates that the Task Scheduler will run the task only when a network is available.

**Parameters**

- **network_id** (*guid*) -- GUID value that identifies a network profile.
- **network_name** (*str*) -- Sets the name of a network profile. The name is used for display purposes.

**Parameters** **allow_demand_start** (*bool*) -- Boolean value that indicates that the task can be started by using either the Run command or the Context menu.

**Parameters** **start_when_available** (*bool*) -- Boolean value that indicates that the Task Scheduler can start the task at any time after its scheduled time has passed.

**Parameters** **restart_every** -- A value that specifies the interval between task restart attempts. Valid values are: :type: bool str - False (to disable) - 1 minute - 5 minutes - 10 minutes - 15 minutes - 30 minutes - 1 hour - 2 hours

**Parameters** **restart_count** (*int*) -- The number of times the Task Scheduler will attempt to restart the task. Valid values are integers 1 - 999.

**Parameters** **execution_time_limit** -- The amount of time allowed to complete the task. Valid values are: :type: bool str - False (to disable) - 1 hour - 2 hours - 4 hours - 8 hours - 12 hours - 1

day - 3 days

**Parameters** **force_stop** (*bool*) -- Boolean value that indicates that the task may be terminated by using TerminateProcess.

**Parameters** **delete_after** -- The amount of time that the Task Scheduler will wait before deleting the task after it expires. Requires a trigger with an expiration date. Valid values are: :type: bool str - False (to disable) - Immediately - 30 days - 90 days - 180 days - 365 days

**Parameters** **multiple_instances** (*str*) -- Sets the policy that defines how the Task Scheduler deals with multiple instances of the task. Valid values are: - Parallel - Queue - No New Instance - Stop Existing

**Returns** True if successful, False if unsuccessful

**Return type** bool

salt.modules.win_task.**info**(*name*, *location='\\'*)

Get the details about a task in the task scheduler.

**Parameters**

- **name** (*str*) -- The name of the task for which to return the status
- **location** (*str*) -- A string value representing the location of the task. Default is `\' which is the root for the task scheduler (C:WindowsSystem32tasks).

**Returns**

**Return type** dict

salt.modules.win_task.**list_actions**(*name*, *location='\\'*)

List all actions that pertain to a task in the specified location.

**Parameters**

- **name** (*str*) -- The name of the task for which list actions.
- **location** (*str*) -- A string value representing the location of the task from which to list actions. Default is `\' which is the root for the task scheduler (C:WindowsSystem32tasks).

**Returns** Returns a list of actions.

**Return type** *list*

salt.modules.win_task.**list_folders**(*location='\\'*)

List all folders located in a specific location in the task scheduler.

**Parameters** **location** (*str*) -- A string value representing the folder from which you want to list tasks. Default is `\' which is the root for the task scheduler (C:WindowsSystem32tasks).

**Returns** Returns a list of folders.

**Return type** *list*

salt.modules.win_task.**list_tasks**(*location='\\'*)

List all tasks located in a specific location in the task scheduler.

**Parameters** **location** (*str*) -- A string value representing the folder from which you want to list tasks. Default is `\' which is the root for the task scheduler (C:WindowsSystem32tasks).

**Returns** Returns a list of tasks.

**Return type** *list*

salt.modules.win_task.**list_triggers**(*name*, *location='\\'*)

List all triggers that pertain to a task in the specified location.

**Parameters**

- **name** (*str*) -- The name of the task for which list triggers.
- **location** (*str*) -- A string value representing the location of the task from which to list triggers. Default is `\' which is the root for the task scheduler (C:WindowsSystem32tasks).

**Returns** Returns a list of triggers.

**Return type** *list*

salt.modules.win_task.**run**(*name*, *location='\\'*)
Run a scheduled task manually.
**Parameters**
- **name** (*str*) -- The name of the task to run.
- **location** (*str*) -- A string value representing the location of the task.

Default is `\' which is the root for the task scheduler (C:WindowsSystem32tasks).
**Returns** True if successful, False if unsuccessful
**Return type** bool

salt.modules.win_task.**run_wait**(*name*, *location='\\'*)
Run a scheduled task and return when the task finishes
**Parameters**
- **name** (*str*) -- The name of the task to run.
- **location** (*str*) -- A string value representing the location of the task.

Default is `\' which is the root for the task scheduler (C:WindowsSystem32tasks).
**Returns** True if successful, False if unsuccessful
**Return type** bool

salt.modules.win_task.**status**(*name*, *location='\\'*)
Determine the status of a task. Is it Running, Queued, Ready, etc.
**Parameters**
- **name** (*str*) -- The name of the task for which to return the status
- **location** (*str*) -- A string value representing the location of the task.

Default is `\' which is the root for the task scheduler (C:WindowsSystem32tasks).
**Returns** The current status of the task. Will be one of the following:

•Unknown
•Disabled
•Queued
•Ready
•Running

**Return type** *string*

salt.modules.win_task.**stop**(*name*, *location='\\'*)
Stop a scheduled task.
**Parameters**
- **name** (*str*) -- The name of the task to stop.
- **location** (*str*) -- A string value representing the location of the task.

Default is `\' which is the root for the task scheduler (C:WindowsSystem32tasks).
**Returns** True if successful, False if unsuccessful
**Return type** bool

### 13.6.363 salt.modules.win_timezone

Module for managing timezone on Windows systems.

salt.modules.win_timezone.**get_hwclock**()
Get current hardware clock setting (UTC or localtime)

CLI Example:

```
salt '*' timezone.get_hwclock
```

salt.modules.win_timezone.**get_offset**()
Get current numeric timezone offset from UCT (i.e. -0700)

CLI Example:

```
salt '*' timezone.get_offset
```

salt.modules.win_timezone.**get_zone**()
Get current timezone (i.e. America/Denver)

CLI Example:

```
salt '*' timezone.get_zone
```

salt.modules.win_timezone.**get_zonecode**()
Get current timezone (i.e. PST, MDT, etc)

CLI Example:

```
salt '*' timezone.get_zonecode
```

salt.modules.win_timezone.**set_hwclock**(*clock*)
Sets the hardware clock to be either UTC or localtime

CLI Example:

```
salt '*' timezone.set_hwclock UTC
```

salt.modules.win_timezone.**set_zone**(*timezone*)
Unlinks, then symlinks /etc/localtime to the set timezone.

The timezone is crucial to several system processes, each of which SHOULD be restarted (for instance, whatever you system uses as its cron and syslog daemons). This will not be magically done for you!

CLI Example:

```
salt '*' timezone.set_zone 'America/Denver'
```

salt.modules.win_timezone.**zone_compare**(*timezone*)
Checks the md5sum between the given timezone, and the one set in /etc/localtime. Returns True if they match, and False if not. Mostly useful for running state checks.

Example:

```
salt '*' timezone.zone_compare 'America/Denver'
```

### 13.6.364 salt.modules.win_update

Module for running windows updates.

**depends**

- win32com
- win32con
- win32api

- pywintypes

New in version 2014.7.0.

Set windows updates to run by category. Default behavior is to install all updates that do not require user interaction to complete. Optionally set `categories` to a category of your choice to only install certain updates. Default is to set to install all available but driver updates. The following example will install all Security and Critical Updates, and download but not install standard updates.

```
salt '*' win_update.install_updates categories="['Critical Updates', 'Security Updates
 ↪']"
```

You can also specify a number of features about the update to have a fine grain approach to specific types of updates. These are the following features/states of updates available for configuring: .. code-block:: text

    `UI' - User interaction required, skipped by default `downloaded' - Already downloaded, included by default `present' - Present on computer, included by default `installed' - Already installed, skipped by default `reboot' - Reboot required, included by default `hidden' - Skip hidden updates, skipped by default `software' - Software updates, included by default `driver' - Driver updates, included by default

The following example installs all updates that don't require a reboot: .. code-block:: bash

    salt `*' win_update.install_updates skips="[{`reboot':True}]"

Once installed Salt will return a similar output:

```
2 : Windows Server 2012 Update (KB123456)
4 : Internet Explorer Security Update (KB098765)
2 : Malware Definition Update (KB321456)
...
```

The number at the beginning of the line is an OperationResultCode from the Windows Update Agent, it's enumeration is described here: https://msdn.microsoft.com/en-us/library/windows/desktop/aa387095(v=vs.85).aspx. The result code is then followed by the update name and its KB identifier.

**class** `salt.modules.win_update.`**PyWinUpdater**(*categories=None*, *skipUI=True*, *skipDownloaded=False*, *skipInstalled=True*, *skipReboot=False*, *skipPresent=False*, *skipSoftwareUpdates=False*, *skipDriverUpdates=False*, *skipHidden=True*)

**AutoSearch**()
: this function generates a search string. simplifying the search function while still providing as many features as possible.

**Download**()

**GetAvailableCategories**()

**GetCategories**()

**GetDownloadResults**()

**GetInstallationResults**()
: this gets results of installation process.

**GetInstallationResultsPretty**()
: converts the installation results into a pretty print.

**GetSearchResults**(*fields=None*)
: Reduce full updates information to the most important information.

**GetSearchResultsVerbose**()

**Install**()

**Search**(*searchString*)

**SetCategories**(*categories*)

**SetSkip**(*skip*, *state*)

**SetSkips**(*skips*)

salt.modules.win_update.**download_updates**(*skips=None*, *retries=5*, *categories=None*)

Downloads all available updates, skipping those that require user interaction.

Various aspects of the updates can be included or excluded. this feature is still in development.
**retries** Number of retries to make before giving up. This is total, not per step.
**categories** Specify the categories to update. Must be passed as a list.

```
salt '*' win_update.download_updates categories="['Updates']"
```

Categories include the following:

- Updates
- Windows 7
- Critical Updates
- Security Updates
- Update Rollups

CLI Examples:

```
# Normal Usage
salt '*' win_update.download_updates

# Download critical updates only
salt '*' win_update.download_updates categories="['Critical Updates']"
```

salt.modules.win_update.**install_updates**(*skips=None*, *retries=5*, *categories=None*)

Downloads and installs all available updates, skipping those that require user interaction.

Add `cached` to only install those updates which have already been downloaded.

you can set the maximum number of retries to `n` in the search process by adding: `retries=n`

various aspects of the updates can be included or excluded. This function is still under development.
**retries** Number of retries to make before giving up. This is total, not per step.
**categories** Specify the categories to install. Must be passed as a list.

```
salt '*' win_update.install_updates categories="['Updates']"
```

Categories include the following:

- Updates
- Windows 7
- Critical Updates
- Security Updates
- Update Rollups

CLI Examples:

```
# Normal Usage
salt '*' win_update.install_updates

# Install all critical updates
salt '*' win_update.install_updates categories="['Critical Updates']"
```

salt.modules.win_update.**list_updates**(*verbose=False*, *fields=None*, *skips=None*, *retries=5*, *categories=None*)

Returns a summary of available updates, grouped into their non-mutually exclusive categories.

**verbose** Return full set of results, including several fields from the COM.

**fields** Return a list of specific fields for each update. The optional values here are those at the root level of the verbose list. This is superseded by the verbose option.

**retries** Number of retries to make before giving up. This is total, not per step.

**categories** Specify the categories to list. Must be passed as a list.

```
salt '*' win_update.list_updates categories="['Updates']"
```

Categories include, but are not limited to, the following:

- Updates
- Windows 7
- Critical Updates
- Security Updates
- Update Rollups

CLI Examples:

```
# Normal Usage
salt '*' win_update.list_updates

# Specific Fields
salt '*' win_update.list_updates fields="['Title', 'Description']"

# List all critical updates list in verbose detail
salt '*' win_update.list_updates categories="['Critical Updates']" verbose=True
```

### 13.6.365 salt.modules.win_useradd

Module for managing Windows Users

---

**Important**: If you feel that Salt should be using this module to manage users on a minion, and it is using a different module (or gives an error similar to *`user.info' is not available*), see *here*.

---

**depends**

- pywintypes
- win32api
- win32net
- win32netcon
- win32profile
- win32security
- win32ts

---

**Note**: This currently only works with local user accounts, not domain accounts

---

salt.modules.win_useradd.**add**(*name*, *password=None*, *fullname=False*, *description=None*, *groups=None*, *home=None*, *homedrive=None*, *profile=None*, *logonscript=None*)

Add a user to the minion.

**Parameters**

- **name** (*str*) -- User name
- **password** (*str*) -- User's password in plain text.
- **fullname** (*str*) -- The user's full name.
- **description** (*str*) -- A brief description of the user account.
- **groups** (*list*) -- A list of groups to add the user to.
- **home** (*str*) -- The path to the user's home directory.
- **homedrive** (*str*) -- The drive letter to assign to the home directory. Must be the Drive Letter followed by a colon. ie: U:
- **profile** (*str*) -- An explicit path to a profile. Can be a UNC or a folder on the system. If left blank, windows uses it's default profile directory.
- **logonscript** (*str*) -- Path to a login script to run when the user logs on.

**Returns** True if successful. False is unsuccessful.

**Return type** bool

CLI Example:

```
salt '*' user.add name password
```

salt.modules.win_useradd.**addgroup**(*name*, *group*)

Add user to a group

**Parameters**

- **name** (*str*) -- user name to add to the group
- **group** (*str*) -- name of the group to which to add the user

**Returns** True if successful. False is unsuccessful.

**Return type** bool

CLI Example:

```
salt '*' user.addgroup jsnuffy 'Power Users'
```

salt.modules.win_useradd.**chfullname**(*name*, *fullname*)

Change the full name of the user

**Parameters**

- **name** (*str*) -- user name for which to change the full name
- **fullname** (*str*) -- the new value for the full name

**Returns** True if successful. False is unsuccessful.

**Return type** bool

CLI Example:

```
salt '*' user.chfullname user 'First Last'
```

salt.modules.win_useradd.**chgroups**(*name*, *groups*, *append=True*)

Change the groups this user belongs to, add append=False to make the user a member of only the specified groups

**Parameters**

- **name** (*str*) -- user name for which to change groups
- **groups** (*list, str*) -- a single group or a list of groups to assign to the user
- **append** (*bool*) -- True adds the passed groups to the user's current groups False sets the user's groups to the passed groups only

**Returns** True if successful. False is unsuccessful.

**Return type** bool

CLI Example:

```
salt '*' user.chgroups jsnuffy Administrators,Users True
```

salt.modules.win_useradd.**chhome**(*name*, *home*, *persist=False*)

Change the home directory of the user, pass True for persist to move files to the new home directory if the old home directory exist.

**Parameters**

- **name** (*str*) -- name of the user whose home directory you wish to change
- **home** (*str*) -- new location of the home directory
- **persist** (*bool*) -- True to move the contents of the existing home directory to the new location

**Returns** True if successful. False is unsuccessful.

**Return type** bool

CLI Example:

```
salt '*' user.chhome foo \\fileserver\home\foo True
```

salt.modules.win_useradd.**chprofile**(*name*, *profile*)

Change the profile directory of the user

**Parameters**

- **name** (*str*) -- name of the user whose profile you wish to change
- **profile** (*str*) -- new location of the profile

**Returns** True if successful. False is unsuccessful.

**Return type** bool

CLI Example:

```
salt '*' user.chprofile foo \\fileserver\profiles\foo
```

salt.modules.win_useradd.**current**(*sam=False*)

Get the username that salt-minion is running under. If salt-minion is running as a service it should return the Local System account. If salt is running from a command prompt it should return the username that started the command prompt.

New in version 2015.5.6.

**Parameters** **sam** (*bool*) -- False returns just the username without any domain notation. True returns the domain with the username in the SAM format. Ie:

```
domain\username
```

**Returns** Returns False if the username cannot be returned. Otherwise returns the username.

**Return type** bool str

CLI Example:

```
salt '*' user.current
```

salt.modules.win_useradd.**delete**(*name*, *purge=False*, *force=False*)

Remove a user from the minion

**Parameters**

- **name** (*str*) -- The name of the user to delete
- **purge** (*bool*) -- Boolean value indicating that the user profile should also be removed when the user account is deleted. If set to True the profile will be removed.
- **force** (*bool*) -- Boolean value indicating that the user account should be deleted even if the user is logged in. True will log the user out and delete user.

**Returns** True if successful

**Return type** bool

CLI Example:

```
salt '*' user.delete name
```

salt.modules.win_useradd.**getUserSid**(*username*)

Get the Security ID for the user

**Parameters** **username** (*str*) -- user name for which to look up the SID

**Returns** Returns the user SID

**Return type** str

CLI Example:

```
salt '*' user.getUserSid jsnuffy
```

salt.modules.win_useradd.**getent**(*refresh=False*)

Return the list of all info for all users

**Parameters** **refresh** (*bool*) -- Refresh the cached user information. Default is False. Useful when used from within a state function.

**Returns** A dictionary containing information about all users on the system

**Return type** dict

CLI Example:

```
salt '*' user.getent
```

salt.modules.win_useradd.**info**(*name*)

Return user information

**Parameters** **name** (*str*) -- Username for which to display information

**Returns**

**A dictionary containing user information**

- fullname
- username
- SID
- passwd (will always return None)
- comment (same as description, left here for backwards compatibility)
- description
- active
- logonscript
- profile
- home
- homedrive

- groups
- password_changed
- successful_logon_attempts
- failed_logon_attempts
- last_logon
- account_disabled
- account_locked
- password_never_expires
- disallow_change_password
- gid

**Return type** dict

CLI Example:

```
salt '*' user.info jsnuffy
```

salt.modules.win_useradd.**list_groups**(*name*)

Return a list of groups the named user belongs to

**Parameters** **name** (*str*) -- user name for which to list groups

**Returns** list of groups to which the user belongs

**Return type** *list*

CLI Example:

```
salt '*' user.list_groups foo
```

salt.modules.win_useradd.**list_users**()

Return a list of users on Windows

**Returns** list of users on the system

**Return type** *list*

CLI Example:

```
salt '*' user.list_users
```

salt.modules.win_useradd.**removegroup**(*name*, *group*)

Remove user from a group

**Parameters**

- **name** (*str*) -- user name to remove from the group
- **group** (*str*) -- name of the group from which to remove the user

**Returns** True if successful. False is unsuccessful.

**Return type** bool

CLI Example:

```
salt '*' user.removegroup jsnuffy 'Power Users'
```

salt.modules.win_useradd.**rename**(*name*, *new_name*)

Change the username for a named user

**Parameters**

- **name** (*str*) -- user name to change
- **new_name** (*str*) -- the new name for the current user

**Returns** True if successful. False is unsuccessful.

**Return type** bool

CLI Example:

```
salt '*' user.rename jsnuffy jshmoe
```

salt.modules.win_useradd.**setpassword**(*name*, *password*)

Set the user's password

**Parameters**

- **name** (*str*) -- user name for which to set the password
- **password** (*str*) -- the new password

**Returns** True if successful. False is unsuccessful.

**Return type** bool

CLI Example:

```
salt '*' user.setpassword jsnuffy sup3rs3cr3t
```

salt.modules.win_useradd.**update**(*name*, *password=None*, *fullname=None*, *description=None*, *home=None*, *homedrive=None*, *logonscript=None*, *profile=None*, *expiration_date=None*, *expired=None*, *account_disabled=None*, *unlock_account=None*, *password_never_expires=None*, *disallow_change_password=None*)

Updates settings for the windows user. Name is the only required parameter. Settings will only be changed if the parameter is passed a value.

New in version 2015.8.0.

**Parameters**

- **name** (*str*) -- The user name to update.
- **password** (*str*) -- New user password in plain text.
- **fullname** (*str*) -- The user's full name.
- **description** (*str*) -- A brief description of the user account.
- **home** (*str*) -- The path to the user's home directory.
- **homedrive** (*str*) -- The drive letter to assign to the home directory. Must be the Drive Letter followed by a colon. ie: U:
- **logonscript** (*str*) -- The path to the logon script.
- **profile** (*str*) -- The path to the user's profile directory.
- **expiration_date** (*date*) -- The date and time when the account expires. Can be a valid date/time string. To set to never expire pass the string `Never'.
- **expired** (*bool*) -- Pass *True* to expire the account. The user will be prompted to change their password at the next logon. Pass *False* to mark the account as `not expired'. You can't use this to negate the expiration if the expiration was caused by the account expiring. You'll have to change the *expiration_date* as well.
- **account_disabled** (*bool*) -- True disables the account. False enables the account.
- **unlock_account** (*bool*) -- True unlocks a locked user account. False is ignored.
- **password_never_expires** (*bool*) -- True sets the password to never expire. False allows the password to expire.

- **disallow_change_password** (*bool*) -- True blocks the user from changing the password. False allows the user to change the password.

**Returns** True if successful. False is unsuccessful.

**Return type** bool

CLI Example:

```
salt '*' user.update bob password=secret profile=C:\Users\Bob
         home=\\server\homeshare\bob homedrive=U:
```

### 13.6.366 salt.modules.win_wua

Module for managing Windows Updates using the Windows Update Agent.

New in version 2015.8.0.

**depends**

- win32com
- pythoncom

salt.modules.win_wua.**download_update**(*guid=None*)

Downloads a single update

**Parameters** **guid** -- str A GUID for the update to be downloaded

**Returns** A dictionary containing the status, a message, and a list of updates that were downloaded.

CLI Examples:

```
salt '*' win_wua.download_update 12345678-abcd-1234-abcd-1234567890ab
```

salt.modules.win_wua.**download_updates**(*guid=None*)

Downloads updates that match the list of passed GUIDs. It's easier to use this function by using list_updates and setting install=True.

**Parameters** **guid** -- A list of GUIDs to be downloaded

**Returns** A dictionary containing the status, a message, and a list of updates that were downloaded.

CLI Examples:

```
# Normal Usage
salt '*' win_wua.download_updates                guid=['12345678-abcd-1234-abcd-
 ↪1234567890ab',                    '87654321-dcba-4321-dcba-ba0987654321']
```

salt.modules.win_wua.**get_needs_reboot**()

Determines if the system needs to be rebooted.

**Returns** bool True if the system requires a reboot, False if not

CLI Examples:

```
salt '*' win_wua.get_needs_reboot
```

salt.modules.win_wua.**get_wu_settings**()

Get current Windows Update settings.

**Returns**

**Featured Updates**: Boolean value that indicates whether to display notifications for featured updates.

**Group Policy Required (Read-only)**: Boolean value that indicates whether Group Policy requires the Automatic Updates service.

**Microsoft Update**: Boolean value that indicates whether to turn on Microsoft Update for other Microsoft Products

**Needs Reboot**: Boolean value that indicates whether the machine is in a reboot pending state.

**Non Admins Elevated**: Boolean value that indicates whether non-administrators can perform some update-related actions without administrator approval.

**Notification Level**:

**Number 1 to 4 indicating the update level**:

1. Never check for updates
2. Check for updates but let me choose whether to download and install them
3. Download updates but let me choose whether to install them
4. Install updates automatically

**Read Only (Read-only)**: Boolean value that indicates whether the Automatic Update settings are read-only.

**Recommended Updates**: Boolean value that indicates whether to include optional or recommended updates when a search for updates and installation of updates is performed.

**Scheduled Day**: Days of the week on which Automatic Updates installs or uninstalls updates.

**Scheduled Time**: Time at which Automatic Updates installs or uninstalls updates.

CLI Examples:

```
salt '*' win_wua.get_wu_settings
```

salt.modules.win_wua.**install_update**(*guid=None*)

Installs a single update

**Parameters** **guid** -- str A GUID for the update to be installed

**Returns** dict A dictionary containing the details about the installed update

CLI Examples:

```
salt '*' win_wua.install_update 12345678-abcd-1234-abcd-1234567890ab
```

salt.modules.win_wua.**install_updates**(*guid=None*)

Installs updates that match the passed criteria. It may be easier to use the list_updates function and set install=True.

**Parameters** **guid** -- list A list of GUIDs to be installed

**Returns** dict A dictionary containing the details about the installed updates

CLI Examples:

```
# Normal Usage
salt '*' win_wua.install_updates
 guid=['12345678-abcd-1234-abcd-1234567890ab',
 '87654321-dcba-4321-dcba-ba0987654321']
```

salt.modules.win_wua.**list_update**(*name=None, download=False, install=False*)

Returns details for all updates that match the search criteria

**Parameters**

- **name** (*str*) -- The name of the update you're searching for. This can be the GUID (preferred), a KB number, or the full name of the update. Run list_updates to get the GUID for the update you're looking for.
- **download** (*bool*) -- Download the update returned by this function. Run this function first to see if the update exists, then set download=True to download the update.
- **install** (*bool*) -- Install the update returned by this function. Run this function first to see if the update exists, then set install=True to install the update. This will override download=True

**Returns**

Returns a dict containing a list of updates that match the name if download and install are both set to False. Should usually be a single update, but can return multiple if a partial name is given. If download or install is set to true it will return the results of win_wua.download_updates:

```
List of Updates:
{'<GUID>': {'Title': <title>,
            'KB': <KB>,
            'GUID': <the globally unique identifier for the update>
            'Description': <description>,
            'Downloaded': <has the update been downloaded>,
            'Installed': <has the update been installed>,
            'Mandatory': <is the update mandatory>,
            'UserInput': <is user input required>,
            'EULAAccepted': <has the EULA been accepted>,
            'Severity': <update severity>,
            'NeedsReboot': <is the update installed and awaiting
 ↪reboot>,
            'RebootBehavior': <will the update require a reboot>,
            'Categories': [ '<category 1>',
                            '<category 2>',
                            ...]
            }
}
```

**Return type** dict

CLI Examples:

```
# Recommended Usage using GUID without braces
# Use this to find the status of a specific update
salt '*' win_wua.list_update 12345678-abcd-1234-abcd-1234567890ab

# Use the following if you don't know the GUID:

# Using a KB number (could possibly return multiple results)
# Not all updates have an associated KB
salt '*' win_wua.list_update KB3030298

# Using part or all of the name of the update
# Could possibly return multiple results
# Not all updates have an associated KB
salt '*' win_wua.list_update 'Microsoft Camera Codec Pack'
```

salt.modules.win_wua.**list_updates**(*software=True*, *drivers=False*, *summary=False*, *installed=False*, *categories=None*, *severities=None*, *download=False*, *install=False*)

Returns a detailed list of available updates or a summary

**Parameters**

- **software** (*bool*) -- Include software updates in the results (default is True)
- **drivers** (*bool*) -- Include driver updates in the results (default is False)
- **summary** (*bool*) -- True: Return a summary of updates available for each category. False (default): Return a detailed list of available updates.
- **installed** (*bool*) -- Include installed updates in the results (default if False)
- **download** (*bool*) -- (Overrides reporting functionality) Download the list of updates returned by this function. Run this function first to see what will be installed, then set download=True to download the updates.
- **install** (*bool*) -- (Overrides reporting functionality) Install the list of updates returned by this function. Run this function first to see what will be installed, then set install=True to install the updates. This will override download=True
- **categories** (*list*) -- Specify the categories to list. Must be passed as a list. All categories returned by default.

  Categories include the following:

  - Critical Updates
  - Definition Updates
  - Drivers (make sure you set drivers=True)
  - Feature Packs
  - Security Updates
  - Update Rollups
  - Updates
  - Update Rollups
  - Windows 7
  - Windows 8.1
  - Windows 8.1 drivers
  - Windows 8.1 and later drivers
  - Windows Defender
- **severities** (*list*) -- Specify the severities to include. Must be passed as a list. All severities returned by default.

  Severities include the following:

  - Critical
  - Important

**Returns**

Returns a dict containing either a summary or a list of updates:

```
List of Updates:
{'<GUID>': {'Title': <title>,
            'KB': <KB>,
            'GUID': <the globally uinique identifier for the update>
            'Description': <description>,
```

```
            'Downloaded': <has the update been downloaded>,
            'Installed': <has the update been installed>,
            'Mandatory': <is the update mandatory>,
            'UserInput': <is user input required>,
            'EULAAccepted': <has the EULA been accepted>,
            'Severity': <update severity>,
            'NeedsReboot': <is the update installed and awaiting
 ↪reboot>,
            'RebootBehavior': <will the update require a reboot>,
            'Categories': [ '<category 1>',
                            '<category 2>',
                            ...]
            }
}

Summary of Updates:
{'Total': <total number of updates returned>,
 'Available': <updates that are not downloaded or installed>,
 'Downloaded': <updates that are downloaded but not installed>,
 'Installed': <updates installed (usually 0 unless installed=True)>,
 'Categories': { <category 1>: <total for that category>,
                 <category 2>: <total for category 2>,
                 ... }
}
```

**Return type** dict

CLI Examples:

```
# Normal Usage (list all software updates)
salt '*' win_wua.list_updates

# List all updates with categories of Critical Updates and Drivers
salt '*' win_wua.list_updates categories=['Critical Updates','Drivers']

# List all Critical Security Updates
salt '*' win_wua.list_updates categories=['Security Updates'] severities=[
 ↪'Critical']

# List all updates with a severity of Critical
salt '*' win_wua.list_updates severities=['Critical']

# A summary of all available updates
salt '*' win_wua.list_updates summary=True

# A summary of all Feature Packs and Windows 8.1 Updates
salt '*' win_wua.list_updates categories=['Feature Packs','Windows 8.1']
 ↪summary=True
```

salt.modules.win_wua.**set_wu_settings**(*level=None*, *recommended=None*, *featured=None*, *elevated=None*, *msupdate=None*, *day=None*, *time=None*)

Change Windows Update settings. If no parameters are passed, the current value will be returned.

**Parameters**

- **level** (*int*) --

  **Number from 1 to 4 indicating the update level**:

  1. Never check for updates
  2. Check for updates but let me choose whether to download and install them

3. Download updates but let me choose whether to install them
4. Install updates automatically

- **recommended** (*bool*) -- Boolean value that indicates whether to include optional or recommended updates when a search for updates and installation of updates is performed.
- **featured** (*bool*) -- Boolean value that indicates whether to display notifications for featured updates.
- **elevated** (*bool*) -- Boolean value that indicates whether non-administrators can perform some update-related actions without administrator approval.
- **msupdate** (*bool*) -- Boolean value that indicates whether to turn on Microsoft Update for other Microsoft products
- **day** (*str*) -- Days of the week on which Automatic Updates installs or uninstalls updates. Accepted values:
  - Everyday
  - Monday
  - Tuesday
  - Wednesday
  - Thursday
  - Friday
  - Saturday
- **time** (*str*) -- Time at which Automatic Updates installs or uninstalls updates. Must be in the ##:## 24hr format, eg. 3:00 PM would be 15:00

**Returns** Returns a dictionary containing the results.

CLI Examples:

```
salt '*' win_wua.set_wu_settings level=4 recommended=True featured=False
```

### 13.6.367 salt.modules.x509

Manage X509 certificates

New in version 2015.8.0.

salt.modules.x509.**create_certificate**(*path=None*, *text=False*, *ca_server=None*, ***kwargs*)

Create an X509 certificate.

**path**: Path to write the certificate to.

**text**: If `True`, return the PEM text without writing to a file. Default `False`.

**kwargs**: Any of the properties below can be included as additional keyword arguments.

**ca_server**: Request a remotely signed certificate from ca_server. For this to work, a `signing_policy` must be specified, and that same policy must be configured on the ca_server. See `signing_policy` for details. Also the salt master must permit peers to call the `sign_remote_certificate` function.

Example:

/etc/salt/master.d/peer.conf

```
peer:
  .*:
    - x509.sign_remote_certificate
```

**subject properties**: Any of the values below can be included to set subject properties Any other subject properties supported by OpenSSL should also work.
**C**: 2 letter Country code
**CN**: Certificate common name, typically the FQDN.
**Email**: Email address
**GN**: Given Name
**L**: Locality
**O**: Organization
**OU**: Organization Unit
**SN**: SurName
**ST**: State or Province

**signing_private_key**: A path or string of the private key in PEM format that will be used to sign this certificate. If neither `signing_cert`, `public_key`, or `csr` are included, it will be assumed that this is a self-signed certificate, and the public key matching `signing_private_key` will be used to create the certificate.

**signing_cert**: A certificate matching the private key that will be used to sign this certificate. This is used to populate the issuer values in the resulting certificate. Do not include this value for self-signed certificates.

**public_key**: The public key to be included in this certificate. This can be sourced from a public key, certificate, csr or private key. If a private key is used, the matching public key from the private key will be generated before any processing is done. This means you can request a certificate from a remote CA using a private key file as your public_key and only the public key will be sent across the network to the CA. If neither `public_key` or `csr` are specified, it will be assumed that this is a self-signed certificate, and the public key derived from `signing_private_key` will be used. Specify either `public_key` or `csr`, not both. Because you can input a CSR as a public key or as a CSR, it is important to understand the difference. If you import a CSR as a public key, only the public key will be added to the certificate, subject or extension information in the CSR will be lost.

**csr**: A file or PEM string containing a certificate signing request. This will be used to supply the subject, extensions and public key of a certificate. Any subject or extensions specified explicitly will overwrite any in the CSR.

**basicConstraints**: X509v3 Basic Constraints extension.

**extensions**: The following arguments set X509v3 Extension values. If the value starts with ``critical ``, the extension will be marked as critical.

Some special extensions are `subjectKeyIdentifier` and `authorityKeyIdentifier`.

`subjectKeyIdentifier` can be an explicit value or it can be the special string `hash`. `hash` will set the subjectKeyIdentifier equal to the SHA1 hash of the modulus of the public key in this certificate. Note that this is not the exact same hashing method used by OpenSSL when using the hash value.

`authorityKeyIdentifier` Use values acceptable to the openssl CLI tools. This will automatically populate `authorityKeyIdentifier` with the `subjectKeyIdentifier` of `signing_cert`. If this is a self-signed cert these values will be the same.
**basicConstraints**: X509v3 Basic Constraints
**keyUsage**: X509v3 Key Usage
**extendedKeyUsage**: X509v3 Extended Key Usage
**subjectKeyIdentifier**: X509v3 Subject Key Identifier
**issuerAltName**: X509v3 Issuer Alternative Name
**subjectAltName**: X509v3 Subject Alternative Name
**crlDistributionPoints**: X509v3 CRL distribution points
**issuingDistributionPoint**: X509v3 Issuing Distribution Point
**certificatePolicies**: X509v3 Certificate Policies

**policyConstraints**: X509v3 Policy Constraints
**inhibitAnyPolicy**: X509v3 Inhibit Any Policy
**nameConstraints**: X509v3 Name Constraints
**noCheck**: X509v3 OCSP No Check
**nsComment**: Netscape Comment
**nsCertType**: Netscape Certificate Type

**days_valid**: The number of days this certificate should be valid. This sets the `notAfter` property of the certificate. Defaults to 365.

**version**: The version of the X509 certificate. Defaults to 3. This is automatically converted to the version value, so `version=3` sets the certificate version field to 0x2.

**serial_number**: The serial number to assign to this certificate. If omitted a random serial number of size `serial_bits` is generated.

**serial_bits**: The number of bits to use when randomly generating a serial number. Defaults to 64.

**algorithm**: The hashing algorithm to be used for signing this certificate. Defaults to sha256.

**copypath**: An additional path to copy the resulting certificate to. Can be used to maintain a copy of all certificates issued for revocation purposes.

**signing_policy**: A signing policy that should be used to create this certificate. Signing policies should be defined in the minion configuration, or in a minion pillar. It should be a yaml formatted list of arguments which will override any arguments passed to this function. If the `minions` key is included in the signing policy, only minions matching that pattern will be permitted to remotely request certificates from that policy.

Example:

```
x509_signing_policies:
  www:
    - minions: 'www*'
    - signing_private_key: /etc/pki/ca.key
    - signing_cert: /etc/pki/ca.crt
    - C: US
    - ST: Utah
    - L: Salt Lake City
    - basicConstraints: "critical CA:false"
    - keyUsage: "critical cRLSign, keyCertSign"
    - subjectKeyIdentifier: hash
    - authorityKeyIdentifier: keyid,issuer:always
    - days_valid: 90
    - copypath: /etc/pki/issued_certs/
```

The above signing policy can be invoked with `signing_policy=www`

CLI Example:

```
salt '*' x509.create_certificate path=/etc/pki/myca.crt \
signing_private_key='/etc/pki/myca.key' csr='/etc/pki/myca.csr'}
```

`salt.modules.x509.`**`create_crl`**(*path=None, text=False, signing_private_key=None, signing_cert=None, revoked=None, include_expired=False, days_valid=100, digest=''*)

Create a CRL

**Depends**

- PyOpenSSL Python module

**path**: Path to write the crl to.

**text**: If `True`, return the PEM text without writing to a file. Default `False`.

**signing_private_key**: A path or string of the private key in PEM format that will be used to sign this crl. This is required.

**signing_cert**: A certificate matching the private key that will be used to sign this crl. This is required.
**revoked**: A list of dicts containing all the certificates to revoke. Each dict represents one certificate. A dict must contain either the key `serial_number` with the value of the serial number to revoke, or `certificate` with either the PEM encoded text of the certificate, or a path ot the certificate to revoke.

The dict can optionally contain the `revocation_date` key. If this key is omitted the revocation date will be set to now. If should be a string in the format ``%Y-%m-%d %H:%M:%S''.

The dict can also optionally contain the `not_after` key. This is redundant if the `certificate` key is included. If the `Certificate` key is not included, this can be used for the logic behind the `include_expired` parameter. If should be a string in the format ``%Y-%m-%d %H:%M:%S''.

The dict can also optionally contain the `reason` key. This is the reason code for the revocation. Available choices are `unspecified`, `keyCompromise`, `CACompromise`, `affiliationChanged`, `superseded`, `cessationOfOperation` and `certificateHold`.
**include_expired**: Include expired certificates in the CRL. Default is `False`.
**days_valid**: The number of days that the CRL should be valid. This sets the Next Update field in the CRL.
**digest**: The digest to use for signing the CRL. This has no effect on versions of pyOpenSSL less than 0.14

CLI Example:

```
salt '*' x509.create_crl path=/etc/pki/mykey.key signing_private_key=/etc/pki/ca.
↪key \
       signing_cert=/etc/pki/ca.crt \
       revoked="{'compromized-web-key': {'certificate': '/etc/pki/certs/www1.crt
↪', \
       'revocation_date': '2015-03-01 00:00:00'}}"
```

`salt.modules.x509.`**`create_csr`**(*path=None*, *text=False*, ***kwargs*)
Create a certificate signing request.
**path**: Path to write the certificate to.
**text**: If `True`, return the PEM text without writing to a file. Default `False`.
**algorithm**: The hashing algorithm to be used for signing this request. Defaults to sha256.
**kwargs**: The subject, extension and version arguments from *`x509.create_certificate`* can be used.
CLI Example:

```
salt '*' x509.create_csr path=/etc/pki/myca.csr public_key='/etc/pki/myca.key' CN=
↪'My Cert
```

`salt.modules.x509.`**`create_private_key`**(*path=None*, *text=False*, *bits=2048*)
Creates a private key in PEM format.
**path**: The path to write the file to, either `path` or `text` are required.
**text**: If `True`, return the PEM text without writing to a file. Default `False`.
**bits**: Length of the private key in bits. Default 2048
CLI Example:

```
salt '*' x509.create_private_key path=/etc/pki/mykey.key
```

`salt.modules.x509.`**`get_pem_entries`**(*glob_path*)
Returns a dict containing PEM entries in files matching a glob
**glob_path**: A path to certificates to be read and returned.
CLI Example:

```
salt '*' x509.read_pem_entries "/etc/pki/*.crt"
```

`salt.modules.x509.`**`get_pem_entry`**(*text*, *pem_type=None*)
Returns a properly formatted PEM string from the input text fixing any whitespace or line-break issues
**text**: Text containing the X509 PEM entry to be returned or path to a file containing the text.

**pem_type**: If specified, this function will only return a pem of a certain type, for example `CERTIFICATE' or `CERTIFICATE REQUEST'.

CLI Example:

```
salt '*' x509.get_pem_entry "-----BEGIN CERTIFICATE REQUEST-----MIICyzCC Ar8CAQI..
↪.-----END CERTIFICATE REQUEST"
```

salt.modules.x509.**get_private_key_size**(*private_key*)

Returns the bit length of a private key in PEM format.

**private_key**: A path or PEM encoded string containing a private key.

CLI Example:

```
salt '*' x509.get_private_key_size /etc/pki/mycert.key
```

salt.modules.x509.**get_public_key**(*key*, *asObj=False*)

Returns a string containing the public key in PEM format.

**key**: A path or PEM encoded string containing a CSR, Certificate or Private Key from which a public key can be retrieved.

CLI Example:

```
salt '*' x509.get_public_key /etc/pki/mycert.cer
```

salt.modules.x509.**get_signing_policy**(*signing_policy_name*)

Returns the details of a names signing policy, including the text of the public key that will be used to sign it. Does not return the private key.

CLI Example:

```
salt '*' x509.get_signing_policy www
```

salt.modules.x509.**read_certificate**(*certificate*)

Returns a dict containing details of a certificate. Input can be a PEM string or file path.

**certificate**: The certificate to be read. Can be a path to a certificate file, or a string containing the PEM formatted text of the certificate.

CLI Example:

```
salt '*' x509.read_certificate /etc/pki/mycert.crt
```

salt.modules.x509.**read_certificates**(*glob_path*)

Returns a dict containing details of a all certificates matching a glob

**glob_path**: A path to certificates to be read and returned.

CLI Example:

```
salt '*' x509.read_certificates "/etc/pki/*.crt"
```

salt.modules.x509.**read_crl**(*crl*)

Returns a dict containing details of a certificate revocation list. Input can be a PEM string or file path.

**Depends**

- OpenSSL command line tool

**csl**: A path or PEM encoded string containing the CSL to read.

CLI Example:

```
salt '*' x509.read_crl /etc/pki/mycrl.crl
```

salt.modules.x509.**read_csr**(*csr*)

Returns a dict containing details of a certificate request.

**Depends**

- OpenSSL command line tool

**csr**: A path or PEM encoded string containing the CSR to read.

CLI Example:

```
salt '*' x509.read_csr /etc/pki/mycert.csr
```

salt.modules.x509.**sign_remote_certificate**(*argdic*, ***kwargs*)

Request a certificate to be remotely signed according to a signing policy.

**argdic**: A dict containing all the arguments to be passed into the create_certificate function. This will become kwargs when passed to create_certificate.

**kwargs**: kwargs delivered from publish.publish

CLI Example:

```
salt '*' x509.sign_remote_certificate argdic="{'public_key': '/etc/pki/www.key', \
        'signing_policy': 'www'}" __pub_id='www1'
```

salt.modules.x509.**verify_crl**(*crl*, *cert*)

Validate a CRL against a certificate. Parses openssl command line output, this is a workaround for M2Crypto's inability to get them from CSR objects.

**crl**: The CRL to verify

**cert**: The certificate to verify the CRL against

CLI Example:

```
salt '*' x509.verify_crl crl=/etc/pki/myca.crl cert=/etc/pki/myca.crt
```

salt.modules.x509.**verify_private_key**(*private_key*, *public_key*)

Verify that `private_key' matches `public_key'

**private_key**: The private key to verify, can be a string or path to a private key in PEM format.

**public_key**: The public key to verify, can be a string or path to a PEM formatted certificate, csr, or another private key.

CLI Example:

```
salt '*' x509.verify_private_key private_key=/etc/pki/myca.key public_key=/etc/
↪pki/myca.crt
```

salt.modules.x509.**verify_signature**(*certificate*, *signing_pub_key=None*)

Verify that `certificate` has been signed by `signing_pub_key`

**certificate**: The certificate to verify. Can be a path or string containing a PEM formatted certificate.

**signing_pub_key**: The public key to verify, can be a string or path to a PEM formatted certificate, csr, or private key.

CLI Example:

```
salt '*' x509.verify_private_key private_key=/etc/pki/myca.key public_key=/etc/
↪pki/myca.crt
```

salt.modules.x509.**write_pem**(*text*, *path*, *pem_type=None*)

Writes out a PEM string fixing any formatting or whitespace issues before writing.

**text**: PEM string input to be written out.

**path**: Path of the file to write the pem out to.

**pem_type**: The PEM type to be saved, for example `CERTIFICATE` or `PUBLIC KEY`. Adding this will allow the function to take input that may contain multiple pem types.

CLI Example:

```
salt '*' x509.write_pem "-----BEGIN CERTIFICATE-----MIIGMzCCBBugA..." path=/etc/
↪pki/mycert.crt
```

### 13.6.368 salt.modules.xapi

This module (mostly) uses the XenAPI to manage Xen virtual machines.

Big fat warning: the XenAPI used in this file is the one bundled with Xen Source, NOT XenServer nor Xen Cloud Platform. As a matter of fact it *will* fail under those platforms. From what I've read, little work is needed to adapt this code to XS/XCP, mostly playing with XenAPI version, but as XCP is not taking precedence on Xen Source on many platforms, please keep compatibility in mind.

Useful documentation:

. http://downloads.xen.org/Wiki/XenAPI/xenapi-1.0.6.pdf . http://docs.vmd.citrix.com/XenServer/6.0.0/1.0/en_gb/api/ . https://github.com/xapi-project/xen-api/tree/master/scripts/examples/python . http://xenbits.xen.org/gitweb/?p=xen.git;a=tree;f=tools/python/xen/xm;hb=HEAD

`salt.modules.xapi.`**`create`**(*domain*)

Deprecated since version 2016.3.0: Use *`start()`* instead.

Start a defined domain

CLI Example:

```
salt '*' virt.create <domain>
```

`salt.modules.xapi.`**`destroy`**(*domain*)

Deprecated since version 2016.3.0: Use *`stop()`* instead.

Power off a defined domain

CLI Example:

```
salt '*' virt.destroy <domain>
```

`salt.modules.xapi.`**`freecpu`**()

Return an int representing the number of unallocated cpus on this hypervisor

CLI Example:

```
salt '*' virt.freecpu
```

`salt.modules.xapi.`**`freemem`**()

Return an int representing the amount of memory that has not been given to virtual machines on this node

CLI Example:

```
salt '*' virt.freemem
```

`salt.modules.xapi.`**`full_info`**()

Return the node_info, vm_info and freemem

CLI Example:

```
salt '*' virt.full_info
```

salt.modules.xapi.**get_disks**(*vm_*)
Return the disks of a named vm

CLI Example:

```
salt '*' virt.get_disks <vm name>
```

salt.modules.xapi.**get_macs**(*vm_*)
Return a list off MAC addresses from the named vm

CLI Example:

```
salt '*' virt.get_macs <vm name>
```

salt.modules.xapi.**get_nics**(*vm_*)
Return info about the network interfaces of a named vm

CLI Example:

```
salt '*' virt.get_nics <vm name>
```

salt.modules.xapi.**is_hyper**()
Returns a bool whether or not this node is a hypervisor of any kind

CLI Example:

```
salt '*' virt.is_hyper
```

salt.modules.xapi.**list_domains**()
Return a list of virtual machine names on the minion

CLI Example:

```
salt '*' virt.list_domains
```

salt.modules.xapi.**list_vms**()
Deprecated since version 2016.3.0: Use *list_domains()* instead.

List all virtual machines.

CLI Example:

```
salt '*' virt.list_vms <domain>
```

salt.modules.xapi.**migrate**(*vm_*, *target*, *live=1*, *port=0*, *node=-1*, *ssl=None*, *change_home_server=0*)
Migrates the virtual machine to another hypervisor

CLI Example:

```
salt '*' virt.migrate <vm name> <target hypervisor> [live] [port] [node] [ssl]
↪[change_home_server]
```

Optional values:
**live** Use live migration
**port** Use a specified port
**node** Use specified NUMA node on target
**ssl** use ssl connection for migration
**change_home_server** change home server for managed domains

salt.modules.xapi.**node_info**()
Return a dict with information about this node

CLI Example:

```
salt '*' virt.node_info
```

salt.modules.xapi.**pause**(*vm_*)
Pause the named vm

CLI Example:

```
salt '*' virt.pause <vm name>
```

salt.modules.xapi.**reboot**(*vm_*)
Reboot a domain via ACPI request

CLI Example:

```
salt '*' virt.reboot <vm name>
```

salt.modules.xapi.**reset**(*vm_*)
Reset a VM by emulating the reset button on a physical machine

CLI Example:

```
salt '*' virt.reset <vm name>
```

salt.modules.xapi.**resume**(*vm_*)
Resume the named vm

CLI Example:

```
salt '*' virt.resume <vm name>
```

salt.modules.xapi.**setmem**(*vm_*, *memory*)
Changes the amount of memory allocated to VM.

Memory is to be specified in MB

CLI Example:

```
salt '*' virt.setmem myvm 768
```

salt.modules.xapi.**setvcpus**(*vm_*, *vcpus*)
Changes the amount of vcpus allocated to VM.

vcpus is an int representing the number to be assigned

CLI Example:

```
salt '*' virt.setvcpus myvm 2
```

salt.modules.xapi.**shutdown**(*vm_*)
Send a soft shutdown signal to the named vm

CLI Example:

```
salt '*' virt.shutdown <vm name>
```

salt.modules.xapi.**start**(*config_*)
Start a defined domain

CLI Example:

```
salt '*' virt.start <path to Xen cfg file>
```

salt.modules.xapi.**stop**(*vm_*)
Hard power down the virtual machine, this is equivalent to pulling the power

CLI Example:

```
salt '*' virt.stop <vm name>
```

salt.modules.xapi.**vcpu_pin**(*vm_*, *vcpu*, *cpus*)
Set which CPUs a VCPU can use.

CLI Example:

```
salt 'foo' virt.vcpu_pin domU-id 2 1
salt 'foo' virt.vcpu_pin domU-id 2 2-6
```

salt.modules.xapi.**vm_cputime**(*vm_=None*)
Return cputime used by the vms on this hyper in a list of dicts:

```
[
    'your-vm': {
        'cputime' <int>
        'cputime_percent' <int>
        },
    ...
    ]
```

If you pass a VM name in as an argument then it will return info for just the named VM, otherwise it will return all VMs.

CLI Example:

```
salt '*' virt.vm_cputime
```

salt.modules.xapi.**vm_diskstats**(*vm_=None*)
Return disk usage counters used by the vms on this hyper in a list of dicts:

```
[
    'your-vm': {
        'io_read_kbs'   : 0,
        'io_write_kbs'  : 0
        },
    ...
    ]
```

If you pass a VM name in as an argument then it will return info for just the named VM, otherwise it will return all VMs.

CLI Example:

```
salt '*' virt.vm_diskstats
```

salt.modules.xapi.**vm_info**(*vm_=None*)
Return detailed information about the vms.

If you pass a VM name in as an argument then it will return info for just the named VM, otherwise it will return all VMs.

CLI Example:

```
salt '*' virt.vm_info
```

salt.modules.xapi.**vm_netstats**(*vm_=None*)

Return combined network counters used by the vms on this hyper in a list of dicts:

```
[
    'your-vm': {
        'io_read_kbs'           : 0,
        'io_total_read_kbs'     : 0,
        'io_total_write_kbs'    : 0,
        'io_write_kbs'          : 0
        },
    ...
    ]
```

If you pass a VM name in as an argument then it will return info for just the named VM, otherwise it will return all VMs.

CLI Example:

```
salt '*' virt.vm_netstats
```

salt.modules.xapi.**vm_state**(*vm_=None*)

Return list of all the vms and their state.

If you pass a VM name in as an argument then it will return info for just the named VM, otherwise it will return all VMs.

CLI Example:

```
salt '*' virt.vm_state <vm name>
```

### 13.6.369 salt.modules.xfs

Module for managing XFS file systems.

salt.modules.xfs.**defragment**(*device*)

Defragment mounted XFS filesystem. In order to mount a filesystem, device should be properly mounted and writable.

CLI Example:

```
salt '*' xfs.defragment /dev/sda1
```

salt.modules.xfs.**devices**()

Get known XFS formatted devices on the system.

CLI Example:

```
salt '*' xfs.devices
```

salt.modules.xfs.**dump**(*device*, *destination*, *level=0*, *label=None*, *noerase=None*)

Dump filesystem device to the media (file, tape etc).

Required parameters:

- **device**: XFS device, content of which to be dumped.
- **destination**: Specifies a dump destination.

Valid options are:

- **label**: Label of the dump. Otherwise automatically generated label is used.
- **level**: Specifies a dump level of 0 to 9.
- **noerase**: Pre-erase media.

Other options are not used in order to let `xfsdump` use its default values, as they are most optimal. See the `xfsdump(8)` manpage for a more complete description of these options.

CLI Example:

```
salt '*' xfs.dump /dev/sda1 /detination/on/the/client
salt '*' xfs.dump /dev/sda1 /detination/on/the/client label='Company accountancy'
salt '*' xfs.dump /dev/sda1 /detination/on/the/client noerase=True
```

`salt.modules.xfs.`**`estimate`**(*path*)

Estimate the space that an XFS filesystem will take. For each directory estimate the space that directory would take if it were copied to an XFS filesystem. Estimation does not cross mount points.

CLI Example:

```
salt '*' xfs.estimate /path/to/file
salt '*' xfs.estimate /path/to/dir/*
```

`salt.modules.xfs.`**`info`**(*device*)

Get filesystem geometry information.

CLI Example:

```
salt '*' xfs.info /dev/sda1
```

`salt.modules.xfs.`**`inventory`**()

Display XFS dump inventory without restoration.

CLI Example:

```
salt '*' xfs.inventory
```

`salt.modules.xfs.`**`mkfs`**(*device*, *label=None*, *ssize=None*, *noforce=None*, *bso=None*, *gmo=None*, *ino=None*, *lso=None*, *rso=None*, *nmo=None*, *dso=None*)

Create a file system on the specified device. By default wipes out with force.

General options:

- **label**: Specify volume label.
- **ssize**: Specify the fundamental sector size of the filesystem.
- **noforce**: Do not force create filesystem, if disk is already formatted.

Filesystem geometry options:

- **bso**: Block size options.
- **gmo**: Global metadata options.
- **dso**: **Data section options. These options specify the location, size,** and other parameters of the data section of the filesystem.
- **ino**: Inode options to specify the inode size of the filesystem, and other inode allocation parameters.
- **lso**: Log section options.
- **nmo**: Naming options.
- **rso**: Realtime section options.

See the `mkfs.xfs(8)` manpage for a more complete description of corresponding options description.

CLI Example:

```
salt '*' xfs.mkfs /dev/sda1
salt '*' xfs.mkfs /dev/sda1 dso='su=32k,sw=6' noforce=True
salt '*' xfs.mkfs /dev/sda1 dso='su=32k,sw=6' lso='logdev=/dev/sda2,size=10000b'
```

salt.modules.xfs.**modify**(*device*, *label=None*, *lazy_counting=None*, *uuid=None*)

Modify parameters of an XFS filesystem.

CLI Example:

```
salt '*' xfs.modify /dev/sda1 label='My backup' lazy_counting=False
salt '*' xfs.modify /dev/sda1 uuid=False
salt '*' xfs.modify /dev/sda1 uuid=True
```

salt.modules.xfs.**prune_dump**(*sessionid*)

Prunes the dump session identified by the given session id.

CLI Example:

```
salt '*' xfs.prune_dump b74a3586-e52e-4a4a-8775-c3334fa8ea2c
```

### 13.6.370 salt.modules.xmpp

Module for Sending Messages via XMPP (a.k.a. Jabber)

New in version 2014.1.0.

**depends**

- sleekxmpp>=1.3.1
- pyasn1
- pyasn1-modules
- dnspython

**configuration** This module can be used by either passing a jid and password directly to send_message, or by specifying the name of a configuration profile in the minion config, minion pillar, or master config.

For example:

```
my-xmpp-login:
    xmpp.jid: myuser@jabber.example.org/resourcename
    xmpp.password: verybadpass
```

The resourcename refers to the resource that is using this account. It is user-definable, and optional. The following configurations are both valid:

```
my-xmpp-login:
    xmpp.jid: myuser@jabber.example.org/salt
    xmpp.password: verybadpass

my-xmpp-login:
    xmpp.jid: myuser@jabber.example.org
    xmpp.password: verybadpass
```

class salt.modules.xmpp.**SendMsgBot**(*jid*, *password*, *recipient*, *msg*)

classmethod **create_multi**(*jid*, *password*, *msg*, *recipients=None*, *rooms=None*, *nick='SaltStack Bot'*)
Alternate constructor that accept multiple recipients and rooms

**start**(*event*)

class salt.modules.xmpp.**SleekXMPPMUC**(*name=''*)

**filter**(*record*)

salt.modules.xmpp.**send_msg**(*recipient*, *message*, *jid=None*, *password=None*, *profile=None*)
Send a message to an XMPP recipient. Designed for use in states.

CLI Examples:

```
xmpp.send_msg 'admins@xmpp.example.com' 'This is a salt module test'
↪profile='my-xmpp-account'
xmpp.send_msg 'admins@xmpp.example.com' 'This is a salt module test'
↪jid='myuser@xmpp.example.com/salt' password='verybadpass'
```

salt.modules.xmpp.**send_msg_multi**(*message*, *recipients=None*, *rooms=None*, *jid=None*, *password=None*, *nick='SaltStack Bot'*, *profile=None*)
Send a message to an XMPP recipient, support send message to multiple recipients or chat room.

CLI Examples:

```
xmpp.send_msg recipients=['admins@xmpp.example.com']
↪'secret@conference.xmpp.example.com']
↪          profile='my-xmpp-account'
xmpp.send_msg recipients=['admins@xmpp.example.com']
↪'secret@conference.xmpp.example.com']
↪         jid='myuser@xmpp.example.com/salt' password='verybadpass'
```

### 13.6.371 salt.modules.yumpkg

Support for YUM/DNF

**Important**: If you feel that Salt should be using this module to manage packages on a minion, and it is using a different module (or gives an error similar to *`pkg.install' is not available*), see *here*.

**Note**: DNF is fully supported as of version 2015.5.10 and 2015.8.4 (partial support for DNF was initially added in 2015.8.0), and DNF is used automatically in place of YUM in Fedora 22 and newer.

salt.modules.yumpkg.**clean_metadata**(***kwargs*)
New in version 2014.1.0.

Cleans local yum metadata. Functionally identical to *refresh_db()*.

CLI Example:

```
salt '*' pkg.clean_metadata
```

salt.modules.yumpkg.**del_repo**(*repo*, *basedir=None*, ***kwargs*)
Delete a repo from <basedir> (default basedir: all dirs in *reposdir* yum option).

If the .repo file in which the repo exists does not contain any other repo configuration, the file itself will be deleted.

CLI Examples:

```
salt '*' pkg.del_repo myrepo
salt '*' pkg.del_repo myrepo basedir=/path/to/dir
salt '*' pkg.del_repo myrepo basedir=/path/to/dir,/path/to/another/dir
```

salt.modules.yumpkg.**diff**(**paths*)

Return a formatted diff between current files and original in a package. NOTE: this function includes all files (configuration and not), but does not work on binary content.

**Parameters** **path** -- Full path to the installed file

**Returns** Difference string or raises and exception if examined file is binary.

CLI example:

```
salt '*' pkg.diff /etc/apache2/httpd.conf /etc/sudoers
```

salt.modules.yumpkg.**download**(**packages*)

New in version 2015.5.0.

Download packages to the local disk. Requires `yumdownloader` from `yum-utils` package.

---

**Note**: `yum-utils` will already be installed on the minion if the package was installed from the Fedora / EPEL repositories.

---

CLI example:

```
salt '*' pkg.download httpd
salt '*' pkg.download httpd postfix
```

salt.modules.yumpkg.**file_dict**(**packages*)

New in version 2014.1.0.

List the files that belong to a package, grouped by package. Not specifying any packages will return a list of *every* file on the system's rpm database (not generally recommended).

CLI Examples:

```
salt '*' pkg.file_list httpd
salt '*' pkg.file_list httpd postfix
salt '*' pkg.file_list
```

salt.modules.yumpkg.**file_list**(**packages*)

New in version 2014.1.0.

List the files that belong to a package. Not specifying any packages will return a list of *every* file on the system's rpm database (not generally recommended).

CLI Examples:

```
salt '*' pkg.file_list httpd
salt '*' pkg.file_list httpd postfix
salt '*' pkg.file_list
```

salt.modules.yumpkg.**get_repo**(*name*, *basedir=None*, ***kwargs*)

Display a repo from <basedir> (default basedir: all dirs in `reposdir` yum option).

CLI Examples:

```
salt '*' pkg.get_repo myrepo
salt '*' pkg.get_repo myrepo basedir=/path/to/dir
salt '*' pkg.get_repo myrepo basedir=/path/to/dir,/path/to/another/dir
```

salt.modules.yumpkg.**group_diff**(*name*)

New in version 2014.1.0.

Changed in version 2016.3.0,2015.8.4,2015.5.10: Environment groups are now supported. The key names have been renamed, similar to the changes made in *pkg.group_info*.

Lists which of a group's packages are installed and which are not installed

CLI Example:

```
salt '*' pkg.group_diff 'Perl Support'
```

salt.modules.yumpkg.**group_info**(*name*, *expand=False*)

New in version 2014.1.0.

Changed in version 2016.3.0,2015.8.4,2015.5.10: The return data has changed. A new key `type` has been added to distinguish environment groups from package groups. Also, keys for the group name and group ID have been added. The `mandatory packages`, `optional packages`, and `default packages` keys have been renamed to `mandatory`, `optional`, and `default` for accuracy, as environment groups include other groups, and not packages. Finally, this function now properly identifies conditional packages.

Lists packages belonging to a certain group

**name** Name of the group to query

**expand** [False] If the specified group is an environment group, then the group will be expanded and the return data will include package names instead of group names.

New in version 2016.3.0.

CLI Example:

```
salt '*' pkg.group_info 'Perl Support'
```

salt.modules.yumpkg.**group_install**(*name*, *skip=()*, *include=()*, ***kwargs*)

New in version 2014.1.0.

Install the passed package group(s). This is basically a wrapper around *pkg.install*, which performs package group resolution for the user. This function is currently considered experimental, and should be expected to undergo changes.

**name** Package group to install. To install more than one group, either use a comma-separated list or pass the value as a python list.

CLI Examples:

```
salt '*' pkg.group_install 'Group 1'
salt '*' pkg.group_install 'Group 1,Group 2'
salt '*' pkg.group_install '["Group 1", "Group 2"]'
```

**skip** Packages that would normally be installed by the package group (``default'' packages), which should not be installed. Can be passed either as a comma-separated list or a python list.

CLI Examples:

```
salt '*' pkg.group_install 'My Group' skip='foo,bar'
salt '*' pkg.group_install 'My Group' skip='["foo", "bar"]'
```

**include** Packages which are included in a group, which would not normally be installed by a `yum groupinstall` (``optional'' packages). Note that this will not enforce group membership; if you include packages which are not members of the specified groups, they will still be installed. Can be passed either as a comma-separated list or a python list.

CLI Examples:

```
salt '*' pkg.group_install 'My Group' include='foo,bar'
salt '*' pkg.group_install 'My Group' include='["foo", "bar"]'
```

---

**Note:** Because this is essentially a wrapper around pkg.install, any argument which can be passed to pkg.install may also be included here, and it will be passed along wholesale.

---

`salt.modules.yumpkg.`**`group_list`**`()`

New in version 2014.1.0.

Lists all groups known by yum on this system

CLI Example:

```
salt '*' pkg.group_list
```

`salt.modules.yumpkg.`**`hold`**`(`*name=None, pkgs=None, sources=None, normalize=True, **kwargs*`)`

New in version 2014.7.0.

Version-lock packages

---

**Note:** Requires the appropriate `versionlock` plugin package to be installed:

- On RHEL 5: `yum-versionlock`
- On RHEL 6 & 7: `yum-plugin-versionlock`
- On Fedora: `python-dnf-plugins-extras-versionlock`

---

**name** The name of the package to be held.

Multiple Package Options:

**pkgs** A list of packages to hold. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.hold <package name>
salt '*' pkg.hold pkgs='["foo", "bar"]'
```

`salt.modules.yumpkg.`**`info_installed`**`(`**names*`)`

New in version 2015.8.1.

Return the information of the named package(s), installed on the system.

CLI example:

```
salt '*' pkg.info_installed <package1>
salt '*' pkg.info_installed <package1> <package2> <package3> ...
```

`salt.modules.yumpkg.`**`install`**`(`*name=None, refresh=False, skip_verify=False, pkgs=None, sources=None, downloadonly=False, reinstall=False, normalize=True, **kwargs*`)`

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now

used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any yum/dnf commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *`config option`* called `systemd.scope`, with a value of `False` (no quotes).

Install the passed package(s), add refresh=True to clean the yum database before package is installed.

**name** The name of the package to be installed. Note that this parameter is ignored if either ``pkgs'' or ``sources'' is passed. Additionally, please note that this option can only be used to install packages from a software repository. To install a package file manually, use the ``sources'' option.

32-bit packages can be installed on 64-bit systems by appending the architecture designation (`.i686`, `.i586`, etc.) to the end of the package name.

CLI Example:

```
salt '*' pkg.install <package name>
```

**refresh** Whether or not to update the yum database before executing.

**reinstall** Specifying reinstall=True will use `yum reinstall` rather than `yum install` for requested packages that are already installed.

If a version is specified with the requested package, then `yum reinstall` will only be used if the installed version matches the requested version.

Works with `sources` when the package header of the source can be matched to the name and version of an installed package.

New in version 2014.7.0.

**skip_verify** Skip the GPG verification check (e.g., `--nogpgcheck`)

**downloadonly** Only download the packages, do not install.

**version** Install a specific version of the package, e.g. 1.2.3-4.el5. Ignored if ``pkgs'' or ``sources'' is passed.

Repository Options:

**fromrepo** Specify a package repository (or repositories) from which to install. (e.g., `yum --disablerepo='*' --enablerepo='somerepo'`)

**enablerepo (ignored if `fromrepo` is specified)** Specify a disabled package repository (or repositories) to enable. (e.g., `yum --enablerepo='somerepo'`)

**disablerepo (ignored if `fromrepo` is specified)** Specify an enabled package repository (or repositories) to disable. (e.g., `yum --disablerepo='somerepo'`)

**disableexcludes** Disable exclude from main, for a repo or for everything. (e.g., `yum --disableexcludes='main'`)

New in version 2014.7.0.

Multiple Package Installation Options:

**pkgs** A list of packages to install from a software repository. Must be passed as a python list. A specific version number can be specified by using a single-element dict representing the package and its version.

CLI Examples:

```
salt '*' pkg.install pkgs='["foo", "bar"]'
salt '*' pkg.install pkgs='["foo", {"bar": "1.2.3-4.el5"}]'
```

**sources** A list of RPM packages to install. Must be passed as a list of dicts, with the keys being package names, and the values being the source URI or local path to the package.

CLI Example:

```
salt '*' pkg.install sources='[{"foo": "salt://foo.rpm"}, {"bar": "salt://bar.
↪rpm"}]'
```

**normalize** [True] Normalize the package name by removing the architecture. This is useful for poorly created packages which might include the architecture as an actual part of the name such as kernel modules which match a specific kernel version.

```
salt -G role:nsd pkg.install gpfs.gplbin-2.6.32-279.31.1.el6.x86_64
 ↪normalize=False
```

New in version 2014.7.0.

Returns a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

salt.modules.yumpkg.**latest_version**(**names*, ***kwargs*)

Return the latest version of the named package available for upgrade or installation. If more than one package name is specified, a dict of name/version pairs is returned.

If the latest version of a given package is already installed, an empty string will be returned for that package.

A specific repo can be requested using the `fromrepo` keyword argument, and the `disableexcludes` option is also supported.

New in version 2014.7.0: Support for the `disableexcludes` option

CLI Example:

```
salt '*' pkg.latest_version <package name>
salt '*' pkg.latest_version <package name> fromrepo=epel-testing
salt '*' pkg.latest_version <package name> disableexcludes=main
salt '*' pkg.latest_version <package1> <package2> <package3> ...
```

salt.modules.yumpkg.**list_holds**(*pattern='\\w+(?:[.-][^-]+)*'*, *full=True*)

Changed in version 2016.3.0,2015.8.4,2015.5.10: Function renamed from `pkg.get_locked_pkgs` to `pkg.list_holds`.

List information on locked packages

---

**Note:** Requires the appropriate `versionlock` plugin package to be installed:

- On RHEL 5: `yum-versionlock`
- On RHEL 6 & 7: `yum-plugin-versionlock`
- On Fedora: `python-dnf-plugins-extras-versionlock`

---

**pattern** [\w+(?:[.-][^-]+)*] Regular expression used to match the package name

**full** [True] Show the full hold definition including version and epoch. Set to `False` to return just the name of the package(s) being held.

CLI Example:

```
salt '*' pkg.list_holds
salt '*' pkg.list_holds full=False
```

salt.modules.yumpkg.**list_pkgs**(*versions_as_list=False*, ***kwargs*)

List the packages currently installed in a dict:

```
{'<package_name>': '<version>'}
```

CLI Example:

```
salt '*' pkg.list_pkgs
```

salt.modules.yumpkg.**list_repo_pkgs**(**args*, ***kwargs*)

New in version 2014.1.0.

Changed in version 2014.7.0: All available versions of each package are now returned. This required a slight modification to the structure of the return dict. The return data shown below reflects the updated return dict structure. Note that packages which are version-locked using *pkg.hold* will only show the currently-installed version, as locking a package will make other versions appear unavailable to yum/dnf.

Returns all available packages. Optionally, package names (and name globs) can be passed and the results will be filtered to packages matching those names. This is recommended as it speeds up the function considerably.

**Warning:** Running this function on RHEL/CentOS 6 and earlier will be more resource-intensive, as the version of yum that ships with older RHEL/CentOS has no yum subcommand for listing packages from a repository. Thus, a `yum list installed` and `yum list available` are run, which generates a lot of output, which must then be analyzed to determine which package information to include in the return data.

This function can be helpful in discovering the version or repo to specify in a *pkg.installed* state.

The return data is a dictionary of repo names, with each repo containing a dictionary in which the keys are package names, and the values are a list of version numbers. Here is an example of the return data:

```
{
    'base': {
        'bash': ['4.1.2-15.el6_4'],
        'kernel': ['2.6.32-431.el6']
    },
    'updates': {
        'bash': ['4.1.2-15.el6_5.2', '4.1.2-15.el6_5.1'],
        'kernel': ['2.6.32-431.29.2.el6',
                   '2.6.32-431.23.3.el6',
                   '2.6.32-431.20.5.el6',
                   '2.6.32-431.20.3.el6',
                   '2.6.32-431.17.1.el6',
                   '2.6.32-431.11.2.el6',
                   '2.6.32-431.5.1.el6',
                   '2.6.32-431.3.1.el6',
                   '2.6.32-431.1.2.0.1.el6']
    }
}
```

**fromrepo** [None] Only include results from the specified repo(s). Multiple repos can be specified, comma-separated.

CLI Example:

```
salt '*' pkg.list_repo_pkgs
salt '*' pkg.list_repo_pkgs foo bar baz
salt '*' pkg.list_repo_pkgs 'samba4*' fromrepo=base,updates
```

salt.modules.yumpkg.**list_repos**(*basedir=None*)

Lists all repos in <basedir> (default: all dirs in *reposdir* yum option).

CLI Example:

```
salt '*' pkg.list_repos
salt '*' pkg.list_repos basedir=/path/to/dir
salt '*' pkg.list_repos basedir=/path/to/dir,/path/to/another/dir
```

salt.modules.yumpkg.**list_upgrades**(*refresh=True*, ***kwargs*)

Check whether or not an upgrade is available for all packages

The `fromrepo`, `enablerepo`, and `disablerepo` arguments are supported, as used in pkg states, and the `disableexcludes` option is also supported.

New in version 2014.7.0: Support for the `disableexcludes` option

CLI Example:

```
salt '*' pkg.list_upgrades
```

salt.modules.yumpkg.**mod_repo**(*repo*, *basedir=None*, ***kwargs*)

Modify one or more values for a repo. If the repo does not exist, it will be created, so long as the following values are specified:

**repo** name by which the yum refers to the repo
**name** a human-readable name for the repo
**baseurl** the URL for yum to reference
**mirrorlist** the URL for yum to reference

Key/Value pairs may also be removed from a repo's configuration by setting a key to a blank value. Bear in mind that a name cannot be deleted, and a baseurl can only be deleted if a mirrorlist is specified (or vice versa).

CLI Examples:

```
salt '*' pkg.mod_repo reponame enabled=1 gpgcheck=1
salt '*' pkg.mod_repo reponame basedir=/path/to/dir enabled=1
salt '*' pkg.mod_repo reponame baseurl= mirrorlist=http://host.com/
```

salt.modules.yumpkg.**modified**(**packages*, ***flags*)

List the modified files that belong to a package. Not specifying any packages will return a list of _all_ modified files on the system's RPM database.

New in version 2015.5.0.

Filtering by flags (True or False):

**size** Include only files where size changed.
**mode** Include only files which file's mode has been changed.
**checksum** Include only files which MD5 checksum has been changed.
**device** Include only files which major and minor numbers has been changed.
**symlink** Include only files which are symbolic link contents.
**owner** Include only files where owner has been changed.
**group** Include only files where group has been changed.
**time** Include only files where modification time of the file has been changed.
**capabilities** Include only files where capabilities differ or not. Note: supported only on newer RPM versions.

CLI Examples:

```
salt '*' pkg.modified
salt '*' pkg.modified httpd
salt '*' pkg.modified httpd postfix
salt '*' pkg.modified httpd owner=True group=False
```

salt.modules.yumpkg.**normalize_name**(*name*)

Strips the architecture from the specified package name, if necessary. Circumstances where this would be done include:

- If the arch is 32 bit and the package name ends in a 32-bit arch.
- If the arch matches the OS arch, or is `noarch`.

CLI Example:

```
salt '*' pkg.normalize_name zsh.x86_64
```

`salt.modules.yumpkg.`**`owner`**`(`*paths*`)`

New in version 2014.7.0.

Return the name of the package that owns the file. Multiple file paths can be passed. Like `pkg.version <salt.modules.yumpkg.version`, if a single path is passed, a string will be returned, and if multiple paths are passed, a dictionary of file/package name pairs will be returned.

If the file is not owned by a package, or is not present on the minion, then an empty string will be returned for that path.

CLI Examples:

```
salt '*' pkg.owner /usr/bin/apachectl
salt '*' pkg.owner /usr/bin/apachectl /etc/httpd/conf/httpd.conf
```

`salt.modules.yumpkg.`**`purge`**`(`*name=None*, *pkgs=None*, ***kwargs*`)`

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any yum/dnf commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *`config option`* called `systemd.scope`, with a value of `False` (no quotes).

Package purges are not supported by yum, this function is identical to *`pkg.remove`*.

**name** The name of the package to be purged

Multiple Package Options:

**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.purge <package name>
salt '*' pkg.purge <package1>,<package2>,<package3>
salt '*' pkg.purge pkgs='["foo", "bar"]'
```

`salt.modules.yumpkg.`**`refresh_db`**`(`***kwargs*`)`

Check the yum repos for updated packages

Returns:

- `True`: Updates are available
- `False`: An error occurred
- `None`: No updates are available

**repo** Refresh just the specified repo

**disablerepo** Do not refresh the specified repo

**enablerepo** Refresh a disabled repo using this option

**branch** Add the specified branch when refreshing

**disableexcludes** Disable the excludes defined in your config files. Takes one of three options: - `all` - disable all excludes - `main` - disable excludes defined in [main] in yum.conf - `repoid` - disable excludes defined for that repo

CLI Example:

```
salt '*' pkg.refresh_db
```

salt.modules.yumpkg.**remove**(*name=None*, *pkgs=None*, ***kwargs*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any yum/dnf commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *`config option`* called `systemd.scope`, with a value of `False` (no quotes).

Remove packages

**name** The name of the package to be removed

Multiple Package Options:

**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.remove <package name>
salt '*' pkg.remove <package1>,<package2>,<package3>
salt '*' pkg.remove pkgs='["foo", "bar"]'
```

salt.modules.yumpkg.**unhold**(*name=None*, *pkgs=None*, *sources=None*, ***kwargs*)

New in version 2014.7.0.

Remove version locks

---

**Note**: Requires the appropriate `versionlock` plugin package to be installed:

- On RHEL 5: `yum-versionlock`
- On RHEL 6 & 7: `yum-plugin-versionlock`
- On Fedora: `python-dnf-plugins-extras-versionlock`

---

**name** The name of the package to be unheld

Multiple Package Options:

**pkgs** A list of packages to unhold. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.unhold <package name>
salt '*' pkg.unhold pkgs='["foo", "bar"]'
```

salt.modules.yumpkg.**upgrade**(*name=None*, *pkgs=None*, *refresh=True*, *skip_verify=False*, *normalize=True*, ***kwargs*)

Run a full system upgrade (a `yum upgrade` or `dnf upgrade`), or upgrade specified packages. If the packages aren't installed, they will not be installed.

Changed in version 2014.7.0.

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands which modify installed packages from the `salt-minion` daemon's control group.

This is done to keep systemd from killing any yum/dnf commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *`config option`* called `systemd.scope`, with a value of `False` (no quotes).

Run a full system upgrade, a yum upgrade

Return a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

CLI Example:

```
salt '*' pkg.upgrade
salt '*' pkg.upgrade name=openssl
```

Repository Options:

**fromrepo** Specify a package repository (or repositories) from which to install. (e.g., `yum --disablerepo='*' --enablerepo='somerepo'`)

**enablerepo (ignored if `fromrepo` is specified)** Specify a disabled package repository (or repositories) to enable. (e.g., `yum --enablerepo='somerepo'`)

**disablerepo (ignored if `fromrepo` is specified)** Specify an enabled package repository (or repositories) to disable. (e.g., `yum --disablerepo='somerepo'`)

**disableexcludes** Disable exclude from main, for a repo or for everything. (e.g., `yum --disableexcludes='main'`)

New in version 2014.7.

**name** The name of the package to be upgraded. Note that this parameter is ignored if ``pkgs'' is passed.

32-bit packages can be upgraded on 64-bit systems by appending the architecture designation (`.i686`, `.i586`, etc.) to the end of the package name.

Warning: if you forget `name=' and run pkg.upgrade openssl, ALL packages are upgraded. This will be addressed in next releases.

CLI Example:

```
salt '*' pkg.upgrade name=openssl
```

New in version 2016.3.0.

**pkgs** A list of packages to upgrade from a software repository. Must be passed as a python list. A specific version number can be specified by using a single-element dict representing the package and its version. If the package was not already installed on the system, it will not be installed.

CLI Examples:

```
salt '*' pkg.upgrade pkgs='["foo", "bar"]'
salt '*' pkg.upgrade pkgs='["foo", {"bar": "1.2.3-4.el5"}]'
```

New in version 2016.3.0.

**normalize** [True] Normalize the package name by removing the architecture. This is useful for poorly created packages which might include the architecture as an actual part of the name such as kernel modules which match a specific kernel version.

```
salt -G role:nsd pkg.upgrade gpfs.gplbin-2.6.32-279.31.1.el6.x86_64
 ↪normalize=False
```

New in version 2016.3.0.

salt.modules.yumpkg.**upgrade_available**(*name*)
Check whether or not an upgrade is available for a given package

CLI Example:

```
salt '*' pkg.upgrade_available <package name>
```

salt.modules.yumpkg.**verify**(**names*, ***kwargs*)
New in version 2014.1.0.

Runs an rpm -Va on a system, and returns the results in a dict

Files with an attribute of config, doc, ghost, license or readme in the package header can be ignored using the `ignore_types` keyword argument

CLI Example:

```
salt '*' pkg.verify
salt '*' pkg.verify httpd
salt '*' pkg.verify 'httpd postfix'
salt '*' pkg.verify 'httpd postfix' ignore_types=['config','doc']
```

salt.modules.yumpkg.**version**(**names*, ***kwargs*)
Returns a string representing the package version or an empty string if not installed. If more than one package name is specified, a dict of name/version pairs is returned.

CLI Example:

```
salt '*' pkg.version <package name>
salt '*' pkg.version <package1> <package2> <package3> ...
```

salt.modules.yumpkg.**version_cmp**(*pkg1*, *pkg2*, *ignore_epoch=False*)
New in version 2015.5.4.

Do a cmp-style comparison on two packages. Return -1 if pkg1 < pkg2, 0 if pkg1 == pkg2, and 1 if pkg1 > pkg2. Return None if there was a problem making the comparison.
**ignore_epoch** [False] Set to `True` to ignore the epoch when comparing versions

New in version 2015.8.10,2016.3.2.
CLI Example:

```
salt '*' pkg.version_cmp '0.2-001' '0.2.0.1-002'
```

### 13.6.372 salt.modules.zabbix module

Support for Zabbix

**configuration** This module is not usable until the zabbix user and zabbix password are specified either in a pillar or in the minion's config file. Zabbix url should be also specified.

For example:

```
zabbix.user: Admin
zabbix.password: mypassword
zabbix.url: http://127.0.0.1/zabbix/api_jsonrpc.php
```

Connection arguments from the minion config file can be overridden on the CLI by using arguments with _connection_ prefix.

For example:

```
zabbix.apiinfo_version _connection_user=Admin _connection_
↪password=zabbix _connection_url=http://host/zabbix/
```

**codeauthor** Jiri Kotlin <jiri.kotlin@ultimum.io>

salt.modules.zabbix.**apiinfo_version**(***connection_args*)

Retrieve the version of the Zabbix API.

**Args**:

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

**Returns**: On success string with Zabbix API version, False on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.apiinfo_version

salt.modules.zabbix.**host_create**(*host*, *groups*, *interfaces*, ***connection_args*)

Create new host.

**Args**: host: technical name of the host groups: groupids of host groups to add the host to interfaces: interfaces to be created for the host

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

**visible_name**: **string with visible name of the host, use `visible_name' instead of `name' parameter** to not mess with value supplied from Salt sls file.

all standard host properties: keyword argument names differ depending on your zabbix version, see:

https://www.zabbix.com/documentation/2.4/manual/api/reference/host/object#host

**Returns**: ID of the created host, False on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.host_create technicalname 4 interfaces='{type: 1, main: 1, useip: 1, ip: ``192.168.3.1'', dns: ``'', port: 10050}' visible_name='Host Visible Name'

salt.modules.zabbix.**host_delete**(*hostids*, ***connection_args*)

Delete hosts.

**Args**: hostids: Hosts (hostids) to delete.

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

**Returns**: IDs of the deleted hosts, False on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.host_delete 10106

salt.modules.zabbix.**host_exists**(*host=None*, *hostid=None*, *name=None*, *node=None*, *nodeids=None*, ***connection_args*)

Checks if at least one host that matches the given filter criteria exists.

**Args**: host: technical name of the host hostids: Hosts (hostids) to delete. name: visible name of the host node: name of the node the hosts must belong to (zabbix API < 2.4) nodeids: IDs of the node the hosts must belong to (zabbix API < 2.4)

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's

docstring)

**Returns**: IDs of the deleted hosts, False on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.host_exists `Zabbix server'

salt.modules.zabbix.**host_get**(*host=None*, *name=None*, *hostids=None*, ***connection_args*)

Retrieve hosts according to the given parameters.

**Args**: host: technical name of the host name: visible name of the host hostids: ids of the hosts

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

all optional host.get parameters: keyword argument names differ depending on your zabbix version, see:

https://www.zabbix.com/documentation/2.4/manual/api/reference/host/get

**Returns**: Array with convenient hosts details, False if no host found or on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.host_get `Zabbix server'

salt.modules.zabbix.**host_list**(***connection_args*)

Retrieve all hosts.

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

**Returns**: Array with details about hosts, False on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.host_list

salt.modules.zabbix.**host_update**(*hostid*, ***connection_args*)

Update existing hosts.

**Args**: hostid: ID of the host to update

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

**visible_name: string with visible name of the host, use `visible_name' instead of `name' parameter** to not mess with value supplied from Salt sls file.

all standard host and host.update properties: keyword argument names differ depending on your zabbix version, see:

https://www.zabbix.com/documentation/2.4/manual/api/reference/host/update https://www.zabbix.com/documentation/2.4/manual/api/reference/host/object#host

**Returns**: ID of the updated host, False on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.host_update 10084 name='Zabbix server2'

salt.modules.zabbix.**hostgroup_create**(*name*, ***connection_args*)

Create a host group.

**Args**: name: name of the host group

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

all standard host group properties: keyword argument names differ depending on your zabbix version, see:

https://www.zabbix.com/documentation/2.4/manual/api/reference/hostgroup/object#host_group

**Returns**: ID of the created host group, False on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.hostgroup_create MyNewGroup

salt.modules.zabbix.**hostgroup_delete**(*hostgroupids*, ***connection_args*)

Delete the host group.

**Args**: hostgroupids: IDs of the host groups to delete

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

**Returns**: ID of the deleted host groups, False on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.hostgroup_delete 23

salt.modules.zabbix.**hostgroup_exists**(*name=None*, *groupid=None*, *node=None*, *nodeids=None*, ***connection_args*)

Checks if at least one host group that matches the given filter criteria exists.

**Args**: name: names of the host groups groupid: host group IDs node: name of the node the host groups must belong to (zabbix API < 2.4) nodeids: IDs of the nodes the host groups must belong to (zabbix API < 2.4)

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

**Returns**: True if at least one host group exists, False if not or on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.hostgroup_exists MyNewGroup

salt.modules.zabbix.**hostgroup_get**(*name=None*, *groupids=None*, ***connection_args*)

Retrieve host groups according to the given parameters.

**Args**: name: names of the host groups groupid: host group IDs node: name of the node the host groups must belong to nodeids: IDs of the nodes the host groups must belong to

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

all standard hostgroup.get properities: keyword argument names differ depending on your zabbix version, see:

https://www.zabbix.com/documentation/2.2/manual/api/reference/hostgroup/get

**Returns**: Array with host groups details, False if no convenient host group found or on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.hostgroup_get MyNewGroup

salt.modules.zabbix.**hostgroup_list**(***connection_args*)

Retrieve all host groups.

**Args**:

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

**Returns**: Array with details about host groups, False on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.hostgroup_list

salt.modules.zabbix.**hostgroup_update**(*groupid*, *name=None*, ***connection_args*)

Update existing hosts group.

**Args**: groupid: ID of the host group to update name: name of the host group

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

all standard host group properties: keyword argument names differ depending on your zabbix version, see:

https://www.zabbix.com/documentation/2.4/manual/api/reference/hostgroup/object#host_group

**Returns**: IDs of updated host groups, False on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.hostgroup_update 24 name='Renamed Name'

salt.modules.zabbix.**user_addmedia**(*users*, *medias*, ***connection_args*)

Add new media to multiple users.

**Args**: users: Users (userids) to add the media to. madias: media to create for the given users

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

**Returns**: IDs of the created media, False on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.user_addmedia 16 medias='{mediatypeid: 1, sendto: ``support@example.com'', active: 0, severity: 63, period: ``1-7,00:00-24:00''}'

salt.modules.zabbix.**user_create**(*alias*, *passwd*, *usrgrps*, ***connection_args*)

Create new zabbix user.

**Args**: alias: user alias passwd: user's password usrgrps: user groups to add the user to

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

**firstname: string with firstname of the user, use `firstname' instead of `name' parameter to not mess** with value supplied from Salt sls file.

all standard user properties: keyword argument names differ depending on your zabbix version, see:

https://www.zabbix.com/documentation/2.0/manual/appendix/api/user/definitions#user

**Returns**: On success string with id of the created user, False on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.user_create james password007 `[7, 12]' firstname='James Bond'

salt.modules.zabbix.**user_delete**(*users*, ***connection_args*)

Delete zabbix users.

**Args**: users: array of users (userids) to delete

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

**Returns**: On success array with userids of deleted users, False on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.user_delete 15

salt.modules.zabbix.**user_deletemedia**(*mediaids, **connection_args*)

Delete media by id.

**Args**: mediaids: IDs of the media to delete

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

**Returns**: IDs of the deleted media, False on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.user_deletemedia 27

salt.modules.zabbix.**user_exists**(*alias, **connection_args*)

Checks if user with given alias exists.

**Args**: alias: user alias

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

**Returns**: True if user exists, else False.

CLI Example: .. code-block:: bash

salt `*' zabbix.user_exists james

salt.modules.zabbix.**user_get**(*alias=None, userids=None, **connection_args*)

Retrieve users according to the given parameters.

**Args**: alias: user alias userids: return only users with the given IDs

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

**Returns**: Array with details of convenient users, False on failure of if no user found.

CLI Example: .. code-block:: bash

salt `*' zabbix.user_get james

salt.modules.zabbix.**user_list**(***connection_args*)

Retrieve all of the configured users.

**Args**:

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

**Returns**: Array with user details, False on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.user_list

salt.modules.zabbix.**user_update**(*userid, **connection_args*)

Update existing users.

**Args**: userid: id of the user to update

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

all standard user properties: keyword argument names differ depending on your zabbix version, see:

https://www.zabbix.com/documentation/2.0/manual/appendix/api/user/definitions#user

**Returns**: Id of the updated user, False on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.user_update 16 visible_name='James Brown'

salt.modules.zabbix.**user_updatemedia**(*users*, *medias*, ***connection_args*)

Update media for multiple users.

**Args**: users: Users (userids) to update. madias: Media to replace existing media. If a media has the mediaid property defined it will be updated,

otherwise a new media will be created.

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

**Returns**: IDs of the updated users, False on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.user_updatemedia 17 medias='{mediaid: 24, mediatypeid: 1, sendto: ``support_new@example.com'', active: 0, severity: 63, period: ``1-7,00:00-24:00''}'

salt.modules.zabbix.**usergroup_create**(*name*, ***connection_args*)

Create new user group.

**Args**: name: name of the user group

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

all standard user group properties: keyword argument names differ depending on your zabbix version, see:

https://www.zabbix.com/documentation/2.0/manual/appendix/api/usergroup/definitions#user_group

**Returns**: IDs of the created user groups, False on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.usergroup_create GroupName

salt.modules.zabbix.**usergroup_delete**(*usergroupids*, ***connection_args*)

Delete user groups by id.

**Args**: usergroupids: IDs of the user groups to delete

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

**Returns**: IDs of the deleted user groups, False on failure.

CLI Example: .. code-block:: bash

salt `*' zabbix.usergroup_delete 28

salt.modules.zabbix.**usergroup_exists**(*name=None*, *node=None*, *nodeids=None*, ***connection_args*)

Checks if at least one user group that matches the given filter criteria exists

**Args**: name: names of the user groups node: name of the node the user groups must belong to (This will override the nodeids parameter.) nodeids: IDs of the nodes the user groups must belong to

**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

**Returns**: True if at least one user group that matches the given filter criteria exists, else False.

CLI Example: .. code-block:: bash
salt `*' zabbix.usergroup_exists Guests

salt.modules.zabbix.**usergroup_get**(*name=None, usrgrpids=None, **connection_args*)
Retrieve user groups according to the given parameters.
**Args**: name: names of the user groups usrgrpids: return only user groups with the given IDs
**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

all usergroup_get properties: keyword argument names differ depending on your zabbix version, see:

https://www.zabbix.com/documentation/2.4/manual/api/reference/usergroup/get
**Returns**: Array with convenient user groups details, False if no user group found or on failure.
CLI Example: .. code-block:: bash
salt `*' zabbix.usergroup_get Guests

salt.modules.zabbix.**usergroup_list**(***connection_args*)
Retrieve all enabled user groups.
**Args**:
**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)
**Returns**: Array with enabled user groups details, False on failure.
CLI Example: .. code-block:: bash
salt `*' zabbix.usergroup_list

salt.modules.zabbix.**usergroup_update**(*usrgrpid, **connection_args*)
Update existing user group.
**Args**: usrgrpid: ID of the user group to update.
**optional connection_args**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring) _connection_password: zabbix password (can also be set in opts or pillar, see module's docstring) _connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

all standard user group properties: keyword argument names differ depending on your zabbix version, see:

https://www.zabbix.com/documentation/2.4/manual/api/reference/usergroup/object#user_group
**Returns**: IDs of the updated user group, False on failure.
CLI Example: .. code-block:: bash
salt `*' zabbix.usergroup_update 8 name=guestsRenamed

### 13.6.373 salt.modules.zcbuildout

Management of zc.buildout

New in version 2014.1.0.

This module is inspired by minitage's buildout maker

**Note**: The zc.buildout integration is still in beta; the API is subject to change

### General notes

You have those following methods:

- upgrade_bootstrap
- bootstrap
- run_buildout
- buildout

salt.modules.zcbuildout.**bootstrap**(**a*, ***kw*)

Run the buildout bootstrap dance (python bootstrap.py).
**directory** directory to execute in
**config** alternative buildout configuration file to use
**runas** User used to run buildout as
**env** environment variables to set when running
**buildout_ver** force a specific buildout version (1 | 2)
**test_release** buildout accept test release
**offline** are we executing buildout in offline mode
**distribute** Forcing use of distribute
**new_st** Forcing use of setuptools >= 0.7
**python** path to a python executable to use in place of default (salt one)
**onlyif** Only execute cmd if statement on the host return 0
**unless** Do not execute cmd if statement on the host return 0
**use_vt** Use the new salt VT to stream output [experimental]
CLI Example:

```
salt '*' buildout.bootstrap /srv/mybuildout
```

salt.modules.zcbuildout.**buildout**(**a*, ***kw*)

Run buildout in a directory.
**directory** directory to execute in
**config** buildout config to use
**parts** specific buildout parts to run
**runas** user used to run buildout as
**env** environment variables to set when running
**buildout_ver** force a specific buildout version (1 | 2)
**test_release** buildout accept test release
**new_st** Forcing use of setuptools >= 0.7
**distribute** use distribute over setuptools if possible
**offline** does buildout run offline
**python** python to use
**debug** run buildout with -D debug flag
**onlyif** Only execute cmd if statement on the host return 0
**unless** Do not execute cmd if statement on the host return 0
**newest** run buildout in newest mode
**verbose** run buildout in verbose mode (-vvvvv)
**use_vt** Use the new salt VT to stream output [experimental]
CLI Example:

```
salt '*' buildout.buildout /srv/mybuildout
```

salt.modules.zcbuildout.**run_buildout**(**a*, ***kw*)

Run a buildout in a directory.
**directory** directory to execute in

**config** alternative buildout configuration file to use
**offline** are we executing buildout in offline mode
**runas** user used to run buildout as
**env** environment variables to set when running
**onlyif** Only execute cmd if statement on the host return 0
**unless** Do not execute cmd if statement on the host return 0
**newest** run buildout in newest mode
**force** run buildout unconditionally
**verbose** run buildout in verbose mode (-vvvvv)
**use_vt** Use the new salt VT to stream output [experimental]
CLI Example:

```
salt '*' buildout.run_buildout /srv/mybuildout
```

salt.modules.zcbuildout.**upgrade_bootstrap**(**a*, ***kw*)
Upgrade current bootstrap.py with the last released one.

Indeed, when we first run a buildout, a common source of problem is to have a locally stale bootstrap, we just try to grab a new copy
**directory** directory to execute in
**offline** are we executing buildout in offline mode
**buildout_ver** forcing to use a specific buildout version (1 | 2)
**onlyif** Only execute cmd if statement on the host return 0
**unless** Do not execute cmd if statement on the host return 0
CLI Example:

```
salt '*' buildout.upgrade_bootstrap /srv/mybuildout
```

### 13.6.374 salt.modules.zenoss

Module for working with the Zenoss API

New in version 2016.3.0.

**depends** requests

**configuration** This module requires a `zenoss' entry in the master/minion config.

For example:

```
zenoss:
  hostname: https://zenoss.example.com
  username: admin
  password: admin123
```

salt.modules.zenoss.**add_device**(*device=None*, *device_class=None*, *collector='localhost'*, *prod_state=1000*)
A function to connect to a zenoss server and add a new device entry.
**Parameters**: device: (Optional) Will use the grain `fqdn' by default. device_class: (Optional) The device class to use. If none, will determine based on kernel grain. collector: (Optional) The collector to use for this device. Defaults to `localhost'. prod_state: (Optional) The prodState to set on the device. If none, defaults to 1000 ( production )
**CLI Example**: salt `*' zenoss.add_device

salt.modules.zenoss.**device_exists**(*device=None*)
Check to see if a device already exists in Zenoss.
**Parameters**: device: (Optional) Will use the grain `fqdn' by default

**CLI Example:** salt `*' zenoss.device_exists

`salt.modules.zenoss.`**`find_device`**(*device=None*)
Find a device in Zenoss. If device not found, returns None.
**Parameters:** device: (Optional) Will use the grain `fqdn' by default
**CLI Example:** salt `*' zenoss.find_device

`salt.modules.zenoss.`**`set_prod_state`**(*prod_state*, *device=None*)
A function to set the prod_state in zenoss.
**Parameters:** prod_state: (Required) Integer value of the state device: (Optional) Will use the grain `fqdn' by default.
**CLI Example:** salt zenoss.set_prod_state 1000 hostname

### 13.6.375 salt.modules.zfs

Salt interface to ZFS commands

**codeauthor** Nitin Madhok <nmadhok@clemson.edu>

`salt.modules.zfs.`**`bookmark`**(*snapshot*, *bookmark*)
New in version 2016.3.0.

Creates a bookmark of the given snapshot

---

**Note:** Bookmarks mark the point in time when the snapshot was created, and can be used as the incremental source for a zfs send command.

This feature must be enabled to be used. See zpool-features(5) for details on ZFS feature flags and the bookmarks feature.

---

**snapshot** [string] name of snapshot to bookmark
**bookmark** [string] name of bookmark

CLI Example:

```
salt '*' zfs.bookmark myzpool/mydataset@yesterday myzpool/mydataset#complete
```

`salt.modules.zfs.`**`clone`**(*name_a*, *name_b*, ***kwargs*)
New in version 2016.3.0.

Creates a clone of the given snapshot.
**name_a** [string] name of snapshot
**name_b** [string] name of filesystem or volume
**create_parent** [boolean] creates all the non-existing parent datasets. any property specified on the command line using the -o option is ignored.
**properties** [dict] additional zfs properties (-o)

---

**Note:** ZFS properties can be specified at the time of creation of the filesystem by passing an additional argument called ``properties'' and specifying the properties with their respective values in the form of a python dictionary:

```
properties="{'property1': 'value1', 'property2': 'value2'}"
```

---

CLI Example:

```
salt '*' zfs.clone myzpool/mydataset@yesterday myzpool/mydataset_yesterday
```

salt.modules.zfs.**create**(*name*, ***kwargs*)

New in version 2015.5.0.

Changed in version 2016.3.0.

Create a ZFS File System.
**name** [string] name of dataset or volume
**volume_size** [string] if specified, a zvol will be created instead of a dataset
**sparse** [boolean] create sparse volume
**create_parent** [boolean] creates all the non-existing parent datasets. any property specified on the command line using the -o option is ignored.
**properties** [dict] additional zfs properties (-o)

---

**Note**: ZFS properties can be specified at the time of creation of the filesystem by passing an additional argument called ``properties'' and specifying the properties with their respective values in the form of a python dictionary:

```
properties="{'property1': 'value1', 'property2': 'value2'}"
```

---

CLI Example:

```
salt '*' zfs.create myzpool/mydataset [create_parent=True|False]
salt '*' zfs.create myzpool/mydataset properties="{'mountpoint': '/export/zfs',
 ↪'sharenfs': 'on'}"
salt '*' zfs.create myzpool/volume volume_size=1G [sparse=True|False]`
salt '*' zfs.create myzpool/volume volume_size=1G properties="{'volblocksize':
 ↪'512'}" [sparse=True|False]
```

salt.modules.zfs.**destroy**(*name*, ***kwargs*)

New in version 2015.5.0.

Destroy a ZFS File System.
**name** [string] name of dataset, volume, or snapshot
**force** [boolean] force an unmount of any file systems using the unmount -f command.
**recursive** [boolean] recursively destroy all children. (-r)
**recursive_all** [boolean] recursively destroy all dependents, including cloned file systems outside the target hierarchy. (-R)

**Warning**: watch out when using recursive and recursive_all

CLI Example:

```
salt '*' zfs.destroy myzpool/mydataset [force=True|False]
```

salt.modules.zfs.**diff**(*name_a*, *name_b*, ***kwargs*)

New in version 2016.3.0.

Display the difference between a snapshot of a given filesystem and another snapshot of that filesystem from a later time or the current contents of the filesystem.
**name_a** [string] name of snapshot
**name_b** [string] name of snapshot or filesystem
**show_changetime** [boolean] display the path's inode change time as the first column of output. (default = False)

**show_indication** [boolean] display an indication of the type of file. (default = True)
CLI Example:

```
salt '*' zfs.diff myzpool/mydataset@yesterday myzpool/mydataset
```

salt.modules.zfs.**exists**(*name*, ***kwargs*)
New in version 2015.5.0.

Check if a ZFS filesystem or volume or snapshot exists.
**name** [string] name of dataset
**type** [string] also check if dataset is of a certain type, valid choices are: filesystem, snapshot, volume, bookmark, or all.
CLI Example:

```
salt '*' zfs.exists myzpool/mydataset
salt '*' zfs.exists myzpool/myvolume type=volume
```

salt.modules.zfs.**get**(**dataset*, ***kwargs*)
New in version 2016.3.0.

Displays properties for the given datasets.
***dataset** [string] name of snapshot(s), filesystem(s), or volume(s)
**properties** [string] comma-separated list of properties to list, defaults to all
**recursive** [boolean] recursively list children
**depth** [int] recursively list children to depth
**fields** [string] comma-separated list of fields to include, the name and property field will always be added
**type** [string] comma-separated list of types to display, where type is one of filesystem, snapshot, volume, bookmark, or all.
**source** [string] comma-separated list of sources to display. Must be one of the following: local, default, inherited, temporary, and none. The default value is all sources.

---

**Note:** If no datasets are specified, then the command displays properties for all datasets on the system.

---

CLI Example:

```
salt '*' zfs.get
salt '*' zfs.get myzpool/mydataset [recursive=True|False]
salt '*' zfs.get myzpool/mydataset properties="sharenfs,mountpoint"
↪[recursive=True|False]
salt '*' zfs.get myzpool/mydataset myzpool/myotherdataset properties=available
↪fields=value depth=1
```

salt.modules.zfs.**hold**(*tag*, **snapshot*, ***kwargs*)
New in version 2016.3.0.

Adds a single reference, named with the tag argument, to the specified snapshot or snapshots.

---

**Note:** Each snapshot has its own tag namespace, and tags must be unique within that space.

If a hold exists on a snapshot, attempts to destroy that snapshot by using the zfs destroy command return EBUSY.

---

**tag** [string] name of tag
***snapshot** [string] name of snapshot(s)
**recursive** [boolean] specifies that a hold with the given tag is applied recursively to the snapshots of all descendent file systems.

**Note:** A comma-separated list can be provided for the tag parameter to hold multiple tags.

CLI Example:

```
salt '*' zfs.hold mytag myzpool/mydataset@mysnapshot [recursive=True]
salt '*' zfs.hold mytag,myothertag myzpool/mydataset@mysnapshot
salt '*' zfs.hold mytag myzpool/mydataset@mysnapshot myzpool/
↪mydataset@myothersnapshot
```

salt.modules.zfs.**holds**(*snapshot*, ***kwargs*)

New in version 2016.3.0.

Lists all existing user references for the given snapshot or snapshots.
**snapshot** [string] name of snapshot
**recursive** [boolean] lists the holds that are set on the named descendent snapshots also.
CLI Example:

```
salt '*' zfs.holds myzpool/mydataset@baseline
```

salt.modules.zfs.**inherit**(*prop*, *name*, ***kwargs*)

New in version 2016.3.0.

Clears the specified property
**prop** [string] name of property
**name** [string] name of the filesystem, volume, or snapshot
**recursive** [boolean] recursively inherit the given property for all children.
**revert** [boolean] revert the property to the received value if one exists; otherwise operate as if the -S option was not specified.
CLI Example:

```
salt '*' zfs.inherit canmount myzpool/mydataset [recursive=True|False]
```

salt.modules.zfs.**list**(*name=None*, ***kwargs*)

New in version 2015.5.0.

Changed in version 2016.3.0.

Return a list of all datasets or a specified dataset on the system and the values of their used, available, referenced, and mountpoint properties.
**name** [string] name of dataset, volume, or snapshot
**recursive** [boolean] recursively list children
**depth** [int] limit recursion to depth
**properties** [string] comma-separated list of properties to list, the name property will always be added
**type** [string] comma-separated list of types to display, where type is one of filesystem, snapshot, volume, bookmark, or all.
**sort** [string] property to sort on (default = name)
**order** [string [ascending|descending]] sort order (default = ascending)
CLI Example:

```
salt '*' zfs.list
salt '*' zfs.list myzpool/mydataset [recursive=True|False]
salt '*' zfs.list myzpool/mydataset properties="sharenfs,mountpoint"
```

salt.modules.zfs.**mount**(*name='-a'*, ***kwargs*)

New in version 2016.3.0.

Mounts ZFS file systems

**name** [string] name of the filesystem, you can use `-a' to mount all unmounted filesystems. (this is the default)
**overlay** [boolean] perform an overlay mount.
**options** [string] optional comma-separated list of mount options to use temporarily for the duration of the mount.
CLI Example:

```
salt '*' zfs.mount
salt '*' zfs.mount myzpool/mydataset
salt '*' zfs.mount myzpool/mydataset options=ro
```

salt.modules.zfs.**promote**(*name*)
New in version 2016.3.0.

Promotes a clone file system to no longer be dependent on its ``origin'' snapshot.

---

**Note**: This makes it possible to destroy the file system that the clone was created from. The clone parent-child dependency relationship is reversed, so that the origin file system becomes a clone of the specified file system.

The snapshot that was cloned, and any snapshots previous to this snapshot, are now owned by the promoted clone. The space they use moves from the origin file system to the promoted clone, so enough space must be available to accommodate these snapshots. No new space is consumed by this operation, but the space accounting is adjusted. The promoted clone must not have any conflicting snapshot names of its own. The rename subcommand can be used to rename any conflicting snapshots.

---

**name** [string] name of clone-filesystem

CLI Example:

```
salt '*' zfs.promote myzpool/myclone
```

salt.modules.zfs.**release**(*tag*, **snapshot*, ***kwargs*)
New in version 2016.3.0.

Removes a single reference, named with the tag argument, from the specified snapshot or snapshots.

---

**Note**: The tag must already exist for each snapshot. If a hold exists on a snapshot, attempts to destroy that snapshot by using the zfs destroy command return EBUSY.

---

**tag** [string] name of tag
***snapshot** [string] name of snapshot(s)
**recursive** [boolean] recursively releases a hold with the given tag on the snapshots of all descendent file systems.

---

**Note**: A comma-separated list can be provided for the tag parameter to release multiple tags.

---

CLI Example:

```
salt '*' zfs.release mytag myzpool/mydataset@mysnapshot [recursive=True]
salt '*' zfs.release mytag myzpool/mydataset@mysnapshot myzpool/
↪mydataset@myothersnapshot
```

salt.modules.zfs.**rename**(*name*, *new_name*, ***kwargs*)
New in version 2015.5.0.

Changed in version 2016.3.0.

Rename or Relocate a ZFS File System.
**name** [string] name of dataset, volume, or snapshot
**new_name** [string] new name of dataset, volume, or snapshot
**force** [boolean] force unmount any filesystems that need to be unmounted in the process.
**create_parent** [boolean] creates all the nonexistent parent datasets. Datasets created in this manner are automatically mounted according to the mountpoint property inherited from their parent.
**recursive** [boolean] recursively rename the snapshots of all descendent datasets. snapshots are the only dataset that can be renamed recursively.
CLI Example:

```
salt '*' zfs.rename myzpool/mydataset myzpool/renameddataset
```

salt.modules.zfs.**rollback**(*name*, ***kwargs*)
New in version 2016.3.0.

Roll back the given dataset to a previous snapshot.

> **Warning**: When a dataset is rolled back, all data that has changed since the snapshot is discarded, and the dataset reverts to the state at the time of the snapshot. By default, the command refuses to roll back to a snapshot other than the most recent one.
>
> In order to do so, all intermediate snapshots and bookmarks must be destroyed by specifying the -r option.

**name** [string] name of snapshot
**recursive** [boolean] destroy any snapshots and bookmarks more recent than the one specified.
**recursive_all** [boolean] destroy any more recent snapshots and bookmarks, as well as any clones of those snapshots.
**force** [boolean] used with the -R option to force an unmount of any clone file systems that are to be destroyed.

CLI Example:

```
salt '*' zfs.rollback myzpool/mydataset@yesterday
```

salt.modules.zfs.**set**(**dataset*, ***kwargs*)
New in version 2016.3.0.

Sets the property or list of properties to the given value(s) for each dataset.
*__dataset__ [string] name of snapshot(s), filesystem(s), or volume(s)
*__properties__ [string] additional zfs properties pairs

---

**Note**: properties are passed as key-value pairs. e.g.
compression=off

---

---

**Note**: Only some properties can be edited.

See the Properties section for more information on what properties can be set and acceptable values.

Numeric values can be specified as exact values, or in a human-readable form with a suffix of B, K, M, G, T, P, E, Z (for bytes, kilobytes, megabytes, gigabytes, terabytes, petabytes, exabytes, or zettabytes, respectively).

---

CLI Example:

```
salt '*' zfs.set myzpool/mydataset compression=off
salt '*' zfs.set myzpool/mydataset myzpool/myotherdataset compression=off
salt '*' zfs.set myzpool/mydataset myzpool/myotherdataset compression=lz4
↪canmount=off
```

```
```

salt.modules.zfs.**snapshot**(**snapshot*, ***kwargs*)

New in version 2016.3.0.

Creates snapshots with the given names.
***snapshot** [string] name of snapshot(s)
**recursive** [boolean] recursively create snapshots of all descendent datasets.
**properties** [dict] additional zfs properties (-o)

---

**Note:** ZFS properties can be specified at the time of creation of the filesystem by passing an additional argument called ``properties'' and specifying the properties with their respective values in the form of a python dictionary:

```
properties="{'property1': 'value1', 'property2': 'value2'}"
```

---

CLI Example:

```
salt '*' zfs.snapshot myzpool/mydataset@yesterday [recursive=True]
salt '*' zfs.snapshot myzpool/mydataset@yesterday myzpool/
 ↪myotherdataset@yesterday [recursive=True]
```

salt.modules.zfs.**unmount**(*name*, ***kwargs*)

New in version 2016.3.0.

Unmounts ZFS file systems
**name** [string] name of the filesystem, you can use `-a' to unmount all mounted filesystems.
**force** [boolean] forcefully unmount the file system, even if it is currently in use.

**Warning:** Using `-a` for the name parameter will probably break your system, unless your rootfs is not on zfs.

CLI Example:

```
salt '*' zfs.unmount myzpool/mydataset [force=True|False]
```

### 13.6.376 salt.modules.zk_concurrency

#### Concurrency controls in zookeeper

This module allows you to acquire and release a slot. This is primarily useful for ensureing that no more than N hosts take a specific action at once. This can also be used to coordinate between masters.

salt.modules.zk_concurrency.**lock**(*path*, *zk_hosts*, *identifier=None*, *max_concurrency=1*, *timeout=None*, *ephemeral_lease=False*, *force=False*)

Get lock (with optional timeout)
**path** The path in zookeeper where the lock is
**zk_hosts** zookeeper connect string
**identifier** Name to identify this minion
**max_concurrency** Maximum number of lock holders
**timeout** timeout to wait for the lock. A None timeout will block forever
**ephemeral_lease** Whether the locks in zookeper should be ephemeral
**force** Forcibly acquire the lock regardless of available slots

Example:

... code-block: bash
salt minion zk_concurrency.lock /lock/path host1:1234,host2:1234

salt.modules.zk_concurrency.**lock_holders**(*path*, *zk_hosts*, *identifier=None*, *max_concurrency=1*, *timeout=None*, *ephemeral_lease=False*)

Return an un-ordered list of lock holders
**path** The path in zookeeper where the lock is
**zk_hosts** zookeeper connect string
**identifier** Name to identify this minion
**max_concurrency** Maximum number of lock holders
**timeout** timeout to wait for the lock. A None timeout will block forever
**ephemeral_lease** Whether the locks in zookeper should be ephemeral
Example:

... code-block: bash
salt minion zk_concurrency.lock_holders /lock/path host1:1234,host2:1234

salt.modules.zk_concurrency.**party_members**(*path*, *zk_hosts*)

Get the List of identifiers in a particular party
**path** The path in zookeeper where the lock is
**zk_hosts** zookeeper connect string
Example:

... code-block: bash
salt minion zk_concurrency.party_members /lock/path host1:1234,host2:1234

salt.modules.zk_concurrency.**unlock**(*path*, *zk_hosts=None*, *identifier=None*, *max_concurrency=1*, *ephemeral_lease=False*)

Remove lease from semaphore
**path** The path in zookeeper where the lock is
**zk_hosts** zookeeper connect string
**identifier** Name to identify this minion
**max_concurrency** Maximum number of lock holders
**timeout** timeout to wait for the lock. A None timeout will block forever
**ephemeral_lease** Whether the locks in zookeper should be ephemeral
Example:

... code-block: bash
salt minion zk_concurrency.unlock /lock/path host1:1234,host2:1234

### 13.6.377 salt.modules.znc

znc - An advanced IRC bouncer

New in version 2014.7.0.

Provides an interface to basic ZNC functionality

salt.modules.znc.**buildmod**(**modules*)

Build module using znc-buildmod

CLI Example:

```
salt '*' znc.buildmod module.cpp [...]
```

salt.modules.znc.**dumpconf**()
Write the active configuration state to config file

CLI Example:

```
salt '*' znc.dumpconf
```

salt.modules.znc.**rehashconf**()
Rehash the active configuration state from config file

CLI Example:

```
salt '*' znc.rehashconf
```

salt.modules.znc.**version**()
Return server version from znc --version

CLI Example:

```
salt '*' znc.version
```

### 13.6.378 salt.modules.zpool

Module for running ZFS zpool command

**codeauthor** Nitin Madhok <nmadhok@clemson.edu>

salt.modules.zpool.**add**(*zpool*, **vdevs*, ***kwargs*)
Changed in version 2016.3.0.

Add the specified vdev's to the given storage pool
**zpool** [string] name of storage pool
***vdevs** [string] one or more devices
**force** [boolean] forces use of device
CLI Example:

```
salt '*' zpool.add myzpool /path/to/vdev1 /path/to/vdev2 [...]
```

salt.modules.zpool.**attach**(*zpool*, *device*, *new_device*, *force=False*)
Changed in version 2016.3.0.

Attach specified device to zpool
**zpool** [string] name of storage pool
**device** [string] device to attach too
**new_device** [string] device to attach
**force** [boolean] forces use of device
CLI Example:

```
salt '*' zpool.attach myzpool /path/to/vdev1 /path/to/vdev2 [...]
```

salt.modules.zpool.**create**(*zpool*, **vdevs*, ***kwargs*)
New in version 2015.5.0.

Changed in version 2016.3.0.

Create a simple zpool, a mirrored zpool, a zpool having nested VDEVs, a hybrid zpool with cache, spare and log drives or a zpool with RAIDZ-1, RAIDZ-2 or RAIDZ-3
**zpool** [string] name of storage pool

*__vdevs__ [string] one or move devices
__force__ [boolean] forces use of vdevs, even if they appear in use or specify a conflicting replication level.
__mountpoint__ [string] sets the mount point for the root dataset
__altroot__ [string] equivalent to ``-o cachefile=none,altroot=root''
__properties__ [dict] additional pool properties
__filesystem_properties__ [dict] additional filesystem properties
CLI Example:

```
salt '*' zpool.create myzpool /path/to/vdev1 [...] [force=True|False]
salt '*' zpool.create myzpool mirror /path/to/vdev1 /path/to/vdev2 [...]
 ↪[force=True|False]
salt '*' zpool.create myzpool raidz1 /path/to/vdev1 /path/to/vdev2 raidz2 /path/
 ↪to/vdev3 /path/to/vdev4 /path/to/vdev5 [...] [force=True|False]
salt '*' zpool.create myzpool mirror /path/to/vdev1 [...] mirror /path/to/vdev2 /
 ↪path/to/vdev3 [...] [force=True|False]
salt '*' zpool.create myhybridzpool mirror /tmp/file1 [...] log mirror /path/to/
 ↪vdev1 [...] cache /path/to/vdev2 [...] spare /path/to/vdev3 [...]
 ↪[force=True|False]
```

---

**Note**: Zpool properties can be specified at the time of creation of the pool by passing an additional argument called ``properties'' and specifying the properties with their respective values in the form of a python dictionary:

```
properties="{'property1': 'value1', 'property2': 'value2'}"
```

Filesystem properties can be specified at the time of creation of the pool by passing an additional argument called ``filesystem_properties'' and specifying the properties with their respective values in the form of a python dictionary:

```
filesystem_properties="{'property1': 'value1', 'property2': 'value2'}"
```

Example:

```
salt '*' zpool.create myzpool /path/to/vdev1 [...] properties="{'property1':
 ↪'value1', 'property2': 'value2'}"
```

---

`salt.modules.zpool.`**`create_file_vdev`**(*size*, **vdevs*)
Changed in version 2016.3.0.

Creates file based `virtual devices` for a zpool

`*vdevs` is a list of full paths for mkfile to create

CLI Example:

```
salt '*' zpool.create_file_vdev 7g /path/to/vdev1 [/path/to/vdev2] [...]
```

---

**Note**: Depending on file size, the above command may take a while to return.

---

`salt.modules.zpool.`**`destroy`**(*zpool*, *force=False*)
Changed in version 2016.3.0.

Destroys a storage pool
__zpool__ [string] name of storage pool
__force__ [boolean] force destroy of pool

CLI Example:

```
salt '*' zpool.destroy myzpool
```

salt.modules.zpool.**detach**(*zpool*, *device*)

Changed in version 2016.3.0.

Detach specified device to zpool
**zpool** [string] name of storage pool
**device** [string] device to detach
CLI Example:

```
salt '*' zpool.detach myzpool /path/to/vdev1
```

salt.modules.zpool.**exists**(*zpool*)

Check if a ZFS storage pool is active
**zpool** [string] name of storage pool
CLI Example:

```
salt '*' zpool.exists myzpool
```

salt.modules.zpool.**export**(**pools*, ***kwargs*)

New in version 2015.5.0.

Changed in version 2016.3.0.

Export storage pools
***pools** [string] one or more storage pools to export
**force** [boolean] force export of storage pools
CLI Example:

```
salt '*' zpool.export myzpool ... [force=True|False]
salt '*' zpool.export myzpool2 myzpool2 ... [force=True|False]
```

salt.modules.zpool.**get**(*zpool*, *prop=None*, *show_source=False*)

New in version 2016.3.0.

Retrieves the given list of properties
**zpool** [string] name of storage pool
**prop** [string] optional name of property to retrieve
**show_source** [boolean] show source of property
CLI Example:

```
salt '*' zpool.get myzpool
```

salt.modules.zpool.**healthy**()

New in version 2016.3.0.

Check if all zpools are healthy

CLI Example:

```
salt '*' zpool.healthy
```

salt.modules.zpool.**history**(*zpool=None*, *internal=False*, *verbose=False*)

New in version 2016.3.0.

Displays the command history of the specified pools or all pools if no pool is specified
**zpool** [string] optional storage pool

**internal** [boolean] toggle display of internally logged ZFS events
**verbose** [boolean] toggle display of the user name, the hostname, and the zone in which the operation was performed
CLI Example:

```
salt '*' zpool.upgrade myzpool
```

salt.modules.zpool.**import**(*zpool=None*, *new_name=None*, ***kwargs*)
New in version 2015.5.0.

Changed in version 2016.3.0.

Import storage pools or list pools available for import
**zpool** [string] optional name of storage pool
**new_name** [string] optional new name for the storage pool
**mntopts** [string] comma-separated list of mount options to use when mounting datasets within the pool.
**force** [boolean] forces import, even if the pool appears to be potentially active.
**altroot** [string] equivalent to ``-o cachefile=none,altroot=root''
**dir** [string] searches for devices or files in dir, multiple dirs can be specified as follows:: dir="dir1,dir2"
**no_mount** [boolean] import the pool without mounting any file systems.
**only_destroyed** [boolean] imports destroyed pools only. this also sets force=True.
**properties** [dict] additional pool properties

---

**Note**: Zpool properties can be specified at the time of creation of the pool by passing an additional argument called ``properties'' and specifying the properties with their respective values in the form of a python dictionary:

```
properties="{'property1': 'value1', 'property2': 'value2'}"
```

---

CLI Example:

```
salt '*' zpool.import [force=True|False]
salt '*' zpool.import myzpool [mynewzpool] [force=True|False]
salt '*' zpool.import myzpool dir='/tmp'
```

salt.modules.zpool.**iostat**(*zpool=None*, *sample_time=0*)
Changed in version 2016.3.0.

Display I/O statistics for the given pools
**zpool** [string] optional name of storage pool
**sample_time** [int] seconds to capture data before output
CLI Example:

```
salt '*' zpool.iostat myzpool
```

salt.modules.zpool.**list**(*properties='size, alloc, free, cap, frag, health'*, *zpool=None*)
New in version 2015.5.0.

Changed in version 2016.3.0.

Return information about (all) storage pools
**zpool** [string] optional name of storage pool
**properties** [string] comma-separated list of properties to list

---

**Note**: the `name' property will always be included, the `frag' property will get removed if not available

---

**zpool** [string] optional zpool

---

**Note**: multiple storage pool can be provded as a space separated list

---

CLI Example:

```
salt '*' zpool.list
```

salt.modules.zpool.**offline**(*zpool*, **vdevs*, ***kwargs*)

New in version 2015.5.0.

Changed in version 2016.3.0.

Ensure that the specified devices are offline

**Warning**: By default, the OFFLINE state is persistent. The device remains offline when the system is rebooted. To temporarily take a device offline, use `temporary=True`.

**zpool** [string] name of storage pool
*__vdevs__ [string] one or more devices
**temporary** [boolean] enable temporarily offline

CLI Example:

```
salt '*' zpool.offline myzpool /path/to/vdev1 [...] [temporary=True|False]
```

salt.modules.zpool.**online**(*zpool*, **vdevs*, ***kwargs*)

New in version 2015.5.0.

Changed in version 2016.3.0.

Ensure that the specified devices are online
**zpool** [string] name of storage pool
*__vdevs__ [string] one or more devices
**expand** [boolean] Expand the device to use all available space.

---

**Note**: If the device is part of a mirror or raidz then all devices must be expanded before the new space will become available to the pool.

---

CLI Example:

```
salt '*' zpool.online myzpool /path/to/vdev1 [...]
```

salt.modules.zpool.**reguid**(*zpool*)

New in version 2016.3.0.

Generates a new unique identifier for the pool

**Warning**: You must ensure that all devices in this pool are online and healthy before performing this action.

**zpool** [string] name of storage pool

CLI Example:

```
salt '*' zpool.reguid myzpool
```

salt.modules.zpool.**reopen**(*zpool*)
New in version 2016.3.0.

Reopen all the vdevs associated with the pool
**zpool** [string] name of storage pool
CLI Example:

```
salt '*' zpool.reopen myzpool
```

salt.modules.zpool.**replace**(*zpool*, *old_device*, *new_device=None*, *force=False*)
Changed in version 2016.3.0.

Replaces old_device with new_device.

---

**Note**: This is equivalent to attaching new_device, waiting for it to resilver, and then detaching old_device.

The size of new_device must be greater than or equal to the minimum size of all the devices in a mirror or raidz configuration.

---

**zpool** [string] name of storage pool
**old_device** [string] old device to replace
**new_device** [string] optional new device
**force** [boolean] Forces use of new_device, even if its appears to be in use.

CLI Example:

```
salt '*' zpool.replace myzpool /path/to/vdev1 /path/to/vdev2
```

salt.modules.zpool.**scrub**(*zpool*, *stop=False*)
Changed in version 2016.3.0.

Scrub a storage pool
**zpool** [string] name of storage pool
**stop** [boolean] if true, cancel ongoing scrub
CLI Example:

```
salt '*' zpool.scrub myzpool
```

salt.modules.zpool.**set**(*zpool*, *prop*, *value*)
New in version 2016.3.0.

Sets the given property on the specified pool
**zpool** [string] name of storage pool
**prop** [string] name of property
**value** [string] value to set property to
CLI Example:

```
salt '*' zpool.set myzpool readonly yes
```

salt.modules.zpool.**status**(*zpool=None*)
Changed in version 2016.3.0.

Return the status of the named zpool
**zpool** [string] optional name of storage pool
CLI Example:

```
salt '*' zpool.status myzpool
```

salt.modules.zpool.**upgrade**(*zpool=None*, *version=None*)
New in version 2016.3.0.

Enables all supported features on the given pool

> **Warning**: Once this is done, the pool will no longer be accessible on systems that do not support feature flags. See zpool-features(5) for details on compatibility with systems that support feature flags, but do not support all features enabled on the pool.

**zpool** [string] optional storage pool, applies to all otherwize
**version** [int] version to upgrade to, if unspecified upgrade to the highest possible

CLI Example:

```
salt '*' zpool.upgrade myzpool
```

salt.modules.zpool.**zpool_list**()
Deprecated since version 2014.7.0: Use *list()* instead.

Return a list of all pools in the system with health status and space usage

CLI Example:

```
salt '*' zpool.zpool_list
```

### 13.6.379 salt.modules.zypper

Package support for openSUSE via the zypper package manager

**depends**

- `rpm` Python module. Install with `zypper install rpm-python`

**Important**: If you feel that Salt should be using this module to manage packages on a minion, and it is using a different module (or gives an error similar to *`pkg.install' is not available*), see *here*.

salt.modules.zypper.**add_lock**(*packages*, ***kwargs*)
Add a package lock. Specify packages to lock by exact name.

CLI Example:

```
salt '*' pkg.add_lock <package name>
salt '*' pkg.add_lock <package1>,<package2>,<package3>
salt '*' pkg.add_lock pkgs='["foo", "bar"]'
```

salt.modules.zypper.**clean_locks**()
Remove unused locks that do not currently (with regard to repositories used) lock any package.

CLI Example:

```
salt '*' pkg.clean_locks
```

salt.modules.zypper.**del_repo**(*repo*)

Delete a repo.

CLI Examples:

```
salt '*' pkg.del_repo alias
```

salt.modules.zypper.**diff**(**paths*)

Return a formatted diff between current files and original in a package. NOTE: this function includes all files (configuration and not), but does not work on binary content.

**Parameters** **path** -- Full path to the installed file

**Returns** Difference string or raises and exception if examined file is binary.

CLI example:

```
salt '*' pkg.diff /etc/apache2/httpd.conf /etc/sudoers
```

salt.modules.zypper.**download**(**packages*, ***kwargs*)

Download packages to the local disk.

**refresh** force a refresh if set to True. If set to False (default) it depends on zypper if a refresh is executed.

CLI example:

```
salt '*' pkg.download httpd
salt '*' pkg.download httpd postfix
```

salt.modules.zypper.**file_dict**(**packages*)

List the files that belong to a package, grouped by package. Not specifying any packages will return a list of *every* file on the system's rpm database (not generally recommended).

CLI Examples:

```
salt '*' pkg.file_list httpd
salt '*' pkg.file_list httpd postfix
salt '*' pkg.file_list
```

salt.modules.zypper.**file_list**(**packages*)

List the files that belong to a package. Not specifying any packages will return a list of *every* file on the system's rpm database (not generally recommended).

CLI Examples:

```
salt '*' pkg.file_list httpd
salt '*' pkg.file_list httpd postfix
salt '*' pkg.file_list
```

salt.modules.zypper.**get_repo**(*repo*, ***kwargs*)

Display a repo.

CLI Example:

```
salt '*' pkg.get_repo alias
```

salt.modules.zypper.**info**(**names*, ***kwargs*)

Deprecated since version 2016.3.0: Use `info_available()` instead.

Return the information of the named package available for the system.

CLI example:

```
salt '*' pkg.info <package1>
salt '*' pkg.info <package1> <package2> <package3> ...
```

salt.modules.zypper.**info_available**(**names*, ***kwargs*)

Return the information of the named package available for the system.

**refresh** force a refresh if set to True (default). If set to False it depends on zypper if a refresh is executed or not.

CLI example:

```
salt '*' pkg.info_available <package1>
salt '*' pkg.info_available <package1> <package2> <package3> ...
```

salt.modules.zypper.**info_installed**(**names*, ***kwargs*)

Return the information of the named package(s), installed on the system.

**Parameters**

- **names** -- Names of the packages to get information about.
- **attr** -- Comma-separated package attributes. If no `attr' is specified, all available attributes returned.

  **Valid attributes are**: version, vendor, release, build_date, build_date_time_t, install_date, install_date_time_t, build_host, group, source_rpm, arch, epoch, size, license, signature, packager, url, summary, description.
- **errors** -- Handle RPM field errors (true|false). By default, various mistakes in the textual fields are simply ignored and omitted from the data. Otherwise a field with a mistake is not returned, instead a `N/A (bad UTF-8)' (not available, broken) text is returned.

  **Valid attributes are**: ignore, report

CLI example:

```
salt '*' pkg.info_installed <package1>
salt '*' pkg.info_installed <package1> <package2> <package3> ...
salt '*' pkg.info_installed <package1> attr=version,vendor
salt '*' pkg.info_installed <package1> <package2> <package3> ...
 ↪attr=version,vendor
salt '*' pkg.info_installed <package1> <package2> <package3> ...
 ↪attr=version,vendor errors=true
```

salt.modules.zypper.**install**(*name=None*, *refresh=False*, *fromrepo=None*, *pkgs=None*, *sources=None*, *downloadonly=None*, *skip_verify=False*, *version=None*, *ignore_repo_failure=False*, ***kwargs*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any zypper commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *`config option`* called `systemd.scope`, with a value of `False` (no quotes).

Install the passed package(s), add refresh=True to force a `zypper refresh' before package is installed.

**name** The name of the package to be installed. Note that this parameter is ignored if either `pkgs` or `sources` is passed. Additionally, please note that this option can only be used to install packages from a software repository. To install a package file manually, use the `sources` option.

CLI Example:

```
salt '*' pkg.install <package name>
```

**refresh** force a refresh if set to True. If set to False (default) it depends on zypper if a refresh is executed.
**fromrepo** Specify a package repository to install from.
**downloadonly** Only download the packages, do not install.
**skip_verify** Skip the GPG verification check (e.g., `--no-gpg-checks`)
**version** Can be either a version number, or the combination of a comparison operator (<, >, <=, >=, =) and a version number (ex. `>1.2.3-4'). This parameter is ignored if `pkgs` or `sources` is passed.
Multiple Package Installation Options:
**pkgs** A list of packages to install from a software repository. Must be passed as a python list. A specific version number can be specified by using a single-element dict representing the package and its version. As with the `version` parameter above, comparison operators can be used to target a specific version of a package.

CLI Examples:

```
salt '*' pkg.install pkgs='["foo", "bar"]'
salt '*' pkg.install pkgs='["foo", {"bar": "1.2.3-4"}]'
salt '*' pkg.install pkgs='["foo", {"bar": "<1.2.3-4"}]'
```

**sources** A list of RPM packages to install. Must be passed as a list of dicts, with the keys being package names, and the values being the source URI or local path to the package.

CLI Example:

```
salt '*' pkg.install sources='[{"foo": "salt://foo.rpm"},{"bar": "salt://bar.
↪rpm"}]'
```

**ignore_repo_failure** Zypper returns error code 106 if one of the repositories are not available for various reasons. In case to set strict check, this parameter needs to be set to True. Default: False.
Returns a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

`salt.modules.zypper.`**`latest_version`**`(`*names*, ***kwargs*`)`
Return the latest version of the named package available for upgrade or installation. If more than one package name is specified, a dict of name/version pairs is returned.

If the latest version of a given package is already installed, an empty dict will be returned for that package.
**refresh** force a refresh if set to True (default). If set to False it depends on zypper if a refresh is executed or not.
CLI example:

```
salt '*' pkg.latest_version <package name>
salt '*' pkg.latest_version <package1> <package2> <package3> ...
```

`salt.modules.zypper.`**`list_installed_patterns`**`()`
List installed patterns on the system.

CLI Examples:

```
salt '*' pkg.list_installed_patterns
```

`salt.modules.zypper.`**`list_locks`**`()`
List current package locks.

Return a dict containing the locked package with attributes:

```
{'<package>': {'case_sensitive': '<case_sensitive>',
               'match_type': '<match_type>'
               'type': '<type>'}}
```

CLI Example:

```
salt '*' pkg.list_locks
```

salt.modules.zypper.**list_patterns**(*refresh=False*)

List all known patterns from available repos.

**refresh** force a refresh if set to True. If set to False (default) it depends on zypper if a refresh is executed.

CLI Examples:

```
salt '*' pkg.list_patterns
```

salt.modules.zypper.**list_pkgs**(*versions_as_list=False*, ***kwargs*)

List the packages currently installed as a dict with versions as a comma separated string:

```
{'<package_name>': '<version>[,<version>...]'}
```

**versions_as_list**: If set to true, the versions are provided as a list

{`<package_name>': ['<version>', `<version>']}

**removed**: not supported

**purge_desired**: not supported

CLI Example:

```
salt '*' pkg.list_pkgs
```

salt.modules.zypper.**list_products**(*all=False*, *refresh=False*)

List all available or installed SUSE products.

**all** List all products available or only installed. Default is False.

**refresh** force a refresh if set to True. If set to False (default) it depends on zypper if a refresh is executed.

Includes handling for OEM products, which read the OEM productline file and overwrite the release value.

CLI Examples:

```
salt '*' pkg.list_products
salt '*' pkg.list_products all=True
```

salt.modules.zypper.**list_repos**()

Lists all repos.

CLI Example:

```
salt '*' pkg.list_repos
```

salt.modules.zypper.**list_upgrades**(*refresh=True*, ***kwargs*)

List all available package upgrades on this system

**refresh** force a refresh if set to True (default). If set to False it depends on zypper if a refresh is executed.

CLI Example:

```
salt '*' pkg.list_upgrades
```

salt.modules.zypper.**mod_repo**(*repo*, ***kwargs*)

Modify one or more values for a repo. If the repo does not exist, it will be created, so long as the following values are specified:

**repo or alias** alias by which the zypper refers to the repo
**url, mirrorlist or baseurl** the URL for zypper to reference
**enabled** enable or disable (True or False) repository, but do not remove if disabled.
**refresh** enable or disable (True or False) auto-refresh of the repository.
**cache** Enable or disable (True or False) RPM files caching.
**gpgcheck** Enable or disable (True or False) GOG check for this repository.
**gpgautoimport** Automatically trust and import new repository.
Key/Value pairs may also be removed from a repo's configuration by setting a key to a blank value. Bear in mind that a name cannot be deleted, and a url can only be deleted if a mirrorlist is specified (or vice versa).

CLI Examples:

```
salt '*' pkg.mod_repo alias alias=new_alias
salt '*' pkg.mod_repo alias url= mirrorlist=http://host.com/
```

salt.modules.zypper.**modified**(**packages*, ***flags*)

List the modified files that belong to a package. Not specifying any packages will return a list of _all_ modified files on the system's RPM database.

New in version 2015.5.0.

Filtering by flags (True or False):
**size** Include only files where size changed.
**mode** Include only files which file's mode has been changed.
**checksum** Include only files which MD5 checksum has been changed.
**device** Include only files which major and minor numbers has been changed.
**symlink** Include only files which are symbolic link contents.
**owner** Include only files where owner has been changed.
**group** Include only files where group has been changed.
**time** Include only files where modification time of the file has been changed.
**capabilities** Include only files where capabilities differ or not. Note: supported only on newer RPM versions.
CLI Examples:

```
salt '*' pkg.modified
salt '*' pkg.modified httpd
salt '*' pkg.modified httpd postfix
salt '*' pkg.modified httpd owner=True group=False
```

salt.modules.zypper.**owner**(**paths*)

Return the name of the package that owns the file. Multiple file paths can be passed. If a single path is passed, a string will be returned, and if multiple paths are passed, a dictionary of file/package name pairs will be returned.

If the file is not owned by a package, or is not present on the minion, then an empty string will be returned for that path.

CLI Examples:

```
salt '*' pkg.owner /usr/bin/apachectl
salt '*' pkg.owner /usr/bin/apachectl /etc/httpd/conf/httpd.conf
```

salt.modules.zypper.**purge**(*name=None*, *pkgs=None*, ***kwargs*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any zypper commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *`config option`* called `systemd.scope`, with a value of `False` (no quotes).

Recursively remove a package and all dependencies which were installed with it, this will call a `zypper -n remove -u`

**name** The name of the package to be deleted.

Multiple Package Options:

**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.purge <package name>
salt '*' pkg.purge <package1>,<package2>,<package3>
salt '*' pkg.purge pkgs='["foo", "bar"]'
```

`salt.modules.zypper.`**`refresh_db`**`()`

Force a repository refresh by calling `zypper refresh --force`, return a dict:

```
{'<database name>': Bool}
```

CLI Example:

```
salt '*' pkg.refresh_db
```

`salt.modules.zypper.`**`remove`**`(`*name=None*, *pkgs=None*, ***kwargs*`)`

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any zypper commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *`config option`* called `systemd.scope`, with a value of `False` (no quotes).

Remove packages with `zypper -n remove`

**name** The name of the package to be deleted.

Multiple Package Options:

**pkgs** A list of packages to delete. Must be passed as a python list. The `name` parameter will be ignored if this option is passed.

New in version 0.16.0.

Returns a dict containing the changes.

CLI Example:

```
salt '*' pkg.remove <package name>
salt '*' pkg.remove <package1>,<package2>,<package3>
salt '*' pkg.remove pkgs='["foo", "bar"]'
```

`salt.modules.zypper.`**`remove_lock`**`(`*packages*, ***kwargs*`)`

Remove specified package lock.

CLI Example:

```
salt '*' pkg.remove_lock <package name>
salt '*' pkg.remove_lock <package1>,<package2>,<package3>
salt '*' pkg.remove_lock pkgs='["foo", "bar"]'
```

`salt.modules.zypper.`**`search`**`(`*criteria*, *refresh=False*`)`

List known packags, available to the system.

**refresh** force a refresh if set to True. If set to False (default) it depends on zypper if a refresh is executed.
CLI Examples:

```
salt '*' pkg.search <criteria>
```

salt.modules.zypper.**upgrade**(*refresh=True, dryrun=False, dist_upgrade=False, fromrepo=None, novendorchange=False, skip_verify=False, **kwargs*)

Changed in version 2015.8.12,2016.3.3,2016.11.0: On minions running systemd>=205, systemd-run(1) is now used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing any zypper commands spawned by Salt when the `salt-minion` service is restarted. (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *`config option`* called `systemd.scope`, with a value of `False` (no quotes).

Run a full system upgrade, a zypper upgrade
**refresh** force a refresh if set to True (default). If set to False it depends on zypper if a refresh is executed.
**dryrun** If set to True, it creates a debug solver log file and then perform a dry-run upgrade (no changes are made). Default: False
**dist_upgrade** Perform a system dist-upgrade. Default: False
**fromrepo** Specify a list of package repositories to upgrade from. Default: None
**novendorchange** If set to True, no allow vendor changes. Default: False
**skip_verify** Skip the GPG verification check (e.g., `--no-gpg-checks`)
Return a dict containing the new package names and versions:

```
{'<package>': {'old': '<old-version>',
               'new': '<new-version>'}}
```

CLI Example:

```
salt '*' pkg.upgrade
salt '*' pkg.upgrade dist-upgrade=True fromrepo='["MyRepoName"]'
 ↪novendorchange=True
salt '*' pkg.upgrade dist-upgrade=True dryrun=True
```

salt.modules.zypper.**upgrade_available**(*name, **kwargs*)

Check whether or not an upgrade is available for a given package
**refresh** force a refresh if set to True (default). If set to False it depends on zypper if a refresh is executed or not.
CLI Example:

```
salt '*' pkg.upgrade_available <package name>
```

salt.modules.zypper.**verify**(**names, **kwargs*)

Runs an rpm -Va on a system, and returns the results in a dict

Files with an attribute of config, doc, ghost, license or readme in the package header can be ignored using the `ignore_types` keyword argument

CLI Example:

```
salt '*' pkg.verify
salt '*' pkg.verify httpd
salt '*' pkg.verify 'httpd postfix'
salt '*' pkg.verify 'httpd postfix' ignore_types=['config','doc']
```

salt.modules.zypper.**version**(**names, **kwargs*)

Returns a string representing the package version or an empty dict if not installed. If more than one package name is specified, a dict of name/version pairs is returned.

CLI Example:

```
salt '*' pkg.version <package name>
salt '*' pkg.version <package1> <package2> <package3> ...
```

salt.modules.zypper.**version_cmp**(*ver1*, *ver2*, *ignore_epoch=False*)

New in version 2015.5.4.

Do a cmp-style comparison on two packages. Return -1 if ver1 < ver2, 0 if ver1 == ver2, and 1 if ver1 > ver2. Return None if there was a problem making the comparison.

**ignore_epoch** [False] Set to `True` to ignore the epoch when comparing versions

New in version 2015.8.10,2016.3.2.

CLI Example:

```
salt '*' pkg.version_cmp '0.2-001' '0.2.0.1-002'
```

## 13.7 netapi modules

### 13.7.1 rest_cherrypy

#### A REST API for Salt

New in version 2014.7.0.

**depends**

- CherryPy Python module. Version 3.2.3 is currently recommended when SSL is enabled, since this version worked the best with SSL in internal testing. Versions 3.2.3 - 4.x can be used if SSL is not enabled. Be aware that there is a known SSL error introduced in version 3.2.5. The issue was reportedly resolved with CherryPy milestone 3.3, but the patch was committed for version 3.6.1.

**optdepends**

- ws4py Python module for websockets support.

**client_libraries**

- Java: https://github.com/SUSE/saltstack-netapi-client-java
- Python: https://github.com/saltstack/pepper

**setup** All steps below are performed on the machine running the Salt Master daemon. Configuration goes into the Master configuration file.

1. Install `salt-api`. (This step varies between OS and Linux distros. Some package systems have a split package, others include salt-api in the main Salt package. Ensure the `salt-api --version` output matches the `salt --version` output.)
2. Install CherryPy. (Read the version caveat in the section above.)
3. Optional: generate self-signed SSL certificates.

   Using a secure HTTPS connection is strongly recommended since Salt eauth authentication credentials will be sent over the wire.

   (a) Install the PyOpenSSL package.

(b) Generate a self-signed certificate using the *create_self_signed_cert()* execution function.

```
salt-call --local tls.create_self_signed_cert
```

4. Edit the master config to create at least one external auth user or group following the *full external auth instructions*.

5. Edit the master config with the following production-ready example to enable the `rest_cherrypy` module. (Adjust cert paths as needed, or disable SSL (not recommended!).)

```
rest_cherrypy:
  port: 8000
  ssl_crt: /etc/pki/tls/certs/localhost.crt
  ssl_key: /etc/pki/tls/certs/localhost.key
```

6. Restart the `salt-master` daemon.

7. Start the `salt-api` daemon.

**configuration** All available configuration options are detailed below. These settings configure the CherryPy HTTP server and do not apply when using an external server such as Apache or Nginx.

**port** **Required**

The port for the webserver to listen on.

**host** [`0.0.0.0`] The socket interface for the HTTP server to listen on.

**debug** [`False`] Starts the web server in development mode. It will reload itself when the underlying code is changed and will output more debugging info.

**ssl_crt** The path to a SSL certificate. (See below)

**ssl_key** The path to the private key for your SSL certificate. (See below)

**disable_ssl** A flag to disable SSL. Warning: your Salt authentication credentials will be sent in the clear!

**webhook_disable_auth** [False] The *Webhook* URL requires authentication by default but external services cannot always be configured to send authentication. See the Webhook documentation for suggestions on securing this interface.

**webhook_url** [/hook] Configure the URL endpoint for the *Webhook* entry point.

**thread_pool** [`100`] The number of worker threads to start up in the pool.

**socket_queue_size** [`30`] Specify the maximum number of HTTP connections to queue.

**expire_responses** [True] Whether to check for and kill HTTP responses that have exceeded the default timeout.

**max_request_body_size** [`1048576`] Maximum size for the HTTP request body.

**collect_stats** [False] Collect and report statistics about the CherryPy server

Reports are available via the *Stats* URL.

**static** A filesystem path to static HTML/JavaScript/CSS/image assets.

**static_path** [`/static`] The URL prefix to use when serving static assets out of the directory specified in the `static` setting.

**app** A filesystem path to an HTML file that will be served as a static file. This is useful for bootstrapping a single-page JavaScript app.

**app_path** [`/app`] The URL prefix to use for serving the HTML file specified in the `app` setting. This should be a simple name containing no slashes.

Any path information after the specified path is ignored; this is useful for apps that utilize the HTML5 history API.

**root_prefix** [`/`] A URL path to the main entry point for the application. This is useful for serving multiple applications from the same URL.

### Authentication

Authentication is performed by passing a session token with each request. Tokens are generated via the *`Login`* URL.

The token may be sent in one of two ways: as a custom header or as a session cookie. The latter is far more convenient for clients that support cookies.

- Include a custom header named *`X-Auth-Token`*.

  For example, using curl:

```
curl -sSk https://localhost:8000/login \
    -H 'Accept: application/x-yaml' \
    -d username=saltdev \
    -d password=saltdev \
    -d eauth=auto
```

  Copy the `token` value from the output and include it in subsequent requests:

```
curl -sSk https://localhost:8000 \
    -H 'Accept: application/x-yaml' \
    -H 'X-Auth-Token: 697adbdc8fe971d09ae4c2a3add7248859c87079'\
    -d client=local \
    -d tgt='*' \
    -d fun=test.ping
```

- Sent via a cookie. This option is a convenience for HTTP clients that automatically handle cookie support (such as browsers).

  For example, using curl:

```
# Write the cookie file:
curl -sSk https://localhost:8000/login \
      -c ~/cookies.txt \
      -H 'Accept: application/x-yaml' \
      -d username=saltdev \
      -d password=saltdev \
      -d eauth=auto

# Read the cookie file:
curl -sSk https://localhost:8000 \
      -b ~/cookies.txt \
      -H 'Accept: application/x-yaml' \
      -d client=local \
      -d tgt='*' \
      -d fun=test.ping
```

**See also:**

You can bypass the session handling via the *Run* URL.

### Usage

This interface directly exposes Salt's *Python API*. Everything possible at the CLI is possible through the Python API. Commands are executed on the Salt Master.

The root URL (/) is RPC-like in that it accepts instructions in the request body for what Salt functions to execute, and the response contains the result of those function calls.

For example:

```
% curl -sSi https://localhost:8000        -H 'Content-type: application/json'        -
 ↪d '[{
        "client": "local",
        "tgt": "*",
        "fun": "test.ping"
    }]'
HTTP/1.1 200 OK
Content-Type: application/json
[...snip...]

{"return": [{"jerry": true}]}
```

The request body must be an array of commands. Use this workflow to build a command:

1. Choose a client interface.
2. Choose a function.
3. Fill out the remaining parameters needed for the chosen client.

The `client` field is a reference to the main Python classes used in Salt's Python API. Read the full client interfaces documentation, but in short:

- ``local'' uses *`LocalClient`* which sends commands to Minions. Equivalent to the `salt` CLI command.
- ``runner'' uses *`RunnerClient`* which invokes runner modules on the Master. Equivalent to the `salt-run` CLI command.
- ``wheel'' uses *`WheelClient`* which invokes wheel modules on the Master. Wheel modules do not have a direct CLI equivalent but they typically manage Master-side resources such as state files, pillar files, the Salt config files, and the *`key wheel module`* exposes similar functionality as the `salt-key` CLI command.

Most clients have variants like synchronous or asynchronous execution as well as others like batch execution. See the full list of client interfaces.

Each client requires different arguments and sometimes has different syntax. For example, `LocalClient` requires the `tgt` argument because it forwards the command to Minions and the other client interfaces do not. `LocalClient` also takes `arg` (array) and `kwarg` (dictionary) arguments because these values are sent to the Minions and used to execute the requested function there. `RunnerClient` and `WheelClient` are executed directly on the Master and thus do not need or accept those arguments.

Read the method signatures in the client documentation linked above, but hopefully an example will help illustrate the concept. This example causes Salt to execute two functions -- the *`test.arg execution function`* using `LocalClient` and the *`test.arg runner function`* using `RunnerClient`; note the different structure for each command. The results for both are combined and returned as one response.

```
% curl -b ~/cookies.txt -sSi localhost:8000         -H 'Content-type: application/json
 ↪'         -d '
[
    {
        "client": "local",
        "tgt": "*",
        "fun": "test.arg",
        "arg": ["positional arg one", "positional arg two"],
        "kwarg": {
            "keyword arg one": "Hello from a minion",
            "keyword arg two": "Hello again from a minion"
        }
    },
    {
        "client": "runner",
        "fun": "test.arg",
        "keyword arg one": "Hello from a master",
        "keyword arg two": "Runners do not support positional args"
    }
]
'
HTTP/1.1 200 OK
[...snip...]
{
  "return": [
    {
      "jerry": {
        "args": [
          "positional arg one",
          "positional arg two"
        ],
        "kwargs": {
          "keyword arg one": "Hello from a minion",
          "keyword arg two": "Hello again from a minion",
          [...snip...]
        }
      },
      [...snip; other minion returns here...]
    },
    {
      "args": [],
      "kwargs": {
        "keyword arg two": "Runners do not support positional args",
        "keyword arg one": "Hello from a master"
      }
    }
  ]
}
```

One more example, this time with more commonly used functions:

```
curl -b /tmp/cookies.txt -sSi localhost:8000         -H 'Content-type: application/json
 ↪'         -d '
[
    {
        "client": "local",
        "tgt": "*",
        "fun": "state.sls",
```

```
        "kwarg": {
            "mods": "apache",
            "pillar": {
                "lookup": {
                    "wwwdir": "/srv/httpd/htdocs"
                }
            }
        }
    },
    {
        "client": "runner",
        "fun": "cloud.create",
        "provider": "my-ec2-provider",
        "instances": "my-centos-6",
        "image": "ami-1624987f",
        "delvol_on_destroy", true
    }
]
'
HTTP/1.1 200 OK
[...snip...]
{
  "return": [
    {
      "jerry": {
        "pkg_|-install_apache_|-httpd_|-installed": {
            [...snip full state return here...]
        }
      }
      [...snip other minion returns here...]
    },
    {
        [...snip full salt-cloud output here...]
    }
  ]
}
```

### Content negotiation

This REST interface is flexible in what data formats it will accept as well as what formats it will return (e.g., JSON, YAML, urlencoded).

- Specify the format of data in the request body by including the *Content-Type* header.
- Specify the desired data format for the response body with the *Accept* header.

We recommend the JSON format for most HTTP requests. urlencoded data is simple and cannot express complex data structures -- and that is often required for some Salt commands, such as starting a state run that uses Pillar data. Salt's CLI tool can reformat strings passed in at the CLI into complex data structures, and that behavior also works via salt-api, but that can be brittle and since salt-api can accept JSON it is best just to send JSON.

Here is an example of sending urlencoded data:

```
curl -sSik https://localhost:8000 \
    -b ~/cookies.txt \
    -d client=runner \
```

```
    -d fun='jobs.lookup_jid' \
    -d jid='20150129182456704682'
```

**urlencoded data caveats**

- Only a single command may be sent per HTTP request.
- Repeating the `arg` parameter multiple times will cause those parameters to be combined into a single list.

  Note, some popular frameworks and languages (notably jQuery, PHP, and Ruby on Rails) will automatically append empty brackets onto repeated query string parameters. E.g., `?foo[]=fooone&foo[]=footwo`. This is **not** supported; send `?foo=fooone&foo=footwo` instead, or send JSON or YAML.

A note about `curl`

The `-d` flag to curl does *not* automatically urlencode data which can affect passwords and other data that contains characters that must be encoded. Use the `--data-urlencode` flag instead. E.g.:

```
curl -ksi http://localhost:8000/login \
-H "Accept: application/json" \
-d username='myapiuser' \
--data-urlencode password='1234+' \
-d eauth='pam'
```

### Deployment

The `rest_cherrypy` netapi module is a standard Python WSGI app. It can be deployed one of two ways.

### `salt-api` using the CherryPy server

The default configuration is to run this module using **`salt-api`** to start the Python-based CherryPy server. This server is lightweight, multi-threaded, encrypted with SSL, and should be considered production-ready.

### Using a WSGI-compliant web server

This module may be deployed on any WSGI-compliant server such as Apache with mod_wsgi or Nginx with FastCGI, to name just two (there are many).

Note, external WSGI servers handle URLs, paths, and SSL certs directly. The `rest_cherrypy` configuration options are ignored and the `salt-api` daemon does not need to be running at all. Remember Salt authentication credentials are sent in the clear unless SSL is being enforced!

An example Apache virtual host configuration:

```
<VirtualHost *:80>
    ServerName example.com
    ServerAlias *.example.com

    ServerAdmin webmaster@example.com

    LogLevel warn
    ErrorLog /var/www/example.com/logs/error.log
    CustomLog /var/www/example.com/logs/access.log combined
```

```
    DocumentRoot /var/www/example.com/htdocs

    WSGIScriptAlias / /path/to/salt/netapi/rest_cherrypy/wsgi.py
</VirtualHost>
```

### REST URI Reference

- */*
- */login*
- */logout*
- */minions*
- */jobs*
- */run*
- */events*
- */hook*
- */keys*
- */ws*
- */stats*

## /

class salt.netapi.rest_cherrypy.app.**LowDataAdapter**

The primary entry point to Salt's REST API

**GET**()

An explanation of the API with links of where to go next

**GET /**

**Request Headers**

- **Accept** -- the desired response format.

**Status Codes**

- **200** -- success
- **401** -- authentication required
- **406** -- requested Content-Type not available

**Example request**:

```
curl -i localhost:8000
```

```
GET / HTTP/1.1
Host: localhost:8000
Accept: application/json
```

**Example response:**

```
HTTP/1.1 200 OK
Content-Type: application/json
```

**POST**

Mock out specified imports.

This allows autodoc to do its thing without having oodles of req'd installed libs. This doesn't work with `import *` imports.

This Mock class can be configured to return a specific values at specific names, if required.

http://read-the-docs.readthedocs.org/en/latest/faq.html#i-get-import-errors-on-libraries-that-depend-on-c-modules

## /login

class salt.netapi.rest_cherrypy.app.**Login**(**args*, ***kwargs*)

Log in to receive a session token

*Authentication information.*

**GET**()

Present the login interface

**GET /login**

An explanation of how to log in.

**Status Codes**

- **200** -- success
- **401** -- authentication required
- **406** -- requested Content-Type not available

**Example request:**

```
curl -i localhost:8000/login
```

```
GET /login HTTP/1.1
Host: localhost:8000
Accept: text/html
```

**Example response:**

```
HTTP/1.1 200 OK
Content-Type: text/html
```

**POST**(***kwargs*)

*Authenticate* against Salt's eauth system

**POST /login**

**Request Headers**

- **X-Auth-Token** -- a session token from *Login*.
- **Accept** -- the desired response format.
- **Content-Type** -- the format of the request body.

**Form Parameters**

- **eauth** -- the eauth backend configured for the user
- **username** -- username
- **password** -- password

**Status Codes**

- **200** -- success
- **401** -- authentication required
- **406** -- requested Content-Type not available

**Example request**:

```
curl -si localhost:8000/login \
    -c ~/cookies.txt \
    -H "Accept: application/json" \
    -H "Content-type: application/json" \
    -d '{
        "username": "saltuser",
        "password": "saltuser",
        "eauth": "auto"
    }'
```

```
POST / HTTP/1.1
Host: localhost:8000
Content-Length: 42
Content-Type: application/json
Accept: application/json

{"username": "saltuser", "password": "saltuser", "eauth": "auto"}
```

**Example response**:

```
HTTP/1.1 200 OK
Content-Type: application/json
Content-Length: 206
X-Auth-Token: 6d1b722e
Set-Cookie: session_id=6d1b722e; expires=Sat, 17 Nov 2012 03:23:52 GMT; Path=/

{"return": {
    "token": "6d1b722e",
    "start": 1363805943.776223,
    "expire": 1363849143.776224,
    "user": "saltuser",
    "eauth": "pam",
    "perms": [
        "grains.*",
        "status.*",
        "sys.*",
        "test.*"
    ]
}}
```

### /logout

class salt.netapi.rest_cherrypy.app.**Logout**
Class to remove or invalidate sessions

**POST**()
Destroy the currently active session and expire the session cookie

### /minions

class salt.netapi.rest_cherrypy.app.**Minions**
Convenience URLs for working with minions

**GET**(*mid=None*)
A convenience URL for getting lists of minions or getting minion details

**GET /minions/**(*mid*)

Request Headers

- **X-Auth-Token** -- a session token from *Login*.
- **Accept** -- the desired response format.

Status Codes

- **200** -- success
- **401** -- authentication required
- **406** -- requested Content-Type not available

**Example request**:

```
curl -i localhost:8000/minions/ms-3
```

```
GET /minions/ms-3 HTTP/1.1
Host: localhost:8000
Accept: application/x-yaml
```

**Example response**:

```
HTTP/1.1 200 OK
Content-Length: 129005
Content-Type: application/x-yaml

return:
- ms-3:
    grains.items:
        ...
```

**POST**(***kwargs*)
Start an execution command and immediately return the job id

**POST /minions**

Request Headers

- **X-Auth-Token** -- a session token from *Login*.
- **Accept** -- the desired response format.

- **Content-Type** -- the format of the request body.

**Response Headers**

- **Content-Type** -- the format of the response body; depends on the *Accept* request header.

**Status Codes**

- **200** -- success
- **401** -- authentication required
- **406** -- requested Content-Type not available

lowstate data describing Salt commands must be sent in the request body. The `client` option will be set to `local_async()`.

**Example request**:

```
curl -sSi localhost:8000/minions \
    -b ~/cookies.txt \
    -H "Accept: application/x-yaml" \
    -d '[{"tgt": "*", "fun": "status.diskusage"}]'
```

```
POST /minions HTTP/1.1
Host: localhost:8000
Accept: application/x-yaml
Content-Type: application/json

tgt=*&fun=status.diskusage
```

**Example response**:

```
HTTP/1.1 202 Accepted
Content-Length: 86
Content-Type: application/x-yaml

return:
- jid: '20130603122505459265'
  minions: [ms-4, ms-3, ms-2, ms-1, ms-0]
_links:
  jobs:
    - href: /jobs/20130603122505459265
```

## /jobs

class salt.netapi.rest_cherrypy.app.**Jobs**

**GET**(*jid=None*, *timeout=''*)

A convenience URL for getting lists of previously run jobs or getting the return from a single job

**GET /jobs/**(*jid*)

List jobs or show a single job from the job cache.

**Request Headers**

- **X-Auth-Token** -- a session token from *Login*.
- **Accept** -- the desired response format.

**Status Codes**

- **200** -- success
- **401** -- authentication required
- **406** -- requested Content-Type not available

**Example request**:

```
curl -i localhost:8000/jobs
```

```
GET /jobs HTTP/1.1
Host: localhost:8000
Accept: application/x-yaml
```

**Example response**:

```
HTTP/1.1 200 OK
Content-Length: 165
Content-Type: application/x-yaml

return:
- '20121130104633606931':
    Arguments:
    - '3'
    Function: test.fib
    Start Time: 2012, Nov 30 10:46:33.606931
    Target: jerry
    Target-type: glob
```

**Example request**:

```
curl -i localhost:8000/jobs/20121130104633606931
```

```
GET /jobs/20121130104633606931 HTTP/1.1
Host: localhost:8000
Accept: application/x-yaml
```

**Example response**:

```
HTTP/1.1 200 OK
Content-Length: 73
Content-Type: application/x-yaml

info:
- Arguments:
    - '3'
    Function: test.fib
    Minions:
    - jerry
    Start Time: 2012, Nov 30 10:46:33.606931
    Target: '*'
    Target-type: glob
    User: saltdev
    jid: '20121130104633606931'
return:
- jerry:
    - - 0
```

```
    - 1
    - 1
    - 2
    - 6.9141387939453125e-06
```

### /run

class salt.netapi.rest_cherrypy.app.**Run**

Class to run commands without normal session handling

**POST**(***kwargs*)

Run commands bypassing the *normal session handling*

**POST /run**

This entry point is primarily for ``one-off'' commands. Each request must pass full Salt authentication credentials. Otherwise this URL is identical to the *root URL (/)*.

lowstate data describing Salt commands must be sent in the request body.

**Status Codes**

- **200** -- success
- **401** -- authentication required
- **406** -- requested Content-Type not available

**Example request**:

```
curl -sS localhost:8000/run \
    -H 'Accept: application/x-yaml' \
    -H 'Content-type: application/json' \
    -d '[{
        "client": "local",
        "tgt": "*",
        "fun": "test.ping",
        "username": "saltdev",
        "password": "saltdev",
        "eauth": "auto"
    }]'
```

```
POST /run HTTP/1.1
Host: localhost:8000
Accept: application/x-yaml
Content-Length: 75
Content-Type: application/json

[{"client": "local", "tgt": "*", "fun": "test.ping", "username": "saltdev",
 ↪"password": "saltdev", "eauth": "auto"}]
```

**Example response**:

```
HTTP/1.1 200 OK
Content-Length: 73
Content-Type: application/x-yaml

return:
- ms-0: true
```

```
  ms-1: true
  ms-2: true
  ms-3: true
  ms-4: true
```

The /run enpoint can also be used to issue commands using the salt-ssh subsystem.

When using salt-ssh, eauth credentials should not be supplied. Instad, authentication should be handled by the SSH layer itself. The use of the salt-ssh client does not require a salt master to be running. Instead, only a roster file must be present in the salt configuration directory.

All SSH client requests are synchronous.

**Example SSH client request**:

```
curl -sS localhost:8000/run \
    -H 'Accept: application/x-yaml' \
    -d client='ssh' \
    -d tgt='*' \
    -d fun='test.ping'
```

```
POST /run HTTP/1.1
Host: localhost:8000
Accept: application/x-yaml
Content-Length: 75
Content-Type: application/x-www-form-urlencoded

client=ssh&tgt=*&fun=test.ping
```

**Example SSH response**:

```
return:
- silver:
  fun: test.ping
  fun_args: []
  id: silver
  jid: '20141203103525666185'
  retcode: 0
  return: true
  success: true
```

## /events

**class** salt.netapi.rest_cherrypy.app.**Events**

Expose the Salt event bus

The event bus on the Salt master exposes a large variety of things, notably when executions are started on the master and also when minions ultimately return their results. This URL provides a real-time window into a running Salt infrastructure.

**See also**:

*Events & Reactor*

**GET**(*token=None*, *salt_token=None*)

An HTTP stream of the Salt master event bus

This stream is formatted per the Server Sent Events (SSE) spec. Each event is formatted as JSON.

### GET /events

**Status Codes**

- **200** -- success
- **401** -- authentication required
- **406** -- requested Content-Type not available

**Query Parameters**

- **token** -- **optional** parameter containing the token ordinarily supplied via the X-Auth-Token header in order to allow cross-domain requests in browsers that do not include CORS support in the EventSource API. E.g., `curl -NsS localhost:8000/events?token=308650d`
- **salt_token** -- **optional** parameter containing a raw Salt *eauth token* (not to be confused with the token returned from the /login URL). E.g., `curl -NsS localhost:8000/events?salt_token=30742765`

**Example request**:

```
curl -NsS localhost:8000/events
```

```
GET /events HTTP/1.1
Host: localhost:8000
```

**Example response**:

Note, the `tag` field is not part of the spec. SSE compliant clients should ignore unknown fields. This addition allows non-compliant clients to only watch for certain tags without having to deserialze the JSON object each time.

```
HTTP/1.1 200 OK
Connection: keep-alive
Cache-Control: no-cache
Content-Type: text/event-stream;charset=utf-8

retry: 400

tag: salt/job/20130802115730568475/new
data: {'tag': 'salt/job/20130802115730568475/new', 'data': {'minions': ['ms-4
 ↪', 'ms-3', 'ms-2', 'ms-1', 'ms-0']}}

tag: salt/job/20130802115730568475/ret/jerry
data: {'tag': 'salt/job/20130802115730568475/ret/jerry', 'data': {'jid':
 ↪'20130802115730568475', 'return': True, 'retcode': 0, 'success': True, 'cmd
 ↪': '_return', 'fun': 'test.ping', 'id': 'ms-1'}}
```

The event stream can be easily consumed via JavaScript:

```
var source = new EventSource('/events');
source.onopen = function() { console.info('Listening ...') };
source.onerror = function(err) { console.error(err) };
source.onmessage = function(message) {
  var saltEvent = JSON.parse(message.data);
  console.info(saltEvent.tag)
  console.debug(saltEvent.data)
};
```

Or using CORS:

```
var source = new EventSource('/events?
 ↪token=ecd589e4e01912cf3c4035afad73426dbb8dba75', {withCredentials: true});
```

It is also possible to consume the stream via the shell.

Records are separated by blank lines; the `data:` and `tag:` prefixes will need to be removed manually before attempting to unserialize the JSON.

curl's `-N` flag turns off input buffering which is required to process the stream incrementally.

Here is a basic example of printing each event as it comes in:

```
curl -NsS localhost:8000/events |\
        while IFS= read -r line ; do
            echo $line
        done
```

Here is an example of using awk to filter events based on tag:

```
curl -NsS localhost:8000/events |\
        awk '
            BEGIN { RS=""; FS="\\n" }
            $1 ~ /^tag: salt\/job\/[0-9]+\/new$/ { print $0 }
        '
tag: salt/job/20140112010149808995/new
data: {"tag": "salt/job/20140112010149808995/new", "data": {"tgt_type": "glob
 ↪", "jid": "20140112010149808995", "tgt": "jerry", "_stamp": "2014-01-12_01:
 ↪01:49.809617", "user": "shouse", "arg": [], "fun": "test.ping", "minions":
 ↪["jerry"]}}
tag: 20140112010149808995
data: {"tag": "20140112010149808995", "data": {"fun_args": [], "jid":
 ↪"20140112010149808995", "return": true, "retcode": 0, "success": true, "cmd
 ↪": "_return", "_stamp": "2014-01-12_01:01:49.819316", "fun": "test.ping",
 ↪"id": "jerry"}}
```

### /hook

**class** salt.netapi.rest_cherrypy.app.**Webhook**

A generic web hook entry point that fires an event on Salt's event bus

External services can POST data to this URL to trigger an event in Salt. For example, Amazon SNS, Jenkins-CI or Travis-CI, or GitHub web hooks.

---

**Note:** Be mindful of security

Salt's Reactor can run any code. A Reactor SLS that responds to a hook event is responsible for validating that the event came from a trusted source and contains valid data.

**This is a generic interface and securing it is up to you!**

This URL requires authentication however not all external services can be configured to authenticate. For this reason authentication can be selectively disabled for this URL. Follow best practices -- always use SSL, pass a secret key, configure the firewall to only allow traffic from a known source, etc.

---

The event data is taken from the request body. The *Content-Type* header is respected for the payload.

The event tag is prefixed with `salt/netapi/hook` and the URL path is appended to the end. For example, a `POST` request sent to `/hook/mycompany/myapp/mydata` will produce a Salt event with the tag `salt/netapi/hook/mycompany/myapp/mydata`.

The following is an example `.travis.yml` file to send notifications to Salt of successful test runs:

```
language: python
script: python -m unittest tests
after_success:
    - |
        curl -sSk https://saltapi-url.example.com:8000/hook/travis/build/success
↪                       -d branch="${TRAVIS_BRANCH}"                          -d
↪commit="${TRAVIS_COMMIT}"
```

**See also**:

*Events & Reactor*, reactor

**POST** (**args*, ***kwargs*)

Fire an event in Salt with a custom event tag and data

**POST /hook**

**Status Codes**

- **200** -- success
- **401** -- authentication required
- **406** -- requested Content-Type not available
- **413** -- request body is too large

**Example request**:

```
curl -sS localhost:8000/hook \
    -H 'Content-type: application/json' \
    -d '{"foo": "Foo!", "bar": "Bar!"}'
```

```
POST /hook HTTP/1.1
Host: localhost:8000
Content-Length: 16
Content-Type: application/json

{"foo": "Foo!", "bar": "Bar!"}
```

**Example response**:

```
HTTP/1.1 200 OK
Content-Length: 14
Content-Type: application/json

{"success": true}
```

As a practical example, an internal continuous-integration build server could send an HTTP POST request to the URL `https://localhost:8000/hook/mycompany/build/success` which contains the result of a build and the SHA of the version that was built as JSON. That would then produce the following event in Salt that could be used to kick off a deployment via Salt's Reactor:

```
Event fired at Fri Feb 14 17:40:11 2014
*************************
```

```
Tag: salt/netapi/hook/mycompany/build/success
Data:
{'_stamp': '2014-02-14_17:40:11.440996',
    'headers': {
        'X-My-Secret-Key': 'F0fAgoQjIT@W',
        'Content-Length': '37',
        'Content-Type': 'application/json',
        'Host': 'localhost:8000',
        'Remote-Addr': '127.0.0.1'},
    'post': {'revision': 'aa22a3c4b2e7', 'result': True}}
```

Salt's Reactor could listen for the event:

```
reactor:
  - 'salt/netapi/hook/mycompany/build/*':
    - /srv/reactor/react_ci_builds.sls
```

And finally deploy the new build:

```
{% set secret_key = data.get('headers', {}).get('X-My-Secret-Key') %}
{% set build = data.get('post', {}) %}

{% if secret_key == 'F0fAgoQjIT@W' and build.result == True %}
deploy_my_app:
  cmd.state.sls:
    - tgt: 'application*'
    - arg:
      - myapp.deploy
    - kwarg:
        pillar:
          revision: {{ revision }}
{% endif %}
```

### /keys

class salt.netapi.rest_cherrypy.app.**Keys**

Convenience URLs for working with minion keys

New in version 2014.7.0.

These URLs wrap the functionality provided by the *key wheel module* functions.

**GET**(*mid=None*)

Show the list of minion keys or detail on a specific key

New in version 2014.7.0.

**GET /keys/**(*mid*)

List all keys or show a specific key

**Status Codes**

- **200** -- success
- **401** -- authentication required
- **406** -- requested Content-Type not available

**Example request**:

```
curl -i localhost:8000/keys
```

```
GET /keys HTTP/1.1
Host: localhost:8000
Accept: application/x-yaml
```

**Example response**:

```
HTTP/1.1 200 OK
Content-Length: 165
Content-Type: application/x-yaml

return:
  local:
  - master.pem
  - master.pub
  minions:
  - jerry
  minions_pre: []
  minions_rejected: []
```

**Example request**:

```
curl -i localhost:8000/keys/jerry
```

```
GET /keys/jerry HTTP/1.1
Host: localhost:8000
Accept: application/x-yaml
```

**Example response**:

```
HTTP/1.1 200 OK
Content-Length: 73
Content-Type: application/x-yaml

return:
  minions:
    jerry: 51:93:b3:d0:9f:3a:6d:e5:28:67:c2:4b:27:d6:cd:2b
```

**POST**(***kwargs*)

Easily generate keys for a minion and auto-accept the new key

Accepts all the same parameters as the *key.gen_accept*.

Example partial kickstart script to bootstrap a new minion:

```
%post
mkdir -p /etc/salt/pki/minion
curl -sSk https://localhost:8000/keys \
        -d mid=jerry \
        -d username=kickstart \
        -d password=kickstart \
        -d eauth=pam \
    | tar -C /etc/salt/pki/minion -xf -

mkdir -p /etc/salt/minion.d
printf 'master: 10.0.0.5\nid: jerry' > /etc/salt/minion.d/id.conf
%end
```

**POST /keys**

Generate a public and private key and return both as a tarball

Authentication credentials must be passed in the request.

**Status Codes**

- **200** -- success
- **401** -- authentication required
- **406** -- requested Content-Type not available

**Example request**:

```
curl -sSk https://localhost:8000/keys \
        -d mid=jerry \
        -d username=kickstart \
        -d password=kickstart \
        -d eauth=pam \
        -o jerry-salt-keys.tar
```

```
POST /keys HTTP/1.1
Host: localhost:8000
```

**Example response**:

```
HTTP/1.1 200 OK
Content-Length: 10240
Content-Disposition: attachment; filename="saltkeys-jerry.tar"
Content-Type: application/x-tar

jerry.pub0000644000000000000000000000000070300000000000010730 0ustar 
 ↪00000000000000
```

## /ws

class salt.netapi.rest_cherrypy.app.**WebsocketEndpoint**

Open a WebSocket connection to Salt's event bus

The event bus on the Salt master exposes a large variety of things, notably when executions are started on the master and also when minions ultimately return their results. This URL provides a real-time window into a running Salt infrastructure. Uses websocket as the transport mechanism.

**See also**:

*Events & Reactor*

**GET**(*token=None*, ***kwargs*)

Return a websocket connection of Salt's event stream

**GET /ws/**(*token*)

**Query format_events** The event stream will undergo server-side formatting if the `format_events` URL parameter is included in the request. This can be useful to avoid formatting on the client-side:

```
curl -NsS <...snip...> localhost:8000/ws?format_events
```

**Reqheader X-Auth-Token** an authentication token from *Login*.

**Status 101** switching to the websockets protocol

**Status 401** authentication required

**Status 406** requested Content-Type not available

**Example request**:

```
curl -NsSk \
    -H 'X-Auth-Token: ffedf49d' \
    -H 'Host: localhost:8000' \
    -H 'Connection: Upgrade' \
    -H 'Upgrade: websocket' \
    -H 'Origin: https://localhost:8000' \
    -H 'Sec-WebSocket-Version: 13' \
    -H 'Sec-WebSocket-Key: '"$(echo -n $RANDOM | base64)" \
    localhost:8000/ws
```

```
GET /ws HTTP/1.1
Connection: Upgrade
Upgrade: websocket
Host: localhost:8000
Origin: https://localhost:8000
Sec-WebSocket-Version: 13
Sec-WebSocket-Key: s65VsgHigh7v/Jcf4nXHnA==
X-Auth-Token: ffedf49d
```

**Example response**:

```
HTTP/1.1 101 Switching Protocols
Upgrade: websocket
Connection: Upgrade
Sec-WebSocket-Accept: mWZjBV9FCglzn1rIKJAxrTFlnJE=
Sec-WebSocket-Version: 13
```

An authentication token **may optionally** be passed as part of the URL for browsers that cannot be configured to send the authentication header or cookie:

```
curl -NsS <...snip...> localhost:8000/ws/ffedf49d
```

The event stream can be easily consumed via JavaScript:

```
// Note, you must be authenticated!
var source = new Websocket('ws://localhost:8000/ws/d0ce6c1a');
source.onerror = function(e) { console.debug('error!', e); };
source.onmessage = function(e) { console.debug(e.data); };

source.send('websocket client ready')

source.close();
```

Or via Python, using the Python module websocket-client for example.

```
# Note, you must be authenticated!

from websocket import create_connection

ws = create_connection('ws://localhost:8000/ws/d0ce6c1a')
ws.send('websocket client ready')
```

```
# Look at https://pypi.python.org/pypi/websocket-client/ for more
# examples.
while listening_to_events:
    print ws.recv()

ws.close()
```

Above examples show how to establish a websocket connection to Salt and activating real time updates from Salt's event stream by signaling `websocket client ready`.

### /stats

class salt.netapi.rest_cherrypy.app.**Stats**

Expose statistics on the running CherryPy server

**GET**()

Return a dump of statistics collected from the CherryPy server

**GET /stats**

**Request Headers**

- **X-Auth-Token** -- a session token from *Login*.
- **Accept** -- the desired response format.

**Response Headers**

- **Content-Type** -- the format of the response body; depends on the *Accept* request header.

**Status Codes**

- **200** -- success
- **401** -- authentication required
- **406** -- requested Content-Type not available

## 13.7.2 rest_tornado

### A Websockets add-on to saltnado

**depends**

- tornado Python module

In order to enable saltnado_websockets you must add websockets: True to your saltnado config block.

```
rest_tornado:
    # can be any port
    port: 8000
    ssl_crt: /etc/pki/api/certs/server.crt
    # no need to specify ssl_key if cert and key
    # are in one single file
    ssl_key: /etc/pki/api/certs/server.key
    debug: False
```

```
    disable_ssl: False
    websockets: True
```

### All Events

Exposes `all` ``real-time'' events from Salt's event bus on a websocket connection. It should be noted that ``Real-time'' here means these events are made available to the server as soon as any salt related action (changes to minions, new jobs etc) happens. Clients are however assumed to be able to tolerate any network transport related latencies. Functionality provided by this endpoint is similar to the `/events` end point.

The event bus on the Salt master exposes a large variety of things, notably when executions are started on the master and also when minions ultimately return their results. This URL provides a real-time window into a running Salt infrastructure. Uses websocket as the transport mechanism.

Exposes GET method to return websocket connections. All requests should include an auth token. A way to obtain obtain authentication tokens is shown below.

```
% curl -si localhost:8000/login \
    -H "Accept: application/json" \
    -d username='salt' \
    -d password='salt' \
    -d eauth='pam'
```

Which results in the response

```
{
    "return": [{
        "perms": [".*", "@runner", "@wheel"],
        "start": 1400556492.277421,
        "token": "d0ce6c1a37e99dcc0374392f272fe19c0090cca7",
        "expire": 1400599692.277422,
        "user": "salt",
        "eauth": "pam"
    }]
}
```

In this example the `token` returned is `d0ce6c1a37e99dcc0374392f272fe19c0090cca7` and can be included in subsequent websocket requests (as part of the URL).

The event stream can be easily consumed via JavaScript:

```
// Note, you must be authenticated!

// Get the Websocket connection to Salt
var source = new Websocket('wss://localhost:8000/all_events/
 ↪d0ce6c1a37e99dcc0374392f272fe19c0090cca7');

// Get Salt's "real time" event stream.
source.onopen = function() { source.send('websocket client ready'); };

// Other handlers
source.onerror = function(e) { console.debug('error!', e); };

// e.data represents Salt's "real time" event data as serialized JSON.
source.onmessage = function(e) { console.debug(e.data); };
```

```
// Terminates websocket connection and Salt's "real time" event stream on the server.
source.close();
```

Or via Python, using the Python module websocket-client for example. Or the tornado client.

```
# Note, you must be authenticated!

from websocket import create_connection

# Get the Websocket connection to Salt
ws = create_connection('wss://localhost:8000/all_events/
 ↪d0ce6c1a37e99dcc0374392f272fe19c0090cca7')

# Get Salt's "real time" event stream.
ws.send('websocket client ready')


# Simple listener to print results of Salt's "real time" event stream.
# Look at https://pypi.python.org/pypi/websocket-client/ for more examples.
while listening_to_events:
    print ws.recv()       #  Salt's "real time" event data as serialized JSON.

# Terminates websocket connection and Salt's "real time" event stream on the server.
ws.close()

# Please refer to https://github.com/liris/websocket-client/issues/81 when using a
 ↪self signed cert
```

Above examples show how to establish a websocket connection to Salt and activating real time updates from Salt's event stream by signaling `websocket client ready`.

### Formatted Events

Exposes `formatted` ``real-time'' events from Salt's event bus on a websocket connection. It should be noted that ``Real-time'' here means these events are made available to the server as soon as any salt related action (changes to minions, new jobs etc) happens. Clients are however assumed to be able to tolerate any network transport related latencies. Functionality provided by this endpoint is similar to the `/events` end point.

The event bus on the Salt master exposes a large variety of things, notably when executions are started on the master and also when minions ultimately return their results. This URL provides a real-time window into a running Salt infrastructure. Uses websocket as the transport mechanism.

Formatted events parses the raw ``real time'' event stream and maintains a current view of the following:

- minions
- jobs

A change to the minions (such as addition, removal of keys or connection drops) or jobs is processed and clients are updated. Since we use salt's presence events to track minions, please enable `presence_events` and set a small value for the `loop_interval` in the salt master config file.

Exposes GET method to return websocket connections. All requests should include an auth token. A way to obtain obtain authentication tokens is shown below.

```
% curl -si localhost:8000/login \
    -H "Accept: application/json" \
    -d username='salt' \
```

```
    -d password='salt' \
    -d eauth='pam'
```

Which results in the response

```
{
    "return": [{
        "perms": [".*", "@runner", "@wheel"],
        "start": 1400556492.277421,
        "token": "d0ce6c1a37e99dcc0374392f272fe19c0090cca7",
        "expire": 1400599692.277422,
        "user": "salt",
        "eauth": "pam"
    }]
}
```

In this example the `token` returned is `d0ce6c1a37e99dcc0374392f272fe19c0090cca7` and can be included in subsequent websocket requests (as part of the URL).

The event stream can be easily consumed via JavaScript:

```
// Note, you must be authenticated!

// Get the Websocket connection to Salt
var source = new Websocket('wss://localhost:8000/formatted_events/
 ↪d0ce6c1a37e99dcc0374392f272fe19c0090cca7');

// Get Salt's "real time" event stream.
source.onopen = function() { source.send('websocket client ready'); };

// Other handlers
source.onerror = function(e) { console.debug('error!', e); };

// e.data represents Salt's "real time" event data as serialized JSON.
source.onmessage = function(e) { console.debug(e.data); };

// Terminates websocket connection and Salt's "real time" event stream on the server.
source.close();
```

Or via Python, using the Python module websocket-client for example. Or the tornado client.

```
# Note, you must be authenticated!

from websocket import create_connection

# Get the Websocket connection to Salt
ws = create_connection('wss://localhost:8000/formatted_events/
 ↪d0ce6c1a37e99dcc0374392f272fe19c0090cca7')

# Get Salt's "real time" event stream.
ws.send('websocket client ready')


# Simple listener to print results of Salt's "real time" event stream.
# Look at https://pypi.python.org/pypi/websocket-client/ for more examples.
while listening_to_events:
    print ws.recv()       #  Salt's "real time" event data as serialized JSON.
```

```
# Terminates websocket connection and Salt's "real time" event stream on the server.
ws.close()

# Please refer to https://github.com/liris/websocket-client/issues/81 when using a
 ↪self signed cert
```

Above examples show how to establish a websocket connection to Salt and activating real time updates from Salt's event stream by signaling `websocket client ready`.

### Example responses

`Minion information` is a dictionary keyed by each connected minion's `id` (`mid`), grains information for each minion is also included.

Minion information is sent in response to the following minion events:

- **connection drops**
  - requires running `manage.present` periodically every `loop_interval` seconds
- minion addition
- minon removal

```
# Not all grains are shown
data: {
    "minions": {
        "minion1": {
            "id": "minion1",
            "grains": {
                "kernel": "Darwin",
                "domain": "local",
                "zmqversion": "4.0.3",
                "kernelrelease": "13.2.0"
            }
        }
    }
}
```

`Job information` is also tracked and delivered.

Job information is also a dictionary in which each job's information is keyed by salt's `jid`.

```
data: {
    "jobs": {
        "20140609153646699137": {
            "tgt_type": "glob",
            "jid": "20140609153646699137",
            "tgt": "*",
            "start_time": "2014-06-09T15:36:46.700315",
            "state": "complete",
            "fun": "test.ping",
            "minions": {
                "minion1": {
                    "return": true,
                    "retcode": 0,
                    "success": true
                }
```

```
            }
        }
    }
}
```

#### Setup

#### REST URI Reference

- */*
- */login*
- */minions*
- */jobs*
- */run*
- */events*
- */hook*

### /

salt.netapi.rest_tornado.saltnado.**SaltAPIHandler**
alias of <Mock object at 0x2b10e9dfded0>

### /login

salt.netapi.rest_tornado.saltnado.**SaltAuthHandler**
alias of <Mock object at 0x2b10da10c050>

### /minions

salt.netapi.rest_tornado.saltnado.**MinionSaltAPIHandler**
alias of <Mock object at 0x2b10ea33e1d0>

### /jobs

salt.netapi.rest_tornado.saltnado.**JobsSaltAPIHandler**
alias of <Mock object at 0x2b10ea33ea90>

### /run

salt.netapi.rest_tornado.saltnado.**RunSaltAPIHandler**
alias of <Mock object at 0x2b10ea33ead0>

#### /events

salt.netapi.rest_tornado.saltnado.**EventsSaltAPIHandler**
alias of <Mock object at 0x2b10e1c63fd0>

#### /hook

salt.netapi.rest_tornado.saltnado.**WebhookSaltAPIHandler**
alias of <Mock object at 0x2b10e1c63e50>

### 13.7.3 rest_wsgi

#### A minimalist REST API for Salt

This `rest_wsgi` module provides a no-frills REST interface for sending commands to the Salt master. There are no dependencies.

Extra care must be taken when deploying this module into production. Please read this documentation in entirety.

All authentication is done through Salt's *external auth* system.

#### Usage

- All requests must be sent to the root URL (`/`).
- All requests must be sent as a POST request with JSON content in the request body.
- All responses are in JSON.

**See also:**

*rest_cherrypy*

The *rest_cherrypy* module is more full-featured, production-ready, and has builtin security features.

#### Deployment

The `rest_wsgi` netapi module is a standard Python WSGI app. It can be deployed one of two ways.

#### Using a WSGI-compliant web server

This module may be run via any WSGI-compliant production server such as Apache with mod_wsgi or Nginx with FastCGI.

It is strongly recommended that this app be used with a server that supports HTTPS encryption since raw Salt authentication credentials must be sent with every request. Any apps that access Salt through this interface will need to manually manage authentication credentials (either username and password or a Salt token). Tread carefully.

### `salt-api` using a development-only server

If run directly via the salt-api daemon it uses the wsgiref.simple_server() that ships in the Python standard library. This is a single-threaded server that is intended for testing and development. **This server does not use encryption**; please note that raw Salt authentication credentials must be sent with every HTTP request.

**Running this module via salt-api is not recommended!**

In order to start this module via the `salt-api` daemon the following must be put into the Salt master config:

```
rest_wsgi:
    port: 8001
```

### Usage examples

**`POST /`**

**Example request** for a basic `test.ping`:

```
% curl -sS -i \
        -H 'Content-Type: application/json' \
        -d '[{"eauth":"pam","username":"saltdev","password":"saltdev","client":
↪"local","tgt":"*","fun":"test.ping"}]' localhost:8001
```

**Example response**:

```
HTTP/1.0 200 OK
Content-Length: 89
Content-Type: application/json

{"return": [{"ms--4": true, "ms--3": true, "ms--2": true, "ms--1": true, "ms--0":
↪true}]}
```

**Example request** for an asynchronous `test.ping`:

```
% curl -sS -i \
        -H 'Content-Type: application/json' \
        -d '[{"eauth":"pam","username":"saltdev","password":"saltdev","client":
↪"local_async","tgt":"*","fun":"test.ping"}]' localhost:8001
```

**Example response**:

```
HTTP/1.0 200 OK
Content-Length: 103
Content-Type: application/json

{"return": [{"jid": "20130412192112593739", "minions": ["ms--4", "ms--3", "ms--2
↪", "ms--1", "ms--0"]}]}
```

**Example request** for looking up a job ID:

```
% curl -sS -i \
        -H 'Content-Type: application/json' \
        -d '[{"eauth":"pam","username":"saltdev","password":"saltdev","client":
↪"runner","fun":"jobs.lookup_jid","jid":"20130412192112593739"}]' localhost:8001
```

**Example response**:

```
HTTP/1.0 200 OK
Content-Length: 89
Content-Type: application/json

{"return": [{"ms--4": true, "ms--3": true, "ms--2": true, "ms--1": true, "ms--0":
 ↪true}]}
```

**form lowstate** A list of lowstate data appropriate for the *client* interface you are calling.

**status 200** success

**status 401** authentication required

## 13.8 output modules

Follow one of the below links for further information and examples

| | |
|---|---|
| *compact* | Display compact output data structure |
| *highstate* | Outputter for displaying results of state runs |
| *json_out* | Display return data in JSON format |
| *key* | Display salt-key output |
| *nested* | Recursively display nested data |
| *newline_values_only* | Display values only, separated by newlines |
| *no_out* | Display no output |
| *no_return* | Display output for minions that did not return |
| *overstatestage* | Display clean output of an overstate stage |
| *pprint_out* | Python pretty-print (pprint) |
| *progress* | Display return data as a progress bar |
| *raw* | Display raw output data structure |
| *txt* | Simple text outputter |
| *virt_query* | virt.query outputter |
| *yaml_out* | Display return data in YAML format |

### 13.8.1 salt.output.compact

#### Display compact output data structure

Example output:: `saltdev': {`test_|-always-passes_|-foo_|-succeed_without_changes': {`comment': `Success!', `name': `foo', `start_time': `05:16:26.111814', `result': True, `duration': 1, `__run_num__': 0, `changes': {}}, `test_|-my-custom-combo_|-foo_|-configurable_test_state': {`comment': `bar.baz', `name': `foo', `start_time': `05:16:26.117177', `result': False, `duration': 1, `__run_num__': 4, `changes': {`testing': {`new': `Something pretended to change', `old': `Unchanged'}}}, `test_|-always-fails_|-foo_|-fail_without_changes': {`comment': `Failure!', `name': `foo', `start_time': `05:16:26.113124', `result': False, `duration': 1, `__run_num__': 1, `changes': {}}, `test_|-always-changes-and-succeeds_|-foo_|-succeed_with_changes': {`comment': `Success!', `name': `foo', `start_time': `05:16:26.114570', `result': True, `duration': 0, `__run_num__': 2, `changes': {`testing': {`new': `Something pretended to change', `old': `Unchanged'}}}, `test_|-always-changes-and-fails_|-foo_|-fail_with_changes': {`comment': `Failure!', `name': `foo', `start_time': `05:16:26.115561', `result': False, `duration': 1, `__run_num__': 3, `changes': {`testing': {`new': `Something pretended to change', `old': `Unchanged'}}}}}{`myminion': {`foo': {`list': ['Hello', `World'], `bar': `baz', `dictionary': {`abc': 123, `def': 456}}}}

`salt.output.compact.`**`output`**(*data*)
Rather basic....

### 13.8.2 salt.output.highstate

#### Outputter for displaying results of state runs

The return data from the Highstate command is a standard data structure which is parsed by the highstate outputter to deliver a clean and readable set of information about the HighState run on minions.

Two configurations can be set to modify the highstate outputter. These values can be set in the master config to change the output of the `salt` command or set in the minion config to change the output of the `salt-call` command.

**state_verbose**: By default *state_verbose* is set to *True*, setting this to *False* will instruct the highstate outputter to omit displaying anything in green, this means that nothing with a result of True and no changes will not be printed

**state_output**: The highstate outputter has five output modes, `full`, `terse`, `mixed`, `changes` and `filter`.

- The default is set to `full`, which will display many lines of detailed information for each executed chunk.
- If `terse` is used, then the output is greatly simplified and shown in only one line.
- If `mixed` is used, then terse output will be used unless a state failed, in which case full output will be used.
- If `changes` is used, then terse output will be used if there was no error and no changes, otherwise full output will be used.
- If `filter` is used, then either or both of two different filters can be used: `exclude` or `terse`. * for `exclude`, state.highstate expects a list of states to be excluded

  (or `None`) followed by `True` for terse output or `False` for regular output. Because of parsing nuances, if only one of these is used, it must still contain a comma. For instance: *exclude=True,*.

  - for `terse`, state.highstate expects simply `True` or `False`.

  These can be set as such from the command line, or in the Salt config as *state_output_exclude* or *state_output_terse*, respectively.

**state_tabular**: If *state_output* uses the terse output, set this to *True* for an aligned output format. If you wish to use a custom format, this can be set to a string.

Example usage:

If `state_output: filter` is set in the configuration file:

```
salt '*' state.highstate exclude=None,True
```

means to exclude no states from the highstate and turn on terse output.

```
salt twd state.highstate exclude=problemstate1,problemstate2,False
```

means to exclude states `problemstate1` and `problemstate2` from the highstate, and use regular output.

Example output for the above highstate call when `top.sls` defines only one other state to apply to minion `twd`:

```
twd:

Summary for twd
------------
Succeeded: 1 (changed=1)
```

```
Failed:    0
------------
Total states run:     1
```

Example output with no special settings in configuration files:

```
myminion:
----------
          ID: test.ping
    Function: module.run
      Result: True
     Comment: Module function test.ping executed
     Changes:
              ----------
              ret:
                  True

Summary for myminion
------------
Succeeded: 1
Failed:    0
------------
Total:     0
```

salt.output.highstate.**output**(*data*)

The HighState Outputter is only meant to be used with the state.highstate function, or a function that returns highstate return data.

### 13.8.3 salt.output.json_out

#### Display return data in JSON format

**configuration** The output format can be configured in two ways: Using the `--out-indent` CLI flag and specifying a positive integer or a negative integer to group JSON from each minion to a single line.

Or setting the `output_indent` setting in the Master or Minion configuration file with one of the following values:

- `Null`: put each minion return on a single line.
- `pretty`: use four-space indents and sort the keys.
- An integer: specify the indentation level.

Salt's outputters operate on a per-minion basis. Each minion return will be output as a single JSON object once it comes in to the master.

Some JSON parsers can guess when an object ends and a new one begins but many can not. A good way to differentiate between each minion return is to use the single-line output format and to parse each line individually. Example output (truncated):

```
{"dave": {"en0": {"hwaddr": "02:b0:26:32:4c:69", ...}}}
{"jerry": {"en0": {"hwaddr": "02:26:ab:0d:b9:0d", ...}}}
{"kevin": {"en0": {"hwaddr": "02:6d:7f:ce:9f:ee", ...}}}
{"mike": {"en0": {"hwaddr": "02:48:a2:4b:70:a0", ...}}}
{"phill": {"en0": {"hwaddr": "02:1d:cc:a2:33:55", ...}}}
{"stuart": {"en0": {"hwaddr": "02:9a:e0:ea:9e:3c", ...}}}
```

salt.output.json_out.**output**(*data*)
Print the output data in JSON

### 13.8.4 salt.output.key

#### Display salt-key output

The `salt-key` command makes use of this outputter to format its output.

salt.output.key.**output**(*data*)
Read in the dict structure generated by the salt key API methods and print the structure.

### 13.8.5 salt.output.nested

#### Recursively display nested data

This is the default outputter for most execution functions.

Example output:

```
myminion:
    ----------
    foo:
        ----------
        bar:
            baz
        dictionary:
            ----------
            abc:
                123
            def:
                456
        list:
            - Hello
            - World
```

**class** salt.output.nested.**NestDisplay**
Manage the nested display contents

**display**(*ret*, *indent*, *prefix*, *out*)
Recursively iterate down through data structures to determine output

**ustring**(*indent*, *color*, *msg*, *prefix=''*, *suffix=''*, *endc=None*)

salt.output.nested.**output**(*ret*)
Display ret data

### 13.8.6 salt.output.newline_values_only

#### Display values only, separated by newlines

New in version 2015.5.0.

This outputter is designed for Salt CLI return data. It will do the following to the return dict:

1. Get just the values (ignoring the minion IDs).
2. Each value, if it is iterable, is split a separate line.
3. Each minion's values are separated by newlines.

This results in a single string of return data containing all the values from the various minions.

**Warning**: As noted above, this outputter will discard the minion ID. If the minion ID is important, then an outputter that returns the full return dictionary in a parsable format (such as `json`, `pprint`,, or `yaml`) may be more suitable.

#### Example 1

#### Input

```
{
    'myminion': ['127.0.0.1', '10.0.0.1'],
    'second-minion': ['127.0.0.1', '10.0.0.2']
}
```

#### Output

```
127.0.0.1
10.0.0.1
127.0.0.1
10.0.0.2
```

#### Example 2

#### Input

```
{
    'myminion': 8,
    'second-minion': 10
}
```

#### Output

```
8
10
```

salt.output.newline_values_only.**output**(*data*)
Display modified ret data

### 13.8.7 salt.output.no_out

#### Display no output

No output is produced when this outputter is selected

salt.output.no_out.**output**(*ret*)
Don't display data. Used when you only are interested in the return.

### 13.8.8 salt.output.no_return

#### Display output for minions that did not return

This outputter is used to display notices about which minions failed to return when a salt function is run with `-v` or `--verbose`. It should not be called directly from the CLI.

Example output:

```
virtucentos:
    Minion did not return
```

class salt.output.no_return.**NestDisplay**
Create generator for nested output

**display**(*ret*, *indent*, *prefix*, *out*)
Recursively iterate down through data structures to determine output

salt.output.no_return.**output**(*ret*)
Display ret data

### 13.8.9 salt.output.overstatestage

#### Display clean output of an overstate stage

This outputter is used to display OverState stages, and should not be called directly.

salt.output.overstatestage.**output**(*data*)
Format the data for printing stage information from the overstate system

### 13.8.10 salt.output.pprint_out

#### Python pretty-print (pprint)

The python pretty-print system was once the default outputter. It simply passes the return data through to `pprint.pformat` and prints the results.

Example output:

```
{'saltmine': {'foo': {'bar': 'baz',
                      'dictionary': {'abc': 123, 'def': 456},
                      'list': ['Hello', 'World']}}}
```

salt.output.pprint_out.**output**(*data*)
Print out via pretty print

### 13.8.11 salt.output.progress

Display return data as a progress bar

`salt.output.progress.`**`output`**(*ret*, *bar*)
Update the progress bar

`salt.output.progress.`**`progress_iter`**(*progress*)
Initialize and return a progress bar iter

### 13.8.12 salt.output.raw

#### Display raw output data structure

This outputter simply displays the output as a python data structure, by printing a string representation of it. It is similar to the `pprint` outputter, only the data is not nicely formatted/indented.

This was the original outputter used by Salt before the outputter system was developed.

Example output:

```
{'myminion': {'foo': {'list': ['Hello', 'World'], 'bar': 'baz', 'dictionary': {'abc':
↪123, 'def': 456}}}}
```

`salt.output.raw.`**`output`**(*data*)
Rather basic....

### 13.8.13 salt.output.txt

#### Simple text outputter

The txt outputter has been developed to make the output from shell commands on minions appear as they do when the command is executed on the minion.

`salt.output.txt.`**`output`**(*data*)
Output the data in lines, very nice for running commands

### 13.8.14 salt.output.virt_query

#### virt.query outputter

Used to display the output from the *`virt.query`* runner.

`salt.output.virt_query.`**`output`**(*data*)
Display output for the salt-run virt.query function

### 13.8.15 salt.output.yaml_out

#### Display return data in YAML format

This outputter defaults to printing in YAML block mode for better readability.

Example output:

```
saltmine:
  foo:
    bar: baz
    dictionary:
      abc: 123
      def: 456
    list:
      - Hello
      - World
```

salt.output.yaml_out.**output**(*data*)
Print out YAML using the block mode

## 13.9 pillar modules

| | |
|---|---|
| *cmd_json* | Execute a command and read the output as JSON. |
| *cmd_yaml* | Execute a command and read the output as YAML. |
| *cmd_yamlex* | Execute a command and read the output as YAMLEX. |
| *cobbler* | A module to pull data from Cobbler via its API into the Pillar dictionary |
| *consul_pillar* | Use consul data as a Pillar source |
| *django_orm* | Generate Pillar data from Django models through the Django ORM |
| *ec2_pillar* | Retrieve EC2 instance data for minions. |
| *etcd_pillar* | Use etcd data as a Pillar source |
| *file_tree* | `File_tree` is an external pillar that allows |
| *foreman* | A module to pull data from Foreman via its API into the Pillar dictionary |
| *git_pillar* | Use a git repository as a Pillar source |
| *hg_pillar* | Use remote Mercurial repository as a Pillar source. |
| *hiera* | Use hiera data as a Pillar source |
| *http_yaml* | A module that adds data to the Pillar structure retrieved by an http request |
| *libvirt* | Load up the libvirt keys into Pillar for a given minion if said keys have been |
| *mongo* | Read Pillar data from a mongodb collection |
| *mysql* | Retrieve Pillar data by doing a MySQL query |
| *neutron* | Use Openstack Neutron data as a Pillar source. |
| *pepa* | Pepa |
| *pillar_ldap* | Use LDAP data as a Pillar source |
| *puppet* | Execute an unmodified puppet_node_classifier and read the output as YAML. |
| *reclass_adapter* | Use the ``reclass'' database as a Pillar source |
| *redismod* | Read pillar data from a Redis backend |
| *s3* | Copy pillar data from a bucket in Amazon S3 |
| *sql_base* | Retrieve Pillar data by doing a SQL query |
| *sqlcipher* | Retrieve Pillar data by running a SQLCipher query |
| *sqlite3* | Retrieve Pillar data by doing a SQLite3 query |
| *stack* | Simple and flexible YAML ext_pillar which can read pillar from within pillar. |

Continued on next page

Table 13.9 -- continued from previous page

| | |
|---|---|
| *svn_pillar* | Clone a remote SVN repository and use the filesystem as a Pillar source |
| *varstack_pillar* | Use Varstack data as a Pillar source |
| *virtkey* | Accept a key from a hypervisor if the virt runner has already submitted an authorization request |

### 13.9.1 salt.pillar.cmd_json

Execute a command and read the output as JSON. The JSON data is then directly overlaid onto the minion's Pillar data.

`salt.pillar.cmd_json.`**`ext_pillar`**(*minion_id*, *pillar*, *command*)
Execute a command and read the output as JSON

### 13.9.2 salt.pillar.cmd_yaml

Execute a command and read the output as YAML. The YAML data is then directly overlaid onto the minion's Pillar data

`salt.pillar.cmd_yaml.`**`ext_pillar`**(*minion_id*, *pillar*, *command*)
Execute a command and read the output as YAML

### 13.9.3 salt.pillar.cmd_yamlex

Execute a command and read the output as YAMLEX. The YAMLEX data is then directly overlaid onto the minion's Pillar data

`salt.pillar.cmd_yamlex.`**`ext_pillar`**(*minion_id*, *pillar*, *command*)
Execute a command and read the output as YAMLEX

### 13.9.4 salt.pillar.cobbler

A module to pull data from Cobbler via its API into the Pillar dictionary

#### Configuring the Cobbler ext_pillar

The same cobbler.* parameters are used for both the Cobbler tops and Cobbler pillar modules.

```
ext_pillar:
- cobbler:
    key: cobbler # Nest results within this key. By default, values are not nested.
    only: [parameters] # Add only these keys to pillar.

cobbler.url: https://example.com/cobbler_api #default is http://localhost/cobbler_api
cobbler.user: username # default is no username
cobbler.password: password # default is no password
```

### Module Documentation

salt.pillar.cobbler.**ext_pillar**(*minion_id*, *pillar*, *key=None*, *only=()*)
Read pillar data from Cobbler via its API.

## 13.9.5 salt.pillar.consul_pillar module

Use consul data as a Pillar source

**depends**

- python-consul

In order to use an consul server, a profile must be created in the master configuration file:

```
my_consul_config:
  consul.host: 127.0.0.1
  consul.port: 8500
  consul.token: my_consul_acl_token
```

The `consul.token` is optional and requires python-consul >= 0.4.7.

After the profile is created, configure the external pillar system to use it. Optionally, a root may be specified.

```
ext_pillar:
  - consul: my_consul_config

ext_pillar:
  - consul: my_consul_config root=/salt
```

Using these configuration profiles, multiple consul sources may also be used:

```
ext_pillar:
  - consul: my_consul_config
  - consul: my_other_consul_config
```

The `minion_id` may be used in the `root` path to expose minion-specific information stored in consul.

```
ext_pillar:
  - consul: my_consul_config root=/salt/%(minion_id)s
```

Minion-specific values may override shared values when the minion-specific root appears after the shared root:

```
ext_pillar:
  - consul: my_consul_config root=/salt-shared
  - consul: my_other_consul_config root=/salt-private/%(minion_id)s
```

salt.pillar.consul_pillar.**consul_fetch**(*client*, *path*)
Query consul for all keys/values within base path

salt.pillar.consul_pillar.**ext_pillar**(*minion_id*, *pillar*, *conf*)
Check consul for all data

salt.pillar.consul_pillar.**fetch_tree**(*client*, *path*)
Grab data from consul, trim base path and remove any keys which are folders. Take the remaining data and send it to be formatted in such a way as to be used as pillar data.

salt.pillar.consul_pillar.**get_conn**(*opts*, *profile*)
Return a client object for accessing consul

salt.pillar.consul_pillar.**pillar_format**(*ret*, *keys*, *value*)
Perform data formatting to be used as pillar data and merge it with the current pillar data

### 13.9.6 salt.pillar.django_orm

Generate Pillar data from Django models through the Django ORM

**maintainer** Micah Hausler <micah.hausler@gmail.com>

**maturity** new

#### Configuring the django_orm ext_pillar

To use this module, your Django project must be on the salt master server with database access. This assumes you are using virtualenv with all the project's requirements installed.

```
ext_pillar:
  - django_orm:
      pillar_name: my_application
      project_path: /path/to/project/
      settings_module: my_application.settings
      env_file: /path/to/env/file.sh
      # Optional: If your project is not using the system python,
      # add your virtualenv path below.
      env: /path/to/virtualenv/

      django_app:

        # Required: the app that is included in INSTALLED_APPS
        my_application.clients:

          # Required: the model name
          Client:

            # Required: model field to use as the key in the rendered
            # Pillar. Must be unique; must also be included in the
            # ``fields`` list below.
            name: shortname

            # Optional:
            # See Django's QuerySet documentation for how to use .filter()
            filter:  {'kw': 'args'}

            # Required: a list of field names
            # List items will be used as arguments to the .values() method.
            # See Django's QuerySet documentation for how to use .values()
            fields:
              - field_1
              - field_2
```

This would return pillar data that would look like

```
my_application:
  my_application.clients:
    Client:
      client_1:
        field_1: data_from_field_1
```

```
        field_2: data_from_field_2
      client_2:
        field_1: data_from_field_1
        field_2: data_from_field_2
```

As another example, data from multiple database tables can be fetched using Django's regular lookup syntax. Note, using ManyToManyFields will not currently work since the return from values() changes if a ManyToMany is present.

```
ext_pillar:
  - django_orm:
      pillar_name: djangotutorial
      project_path: /path/to/mysite
      settings_module: mysite.settings

      django_app:
        mysite.polls:
          Choices:
            name: poll__question
            fields:
              - poll__question
              - poll__id
              - choice_text
              - votes
```

#### Module Documentation

salt.pillar.django_orm.**ext_pillar**(*minion_id*, *pillar*, *pillar_name*, *project_path*, *settings_module*, *django_app*, *env=None*, *env_file=None*, **args*, ***kwargs*)

Connect to a Django database through the ORM and retrieve model fields

**Parameters**

- **pillar_name** (*str*) -- The name of the pillar to be returned
- **project_path** (*str*) -- The full path to your Django project (the directory manage.py is in)
- **settings_module** (*str*) -- The settings module for your project. This can be found in your manage.py file
- **django_app** (*str*) -- A dictionary containing your apps, models, and fields
- **env** (*str*) -- The full path to the virtualenv for your Django project
- **env_file** (*str*) -- An optional bash file that sets up your environment. The file is run in a subprocess and the changed variables are then added

### 13.9.7 salt.pillar.ec2_pillar

Retrieve EC2 instance data for minions.

The minion id must be the instance-id retrieved from AWS. As an option, use_grain can be set to True. This allows the use of an instance-id grain instead of the minion-id. Since this is a potential security risk, the configuration can be further expanded to include a list of minions that are trusted to only allow the alternate id of the instances to specific hosts. There is no glob matching at this time.

```
ext_pillar:
  - ec2_pillar:
      use_grain: True
      minion_ids:
        - trusted-minion-1
        - trusted-minion-2
        - trusted-minion-3
```

This is a very simple pillar that simply retrieves the instance data from AWS. Currently the only portion implemented are EC2 tags, which returns a list of key/value pairs for all of the EC2 tags assigned to the instance.

`salt.pillar.ec2_pillar.`**`ext_pillar`**(*minion_id*, *pillar*, *use_grain=False*, *minion_ids=None*)
Execute a command and read the output as YAML

### 13.9.8 salt.pillar.etcd_pillar

Use etcd data as a Pillar source

New in version 2014.7.0.

**depends**

- python-etcd

In order to use an etcd server, a profile must be created in the master configuration file:

```
my_etcd_config:
  etcd.host: 127.0.0.1
  etcd.port: 4001
```

After the profile is created, configure the external pillar system to use it. Optionally, a root may be specified.

```
ext_pillar:
  - etcd: my_etcd_config

ext_pillar:
  - etcd: my_etcd_config root=/salt
```

Using these configuration profiles, multiple etcd sources may also be used:

```
ext_pillar:
  - etcd: my_etcd_config
  - etcd: my_other_etcd_config
```

The `minion_id` may be used in the `root` path to expose minion-specific information stored in etcd.

```
ext_pillar:
  - etcd: my_etcd_config root=/salt/%(minion_id)s
```

Minion-specific values may override shared values when the minion-specific root appears after the shared root:

```
ext_pillar:
  - etcd: my_etcd_config root=/salt-shared
  - etcd: my_other_etcd_config root=/salt-private/%(minion_id)s
```

Using the configuration above, the following commands could be used to share a key with all minions but override its value for a specific minion:

```
etcdctl set /salt-shared/mykey my_value
etcdctl set /salt-private/special_minion_id/mykey my_other_value
```

salt.pillar.etcd_pillar.**ext_pillar**(*minion_id*, *pillar*, *conf*)
Check etcd for all data

### 13.9.9 salt.pillar.file_tree

`File_tree` is an external pillar that allows values from all files in a directory tree to be imported as Pillar data.

Note this is an external pillar, and is subject to the rules and constraints governing external pillars detailed here: *External Pillars*.

New in version 2015.5.0.

#### Example Configuration

```
ext_pillar:
  - file_tree:
      root_dir: /path/to/root/directory
      follow_dir_links: False
      keep_newline: True
```

The `root_dir` parameter is required and points to the directory where files for each host are stored. The `follow_dir_links` parameter is optional and defaults to False. If `follow_dir_links` is set to True, this external pillar will follow symbolic links to other directories.

**Warning**: Be careful when using `follow_dir_links`, as a recursive symlink chain will result in unexpected results.

If `keep_newline` is set to `True`, then the pillar values for files ending in newlines will keep that newline. The default behavior is to remove the end-of-file newline. `keep_newline` should be turned on if the pillar data is intended to be used to deploy a file using `contents_pillar` with a *`file.managed`* state.

Changed in version 2015.8.4: The `raw_data` parameter has been renamed to `keep_newline`. In earlier releases, `raw_data` must be used. Also, this parameter can now be a list of globs, allowing for more granular control over which pillar values keep their end-of-file newline. The globs match paths relative to the directories named for minion IDs and nodegroups underneath the `root_dir` (see the layout examples in the below sections).

```
ext_pillar:
  - file_tree:
      root_dir: /path/to/root/directory
      keep_newline:
        - files/testdir/*
```

**Note**: In earlier releases, this documentation incorrectly stated that binary files would not affected by the `keep_newline` configuration. However, this module does not actually distinguish between binary and text files.

### Assigning Pillar Data to Individual Hosts

To configure pillar data for each host, this external pillar will recursively iterate over `root_dir`/hosts/`id` (where `id` is a minion ID), and compile pillar data with each subdirectory as a dictionary key and each file as a value.

For example, the following `root_dir` tree:

```
./hosts/
./hosts/test-host/
./hosts/test-host/files/
./hosts/test-host/files/testdir/
./hosts/test-host/files/testdir/file1.txt
./hosts/test-host/files/testdir/file2.txt
./hosts/test-host/files/another-testdir/
./hosts/test-host/files/another-testdir/symlink-to-file1.txt
```

will result in the following pillar tree for minion with ID `test-host`:

```
test-host:
    ----------
    files:
        ----------
        another-testdir:
            ----------
            symlink-to-file1.txt:
                Contents of file #1.

        testdir:
            ----------
            file1.txt:
                Contents of file #1.

            file2.txt:
                Contents of file #2.
```

**Note**: Subdirectories underneath `root_dir`/hosts/`id` become nested dictionaries, as shown above.

### Assigning Pillar Data to Entire Nodegroups

To assign Pillar data to all minions in a given nodegroup, this external pillar recursively iterates over `root_dir`/nodegroups/`nodegroup` (where `nodegroup` is the name of a nodegroup), and like for individual hosts, compiles pillar data with each subdirectory as a dictionary key and each file as a value.

**Important**: If the same Pillar key is set for a minion both by nodegroup and by individual host, then the value set for the individual host will take precedence.

For example, the following `root_dir` tree:

```
./nodegroups/
./nodegroups/test-group/
./nodegroups/test-group/files/
./nodegroups/test-group/files/testdir/
./nodegroups/test-group/files/testdir/file1.txt
./nodegroups/test-group/files/testdir/file2.txt
```

```
./nodegroups/test-group/files/another-testdir/
./nodegroups/test-group/files/another-testdir/symlink-to-file1.txt
```

will result in the following pillar data for minions in the node group `test-group`:

```
test-host:
    ----------
    files:
        ----------
        another-testdir:
            ----------
            symlink-to-file1.txt:
                Contents of file #1.

        testdir:
            ----------
            file1.txt:
                Contents of file #1.

            file2.txt:
                Contents of file #2.
```

salt.pillar.file_tree.**ext_pillar**(*minion_id*, *pillar*, *root_dir=None*, *follow_dir_links=False*, *debug=False*, *raw_data=None*, *keep_newline=False*)

Compile pillar data for the specified minion ID

### 13.9.10 salt.pillar.foreman

A module to pull data from Foreman via its API into the Pillar dictionary

#### Configuring the Foreman ext_pillar

Set the following Salt config to setup Foreman as external pillar source:

```
ext_pillar:
  - foreman:
      key: foreman # Nest results within this key
      only: ['hostgroup_name', 'parameters'] # Add only these keys to pillar

foreman.url: https://example.com/foreman_api
foreman.user: username # default is admin
foreman.password: password # default is changeme
```

The following options are optional:

```
foreman.api: apiversion # default is 2 (1 is not supported yet)
foreman.verifyssl: False # default is True
foreman.certfile: /etc/ssl/certs/mycert.pem # default is None
foreman.keyfile: /etc/ssl/private/mykey.pem # default is None
foreman.cafile: /etc/ssl/certs/mycert.ca.pem # default is None
foreman.lookup_parameters: True # default is True
```

An alternative would be to use the Foreman modules integrating Salt features in the Smart Proxy and the webinterface.

Further information can be found on GitHub.

### Module Documentation

salt.pillar.foreman.**ext_pillar**(*minion_id*, *pillar*, *key=None*, *only=()*)
Read pillar data from Foreman via its API.

## 13.9.11 salt.pillar.git_pillar

### Use a git repository as a Pillar source

---

**Note**: This external pillar has been rewritten for the *2015.8.0* release. The old method of configuring this external pillar will be maintained for a couple releases, allowing time for configurations to be updated to reflect the new usage.

---

This external pillar allows for a Pillar top file and Pillar SLS files to be sourced from a git repository.

However, since git_pillar does not have an equivalent to the *pillar_roots* parameter, configuration is slightly different. A Pillar top file is required to be in the git repository and must still contain the relevant environment, like so:

```
base:
  '*':
    - foo
```

The branch/tag which maps to that environment must then be specified along with the repo's URL. Configuration details can be found below.

---

**Important**: Each branch/tag used for git_pillar must have its own top file. This is different from how the top file works when configuring *States*. The reason for this is that each git_pillar branch/tag is processed separately from the rest. Therefore, if the `qa` branch is to be used for git_pillar, it would need to have its own top file, with the `qa` environment defined within it, like this:

```
qa:
  'dev-*':
    - bar
```

Additionally, while git_pillar allows for the branch/tag to be overridden (see *here*, or *here* for Salt releases before 2015.8.0), keep in mind that the top file must reference the actual environment name. It is common practice to make the environment in a git_pillar top file match the branch/tag name, but when remapping, the environment of course no longer matches the branch/tag, and the top file needs to be adjusted accordingly. When expected Pillar values configured in git_pillar are missing, this is a common misconfiguration that may be to blame, and is a good first step in troubleshooting.

---

### Configuring git_pillar for Salt releases before 2015.8.0

For Salt releases earlier than *2015.8.0*, GitPython is the only supported provider for git_pillar. Individual repositories can be configured under the *ext_pillar* configuration parameter like so:

```
ext_pillar:
  - git: master https://gitserver/git-pillar.git root=subdirectory
```

The repository is specified in the format `<branch> <repo_url>`, with an optional `root` parameter (added in the *2014.7.0* release) which allows the pillar SLS files to be served up from a subdirectory (similar to *gitfs_root* in gitfs).

To use more than one branch from the same repo, multiple lines must be specified under *ext_pillar*:

```
ext_pillar:
  - git: master https://gitserver/git-pillar.git
  - git: dev https://gitserver/git-pillar.git
```

To remap a specific branch to a specific Pillar environment, use the format `<branch>:<env>`:

```
ext_pillar:
  - git: develop:dev https://gitserver/git-pillar.git
  - git: master:prod https://gitserver/git-pillar.git
```

In this case, the `develop` branch would need its own `top.sls` with a `dev` section in it, like this:

```
dev:
  '*':
    - bar
```

The `master` branch would need its own `top.sls` with a `prod` section in it:

```
prod:
  '*':
    - bar
```

If `__env__` is specified as the branch name, then git_pillar will first look at the minion's *environment* option. If unset, it will fall back to using branch specified by the master's *gitfs_base*:

```
ext_pillar:
  - git: __env__ https://gitserver/git-pillar.git root=pillar
```

The corresponding Pillar top file would look like this:

```
{{env}}:
  '*':
    - bar
```

---

**Note**: This feature was unintentionally omitted when git_pillar was rewritten for the 2015.8.0 release. It was added again in the 2016.3.4 release, but it has changed slightly in that release. On Salt masters running 2015.8.0 through 2016.3.3, this feature can only be accessed using the legacy config described above. For 2016.3.4 and later, refer to explanation of the `__env__` parameter in the below section.

Versions 2016.3.0 through 2016.3.4 incorrectly check the *master's* `environment` config option (instead of the minion's) before falling back to *gitfs_base*. This has been fixed in the 2016.3.5 and 2016.11.1 releases (2016.11.0 contains the incorrect behavior).

---

#### Configuring git_pillar for Salt releases 2015.8.0 and later

---

**Note**: In version 2015.8.0, the method of configuring git external pillars has changed, and now more closely resembles that of the *Git Fileserver Backend*. If Salt detects the old configuration schema, it will use the pre-2015.8.0 code

to compile the external pillar. A warning will also be logged.

Beginning with Salt version 2015.8.0, pygit2 is now supported in addition to GitPython (Dulwich will not be supported for the foreseeable future). The requirements for GitPython and pygit2 are the same as for gitfs, as described *here*.

**Important**: git_pillar has its own set of global configuration parameters. While it may seem intuitive to use the global gitfs configuration parameters (*gitfs_base*, etc.) to manage git_pillar, this will not work. The main difference for this is the fact that the different components which use Salt's git backend code do not all function identically. For instance, in git_pillar it is necessary to specify which branch/tag to be used for git_pillar remotes. This is the reverse behavior from gitfs, where branches/tags make up your environments.

See here for documentation on the git_pillar configuration options and their usage.

Here is an example git_pillar configuration:

```
ext_pillar:
  - git:
    # Use 'prod' instead of the branch name 'production' as the environment
    - production https://gitserver/git-pillar.git:
      - env: prod
    # Use 'dev' instead of the branch name 'develop' as the environment
    - develop https://gitserver/git-pillar.git:
      - env: dev
    # No per-remote config parameters (and no trailing colon), 'qa' will
    # be used as the environment
    - qa https://gitserver/git-pillar.git
    # SSH key authentication
    - master git@other-git-server:pillardata-ssh.git:
      # Pillar SLS files will be read from the 'pillar' subdirectory in
      # this repository
      - root: pillar
      - privkey: /path/to/key
      - pubkey: /path/to/key.pub
      - passphrase: CorrectHorseBatteryStaple
    # HTTPS authentication
    - master https://other-git-server/pillardata-https.git:
      - user: git
      - password: CorrectHorseBatteryStaple
```

The main difference between this and the old way of configuring git_pillar is that multiple remotes can be configured under one `git` section under *ext_pillar*. More than one `git` section can be used, but it is not necessary. Remotes will be evaluated sequentially.

Per-remote configuration parameters are supported (similar to *gitfs*), and global versions of the git_pillar configuration parameters can also be set. To remap a specific branch to a specific Pillar environment, use the `env` per-remote parameter:

```
ext_pillar:
  - git:
    - production https://gitserver/git-pillar.git:
      - env: prod
```

If `__env__` is specified as the branch name, then git_pillar will use the branch specified by *git_pillar_base*:

```
ext_pillar:
  - git:
    - __env__ https://gitserver/git-pillar.git:
      - root: pillar
```

The corresponding Pillar top file would look like this:

```
{{env}}:
  '*':
    - bar
```

---

**Note**: This feature was unintentionally omitted when git_pillar was rewritten for the 2015.8.0 release. It was added again in the 2016.3.4 release, but it has changed slightly in that release. The fallback value replaced by `{{env}}` is :conf_master: is *`git_pillar_base`*, while the legacy config's version of this feature replaces `{{env}}` with *`gitfs_base`*.

On Salt masters running 2015.8.0 through 2016.3.3, this feature can only be accessed using the legacy config in the previous section of this page.

The same issue which affected the behavior of the minion's *`environment`* config value using the legacy configuration syntax (see the documentation in the pre-2015.8.0 section above for the legacy support of this feature) also affects the new-style git_pillar syntax in version 2016.3.4. This has been corrected in version 2016.3.5 and 2016.11.1 (2016.11.0 contains the incorrect behavior).

2016.3.4 incorrectly checks the *master's* `environment` config option (instead of the minion's) before falling back to the master's *`git_pillar_base`*.

---

With the addition of pygit2 support, git_pillar can now interact with authenticated remotes. Authentication works just like in gitfs (as outlined in the *Git Fileserver Backend Walkthrough*), only with the global authenication parameter names prefixed with `git_pillar` instead of `gitfs` (e.g. *`git_pillar_pubkey`*, *`git_pillar_privkey`*, *`git_pillar_passphrase`*, etc.).

---

**Note**: The `name` parameter can be used to further differentiate between two remotes with the same URL and branch. When using two remotes with the same URL, the `name` option is required.

---

`salt.pillar.git_pillar.`**`ext_pillar`**(*minion_id*, *repo*, *pillar_dirs*)
Checkout the ext_pillar sources and compile the resulting pillar SLS

### 13.9.12 salt.pillar.hg_pillar

Use remote Mercurial repository as a Pillar source.

New in version 2015.8.0.

The module depends on the `hglib` python module being available. This is the same requirement as for hgfs_ so should not pose any extra hurdles.

This external Pillar source can be configured in the master config file as such:

```
ext_pillar:
  - hg: ssh://hg@example.co/user/repo
```

**class** `salt.pillar.hg_pillar.`**`Repo`**(*repo_uri*)
Deal with remote hg (mercurial) repository for Pillar

**close**()
Cleanup mercurial command server

**pull**()

**update**(*branch='default'*)
Ensure we are using the latest revision in the hg repository

salt.pillar.hg_pillar.**ext_pillar**(*minion_id*, *pillar*, *repo*, *branch='default'*, *root=None*)
Extract pillar from an hg repository

salt.pillar.hg_pillar.**update**(*repo_uri*)
Execute an hg pull on all the repos

### 13.9.13 salt.pillar.hiera

Use hiera data as a Pillar source

salt.pillar.hiera.**ext_pillar**(*minion_id*, *pillar*, *conf*)
Execute hiera and return the data

### 13.9.14 salt.pillar.http_yaml module

A module that adds data to the Pillar structure retrieved by an http request

#### Configuring the HTTP_YAML ext_pillar

Set the following Salt config to setup Foreman as external pillar source:

```
ext_pillar:
  - http_yaml:
      url: http://example.com/api/minion_id
      ::TODO::
      username: username
      password: password
```

#### Module Documentation

salt.pillar.http_yaml.**ext_pillar**(*minion_id*, *pillar*, *url=None*)
Read pillar data from HTTP response.

:param url String to make request :returns dict with pillar data to add :returns empty if error

### 13.9.15 salt.pillar.libvirt

Load up the libvirt keys into Pillar for a given minion if said keys have been generated using the libvirt key runner

**depends** certtool

salt.pillar.libvirt.**ext_pillar**(*minion_id*, *pillar*, *command*)
Read in the generated libvirt keys

salt.pillar.libvirt.**gen_hyper_keys**(*minion_id*, *country='US'*, *state='Utah'*, *locality='Salt Lake City'*, *organization='Salted'*)

Generate the keys to be used by libvirt hypervisors, this routine gens the keys and applies them to the pillar for the hypervisor minions

### 13.9.16 salt.pillar.mongo

Read Pillar data from a mongodb collection

**depends** pymongo (for salt-master)

This module will load a node-specific pillar dictionary from a mongo collection. It uses the node's id for lookups and can load either the whole document, or just a specific field from that document as the pillar dictionary.

#### Salt Master Mongo Configuration

The module shares the same base mongo connection variables as *salt.returners.mongo_return*. These variables go in your master config file.

- `mongo.db` - The mongo database to connect to. Defaults to `'salt'`.
- `mongo.host` - The mongo host to connect to. Supports replica sets by specifying all hosts in the set, comma-delimited. Defaults to `'salt'`.
- `mongo.port` - The port that the mongo database is running on. Defaults to `27017`.
- `mongo.user` - The username for connecting to mongo. Only required if you are using mongo authentication. Defaults to `''`.
- `mongo.password` - The password for connecting to mongo. Only required if you are using mongo authentication. Defaults to `''`.

#### Configuring the Mongo ext_pillar

The Mongo ext_pillar takes advantage of the fact that the Salt Master configuration file is yaml. It uses a sub-dictionary of values to adjust specific features of the pillar. This is the explicit single-line dictionary notation for yaml. One may be able to get the easier-to-read multi-line dict to work correctly with some experimentation.

```
ext_pillar:
  - mongo: {collection: vm, id_field: name, re_pattern: \.example\.com, fields:
↪[customer_id, software, apache_vhosts]}
```

In the example above, we've decided to use the `vm` collection in the database to store the data. Minion ids are stored in the `name` field on documents in that collection. And, since minion ids are FQDNs in most cases, we'll need to trim the domain name in order to find the minion by hostname in the collection. When we find a minion, return only the `customer_id`, `software`, and `apache_vhosts` fields, as that will contain the data we want for a given node. They will be available directly inside the `pillar` dict in your SLS templates.

#### Module Documentation

salt.pillar.mongo.**ext_pillar**(*minion_id*, *pillar*, *collection='pillar'*, *id_field='_id'*, *re_pattern=None*, *re_replace=''*, *fields=None*)

Connect to a mongo database and read per-node pillar information.

**Parameters**:

- *collection*: The mongodb collection to read data from. Defaults to `'pillar'`.

- *id_field*: The field in the collection that represents an individual minion id. Defaults to `'_id'`.
- *re_pattern*: If your naming convention in the collection is shorter than the minion id, you can use this to trim the name. *re_pattern* will be used to match the name, and *re_replace* will be used to replace it. Backrefs are supported as they are in the Python standard library. If `None`, no mangling of the name will be performed - the collection will be searched with the entire minion id. Defaults to `None`.
- *re_replace*: Use as the replacement value in node ids matched with *re_pattern*. Defaults to `''. Feel free to use backreferences here.
- *fields*: The specific fields in the document to use for the pillar data. If `None`, will use the entire document. If using the entire document, the `_id` field will be converted to string. Be careful with other fields in the document as they must be string serializable. Defaults to `None`.

### 13.9.17 salt.pillar.mysql

Retrieve Pillar data by doing a MySQL query

MariaDB provides Python support through the MySQL Python package. Therefore, you may use this module with both MySQL or MariaDB.

This module is a concrete implementation of the sql_base ext_pillar for MySQL.

**maturity** new

**depends** python-mysqldb

**platform** all

#### Configuring the mysql ext_pillar

Use the `mysql' key under ext_pillar for configuration of queries.

MySQL configuration of the MySQL returner is being used (mysql.db, mysql.user, mysql.pass, mysql.port, mysql.host) for database connection info.

Required python modules: MySQLdb

#### Complete example

```
mysql:
  user: 'salt'
  pass: 'super_secret_password'
  db: 'salt_db'

ext_pillar:
  - mysql:
      fromdb:
        query: 'SELECT col1,col2,col3,col4,col5,col6,col7
                  FROM some_random_table
                 WHERE minion_pattern LIKE %s'
        depth: 5
        as_list: True
        with_lists: [1,3]
```

class `salt.pillar.mysql.`**`MySQLExtPillar`**

This class receives and processes the database rows from MySQL.

**extract_queries**(*args*, *kwargs*)
This function normalizes the config block into a set of queries we can use. The return is a list of consistently laid out dicts.

salt.pillar.mysql.**ext_pillar**(*minion_id*, *pillar*, **args*, ***kwargs*)
Execute queries against MySQL, merge and return as a dict

### 13.9.18 salt.pillar.neutron module

Use Openstack Neutron data as a Pillar source. Will list all networks listed inside of Neutron, to all minions.

New in version 2015.5.1.

**depends**

- python-neutronclient

A keystone profile must be used for the pillar to work (no generic keystone configuration here). For example:

```
my openstack_config:
  keystone.user: 'admin'
  keystone.password: 'password'
  keystone.tenant: 'admin'
  keystone.auth_url: 'http://127.0.0.1:5000/v2.0/'
  keystone.region_name: 'RegionOne'
  keystone.service_type: 'network'
```

After the profile is created, configure the external pillar system to use it.

```
ext_pillar:
  - neutron: my_openstack_config
```

Using these configuration profiles, multiple neutron sources may also be used:

```
ext_pillar:
  - neutron: my_openstack_config
  - neutron: my_other_openstack_config
```

By default, these networks will be returned as a pillar item called `networks`. In order to have them returned under a different name, add the name after the Keystone profile name:

**ext_pillar**:

- neutron: my_openstack_config neutron_networks

salt.pillar.neutron.**ext_pillar**(*minion_id*, *pillar*, *conf*)
Check neutron for all data

### 13.9.19 salt.pillar.pepa

#### Pepa

Configuration templating for SaltStack using Hierarchical substitution and Jinja.

### Configuring Pepa

```
extension_modules: /srv/salt/ext

ext_pillar:
  - pepa:
      resource: host                # Name of resource directory and sub-key in pillars
      sequence:                     # Sequence used for hierarchical substitution
        - hostname:                 # Name of key
            name: input             # Alias used for template directory
           base_only: True         # Only use templates from Base environment, i.e. no
 ↪staging
        - default:
        - environment:
        - location..region:
            name: region
        - location..country:
            name: country
        - location..datacenter:
            name: datacenter
        - roles:
        - osfinger:
            name: os
        - hostname:
            name: override
            base_only: True
      subkey: True                  # Create a sub-key in pillars, named after the
 ↪resource in this case [host]
      subkey_only: True             # Only create a sub-key, and leave the top level
 ↪untouched

pepa_roots:                         # Base directory for each environment
  base: /srv/pepa/base              # Path for base environment
  dev: /srv/pepa/base               # Associate dev with base
  qa: /srv/pepa/qa
  prod: /srv/pepa/prod

# Use a different delimiter for nested dictionaries, defaults to '..' since some keys
 ↪may use '.' in the name
#pepa_delimiter: ..

# Supply Grains for Pepa, this should **ONLY** be used for testing or validation
#pepa_grains:
#  environment: dev

# Supply Pillar for Pepa, this should **ONLY** be used for testing or validation
#pepa_pillars:
#  saltversion: 0.17.4

# Enable debug for Pepa, and keep Salt on warning
#log_level: debug

#log_granular_levels:
#  salt: warning
#  salt.loaded.ext.pillar.pepa: debug
```

Pepa can also be used in Master-less SaltStack setup.

### Command line

```
usage: pepa.py [-h] [-c CONFIG] [-d] [-g GRAINS] [-p PILLAR] [-n] [-v]
               hostname

positional arguments:
  hostname              Hostname

optional arguments:
  -h, --help            show this help message and exit
  -c CONFIG, --config CONFIG
                        Configuration file
  -d, --debug           Print debug info
  -g GRAINS, --grains GRAINS
                        Input Grains as YAML
  -p PILLAR, --pillar PILLAR
                        Input Pillar as YAML
  -n, --no-color        No color output
  -v, --validate        Validate output
```

### Templates

Templates is configuration for a host or software, that can use information from Grains or Pillars. These can then be used for hierarchically substitution.

**Example File**: host/input/test_example_com.yaml

```
location..region: emea
location..country: nl
location..datacenter: foobar
environment: dev
roles:
  - salt.master
network..gateway: 10.0.0.254
network..interfaces..eth0..hwaddr: 00:20:26:a1:12:12
network..interfaces..eth0..dhcp: False
network..interfaces..eth0..ipv4: 10.0.0.3
network..interfaces..eth0..netmask: 255.255.255.0
network..interfaces..eth0..fqdn: {{ hostname }}
cobbler..profile: fedora-19-x86_64
```

As you see in this example you can use Jinja directly inside the template.

**Example File**: host/region/amer.yaml

```
network..dns..servers:
  - 10.0.0.1
  - 10.0.0.2
time..ntp..servers:
  - ntp1.amer.example.com
  - ntp2.amer.example.com
  - ntp3.amer.example.com
time..timezone: America/Chihuahua
yum..mirror: yum.amer.example.com
```

Each template is named after the value of the key using lowercase and all extended characters are replaced with underscore.

**Example**:

osfinger: Fedora-19

**Would become**:

fedora_19.yaml

### Nested dictionaries

In order to create nested dictionaries as output you can use double dot ".." as a delimiter. You can change this using ``pepa_delimiter'' we choose double dot since single dot is already used by key names in some modules, and using ":" requires quoting in the YAML.

**Example**:

```
network..dns..servers:
  - 10.0.0.1
  - 10.0.0.2
network..dns..options:
  - timeout:2
  - attempts:1
  - ndots:1
network..dns..search:
  - example.com
```

**Would become**:

```
network:
  dns:
    servers:
      - 10.0.0.1
      - 10.0.0.2
    options:
      - timeout:2
      - attempts:1
      - ndots:1
    search:
      - example.com
```

### Operators

Operators can be used to merge/unset a list/hash or set the key as immutable, so it can't be changed.

| Operator | Description |
|---|---|
| merge() | Merge list or hash |
| unset() | Unset key |
| immutable() | Set the key as immutable, so it can't be changed |
| imerge() | Set immutable and merge |
| iunset() | Set immutable and unset |

**Example**:

```
network..dns..search..merge():
  - foobar.com
  - dummy.nl
```

```
owner..immutable(): Operations
host..printers..unset():
```

### Validation

Since it's very hard to test Jinja as is, the best approach is to run all the permutations of input and validate the output, i.e. Unit Testing.

To facilitate this in Pepa we use YAML, Jinja and Cerberus <https://github.com/nicolaiarocci/cerberus>.

### Schema

So this is a validation schema for network configuration, as you see it can be customized with Jinja just as Pepa templates.

This was designed to be run as a build job in Jenkins or similar tool. You can provide Grains/Pillar input using either the config file or command line arguments.

**File Example: host/validation/network.yaml**

```
network..dns..search:
  type: list
  allowed:
    - example.com

network..dns..options:
  type: list
  allowed: ['timeout:2', 'attempts:1', 'ndots:1']

network..dns..servers:
  type: list
  schema:
    regex: ^([0-9]{1,3}\.){3}[0-9]{1,3}$

network..gateway:
  type: string
  regex: ^([0-9]{1,3}\.){3}[0-9]{1,3}$

{% if network.interfaces is defined %}
{% for interface in network.interfaces %}

network..interfaces..{{ interface }}..dhcp:
  type: boolean

network..interfaces..{{ interface }}..fqdn:
  type: string
  regex: ^([a-z0-9]([a-z0-9-]{0,61}[a-z0-9])?\.)+[a-zA-Z]{2,6}$

network..interfaces..{{ interface }}..hwaddr:
  type: string
  regex: ^([0-9a-f]{1,2}\:){5}[0-9a-f]{1,2}$

network..interfaces..{{ interface }}..ipv4:
  type: string
  regex: ^([0-9]{1,3}\.){3}[0-9]{1,3}$
```

```
network..interfaces..{{ interface }}..netmask:
  type: string
  regex: ^([0-9]{1,3}\.){3}[0-9]{1,3}$

{% endfor %}
{% endif %}
```

#### Links

For more examples and information see <https://github.com/mickep76/pepa>.

`salt.pillar.pepa.`**`ext_pillar`**(*minion_id*, *pillar*, *resource*, *sequence*, *subkey=False*, *subkey_only=False*)
Evaluate Pepa templates

`salt.pillar.pepa.`**`key_value_to_tree`**(*data*)
Convert key/value to tree

`salt.pillar.pepa.`**`validate`**(*output*, *resource*)
Validate Pepa templates

### 13.9.20 salt.pillar.pillar_ldap

Use LDAP data as a Pillar source

This pillar module executes a series of LDAP searches. Data returned by these searches are aggregated, whereby data returned by later searches override data by previous searches with the same key.

The final result is merged with existing pillar data.

The configuration of this external pillar module is done via an external file which provides the actual configuration for the LDAP searches.

#### Configuring the LDAP ext_pillar

The basic configuration is part of the master configuration.

```
ext_pillar:
  - pillar_ldap: /etc/salt/master.d/pillar_ldap.yaml
```

**Note**: When placing the file in the `master.d` directory, make sure its name doesn't end in `.conf`, otherwise the salt-master process will attempt to parse its content.

**Warning**: Make sure this file has very restrictive permissions, as it will contain possibly sensitive LDAP credentials!

The only required key in the master configuration is `pillar_ldap` pointing to a file containing the actual configuration.

### Configuring the LDAP searches

The file is processed using *Salt's Renderers <renderers>* which makes it possible to reference grains within the configuration.

**Warning**: When using Jinja in this file, make sure to do it in a way which prevents leaking sensitive information. A rogue minion could send arbitrary grains to trick the master into returning secret data. Use only the `id' grain which is verified through the minion's key/cert.

### Map Mode

The `it-admins` configuration below returns the Pillar `it-admins` by:

- **filtering for**:
  - members of the group `it-admins`
  - objects with `objectclass=user`
- returning the data of users (`mode: map`), where each user is a dictionary containing the configured string or list attributes.

  **Configuration**:

```
  salt-users:
      server:    ldap.company.tld
      port:      389
      tls:       true
      dn:        'dc=company,dc=tld
      binddn:    'cn=salt-pillars,ou=users,dc=company,dc=tld'
      bindpw:    bi7ieBai5Ano
      referrals: false
      anonymous: false
      mode:      map
      dn:        'ou=users,dc=company,dc=tld'
      filter:    '(&(memberof=cn=it-
 ↪admins,ou=groups,dc=company,dc=tld)(objectclass=user))'
      attrs:
          - cn
          - displayName
          - givenName
          - sn
      lists:
          - memberOf

**Result:**
```

```
salt-users:
    - cn: cn=johndoe,ou=users,dc=company,dc=tld
      displayName: John Doe
      givenName:   John
      sn:          Doe
      memberOf:
          - cn=it-admins,ou=groups,dc=company,dc=tld
          - cn=team01,ou=groups,dc=company
    - cn: cn=janedoe,ou=users,dc=company,dc=tld
```

```
      displayName: Jane Doe
      givenName:   Jane
      sn:          Doe
      memberOf:
          - cn=it-admins,ou=groups,dc=company,dc=tld
          - cn=team02,ou=groups,dc=company
```

#### List Mode

TODO: see also *_result_to_dict()* documentation

`salt.pillar.pillar_ldap.`**`ext_pillar`**(*minion_id*, *pillar*, *config_file*)
Execute LDAP searches and return the aggregated data

### 13.9.21 salt.pillar.puppet

Execute an unmodified puppet_node_classifier and read the output as YAML. The YAML data is then directly overlaid onto the minion's Pillar data.

`salt.pillar.puppet.`**`ext_pillar`**(*minion_id*, *pillar*, *command*)
Execute an unmodified puppet_node_classifier and read the output as YAML

### 13.9.22 salt.pillar.reclass_adapter

Use the ``reclass'' database as a Pillar source

This `ext_pillar` plugin provides access to the **reclass** database, such that Pillar data for a specific minion are fetched using **reclass**.

You can find more information about **reclass** at http://reclass.pantsfullofunix.net.

To use the plugin, add it to the `ext_pillar` list in the Salt master config and tell **reclass** by way of a few options how and where to find the inventory:

```
ext_pillar:
    - reclass:
        storage_type: yaml_fs
        inventory_base_uri: /srv/salt
```

This would cause **reclass** to read the inventory from YAML files in `/srv/salt/nodes` and `/srv/salt/classes`.

If you are also using **reclass** as `master_tops` plugin, and you want to avoid having to specify the same information for both, use YAML anchors (take note of the differing data types for `ext_pillar` and `master_tops`):

```
reclass: &reclass
    storage_type: yaml_fs
    inventory_base_uri: /srv/salt
    reclass_source_path: ~/code/reclass

ext_pillar:
    - reclass: *reclass

master_tops:
    reclass: *reclass
```

If you want to run reclass from source, rather than installing it, you can either let the master know via the PYTHONPATH environment variable, or by setting the configuration option, like in the example above.

salt.pillar.reclass_adapter.**ext_pillar**(*minion_id*, *pillar*, ***kwargs*)
Obtain the Pillar data from **reclass** for the given `minion_id`.

### 13.9.23 salt.pillar.redismod

#### Read pillar data from a Redis backend

New in version 2014.7.0.

**depends**

- redis Python module (on master)

#### Salt Master Redis Configuration

The module shares the same base Redis connection variables as *salt.returners.redis_return*. These variables go in your master config file.

- `redis.db` - The Redis database to use. Defaults to `0`.
- `redis.host` - The Redis host to connect to. Defaults to `'salt'`.
- `redis.port` - The port that the Redis database is listening on. Defaults to `6379`.
- `redis.password` - The password for authenticating with Redis. Only required if you are using master auth. Defaults to `None`.

#### Configuring the Redis ext_pillar

```
ext_pillar:
  - redis: {function: key_value}
```

salt.pillar.redismod.**ext_pillar**(*minion_id*, *pillar*, *function*, ***kwargs*)
Grabs external pillar data based on configured function

salt.pillar.redismod.**key_json**(*minion_id*, *pillar*, *pillar_key=None*)
Pulls a string from redis and deserializes it from json. Deserialized dictionary data loaded directly into top level if pillar_key is not set.
**pillar_key** Pillar key to return data into

salt.pillar.redismod.**key_value**(*minion_id*, *pillar*, *pillar_key='redis_pillar'*)
Looks for key in redis matching minion_id, returns a structure based on the data type of the redis key. String for string type, dict for hash type and lists for lists, sets and sorted sets.
**pillar_key** Pillar key to return data into

### 13.9.24 salt.pillar.s3

Copy pillar data from a bucket in Amazon S3

The S3 pillar can be configured in the master config file with the following options

```
ext_pillar:
  - s3:
      bucket: my.fancy.pillar.bucket
      keyid: KASKFJWAKJASJKDAJKSD
      key: ksladfDLKDALSFKSD93q032sdDasdfasdflsadkf
      multiple_env: False
      environment: base
      prefix: somewhere/overthere
      verify_ssl: True
      service_url: s3.amazonaws.com
      kms_keyid: 01234567-89ab-cdef-0123-4567890abcde
      s3_cache_expire: 30
      s3_sync_on_update: True
```

The `bucket` parameter specifies the target S3 bucket. It is required.

The `keyid` parameter specifies the key id to use when access the S3 bucket. If it is not provided, an attempt to fetch it from EC2 instance meta-data will be made.

The `key` parameter specifies the key to use when access the S3 bucket. If it is not provided, an attempt to fetch it from EC2 instance meta-data will be made.

The `multiple_env` defaults to False. It specifies whether the pillar should interpret top level folders as pillar environments (see mode section below).

The `environment` defaults to `base'. It specifies which environment the bucket represents when in single environments mode (see mode section below). It is ignored if multiple_env is True.

The `prefix` defaults to ``'. It specifies a key prefix to use when searching for data in the bucket for the pillar. It works when multiple_env is True or False. Essentially it tells ext_pillar to look for your pillar data in a `subdirectory' of your S3 bucket

The `verify_ssl` parameter defaults to True. It specifies whether to check for valid S3 SSL certificates. *NOTE* If you use bucket names with periods, this must be set to False else an invalid certificate error will be thrown (issue #12200).

The `service_url` parameter defaults to `s3.amazonaws.com'. It specifies the base url to use for accessing S3.

The `kms_keyid` parameter is optional. It specifies the ID of the Key Management Service (KMS) master key that was used to encrypt the object.

The `s3_cache_expire` parameter defaults to 30s. It specifies expiration time of S3 metadata cache file.

The `s3_sync_on_update` parameter defaults to True. It specifies if cache is synced on update rather than jit.

This pillar can operate in two modes, single environment per bucket or multiple environments per bucket.

Single environment mode must have this bucket structure:

```
s3://<bucket name>/<prefix>/<files>
```

Multiple environment mode must have this bucket structure:

```
s3://<bucket name>/<prefix>/<environment>/<files>
```

If you wish to define your pillar data entirely within S3 it's recommended that you use the *prefix=* parameter and specify one entry in ext_pillar for each environment rather than specifying multiple_env. This is due to issue #22471 (https://github.com/saltstack/salt/issues/22471)

**class** `salt.pillar.s3.`**`S3Credentials`**(*key*, *keyid*, *bucket*, *service_url*, *verify_ssl=True*, *kms_keyid=None*, *location=None*)

salt.pillar.s3.**ext_pillar**(*minion_id*, *pillar*, *bucket*, *key=None*, *keyid=None*, *verify_ssl=True*, *location=None*, *multiple_env=False*, *environment='base'*, *prefix=''*, *service_url=None*, *kms_keyid=None*, *s3_cache_expire=30*, *s3_sync_on_update=True*)

Execute a command and read the output as YAML

### 13.9.25 salt.pillar.sql_base module

Retrieve Pillar data by doing a SQL query

This module is not meant to be used directly as an ext_pillar. It is a place to put code common to PEP 249 compliant SQL database adapters. It exposes a python ABC that can be subclassed for new database providers.

**maturity** new

**platform** all

#### Theory of sql_base ext_pillar

Ok, here's the theory for how this works...

- First, any non-keyword args are processed in order.
- Then, remaining keywords are processed.

We do this so that it's backward compatible with older configs. Keyword arguments are sorted before being appended, so that they're predictable, but they will always be applied last so overall it's moot.

For each of those items we process, it depends on the object type:

- Strings are executed as is and the pillar depth is determined by the number of fields returned.
- A list has the first entry used as the query, the second as the pillar depth.
- A mapping uses the keys ``query'' and ``depth'' as the tuple

You can retrieve as many fields as you like, how they get used depends on the exact settings.

#### Configuring a sql_base ext_pillar

The sql_base ext_pillar cannot be used directly, but shares query configuration with its implementations. These examples use a fake `sql_base' adapter, which should be replaced with the name of the adapter you are using.

A list of queries can be passed in

```
ext_pillar:
  - sql_base:
      - "SELECT pillar,value FROM pillars WHERE minion_id = %s"
      - "SELECT pillar,value FROM more_pillars WHERE minion_id = %s"
```

Or you can pass in a mapping

```
ext_pillar:
  - sql_base:
      main: "SELECT pillar,value FROM pillars WHERE minion_id = %s"
      extras: "SELECT pillar,value FROM more_pillars WHERE minion_id = %s"
```

The query can be provided as a string as we have just shown, but they can be provided as lists

```
ext_pillar:
  - sql_base:
      - "SELECT pillar,value FROM pillars WHERE minion_id = %s"
        2
```

Or as a mapping

```
ext_pillar:
  - sql_base:
      - query: "SELECT pillar,value FROM pillars WHERE minion_id = %s"
        depth: 2
```

The depth defines how the dicts are constructed. Essentially if you query for fields a,b,c,d for each row you'll get:

- With depth 1: {a: {``b'': b, ``c'': c, ``d'': d}}
- With depth 2: {a: {b: {``c'': c, ``d'': d}}}
- With depth 3: {a: {b: {c: d}}}

Depth greater than 3 wouldn't be different from 3 itself. Depth of 0 translates to the largest depth needed, so 3 in this case. (max depth == key count - 1)

Then they are merged in a similar way to plain pillar data, in the order returned by the SQL database.

Thus subsequent results overwrite previous ones when they collide.

The ignore_null option can be used to change the overwrite behavior so that only non-NULL values in subsequent results will overwrite. This can be used to selectively overwrite default values.

```
ext_pillar:
  - sql_base:
      - query: "SELECT pillar,value FROM pillars WHERE minion_id = 'default' and
↪minion_id != %s"
        depth: 2
      - query: "SELECT pillar,value FROM pillars WHERE minion_id = %s"
        depth: 2
        ignore_null: True
```

If you specify *as_list: True* in the mapping expression it will convert collisions to lists.

If you specify *with_lists: `...'* in the mapping expression it will convert the specified depths to list. The string provided is a sequence numbers that are comma separated. The string `1,3' will result in:

```
a,b,c,d,e,1  # field 1 same, field 3 differs
a,b,c,f,g,2  # ^^^^
a,z,h,y,j,3  # field 1 same, field 3 same
a,z,h,y,k,4  # ^^^^
  ^   ^
```

These columns define list grouping

```
{a: [
      {c: [
          {e: 1},
          {g: 2}
          ]
      },
      {h: [
          {j: 3, k: 4 }
```

```
          ]
      }
]}
```

The range for with_lists is 1 to number_of_fields, inclusive. Numbers outside this range are ignored.

Finally, if you pass the queries in via a mapping, the key will be the first level name where as passing them in as a list will place them in the root. This isolates the query results into their own subtrees. This may be a help or hindrance to your aims and can be used as such.

You can basically use any SELECT query that gets you the information, you could even do joins or subqueries in case your minion_id is stored elsewhere. It is capable of handling single rows or multiple rows per minion.

Configuration of the connection depends on the adapter in use.

#### More complete example for MySQL (to also show configuration)

```
mysql:
  user: 'salt'
  pass: 'super_secret_password'
  db: 'salt_db'

ext_pillar:
  - mysql:
      fromdb:
        query: 'SELECT col1,col2,col3,col4,col5,col6,col7
                  FROM some_random_table
                 WHERE minion_pattern LIKE %s'
        depth: 5
        as_list: True
        with_lists: [1,3]
```

class salt.pillar.sql_base.**SqlBaseExtPillar**

This class receives and processes the database rows in a database agnostic way.

**as_list** = False

**depth** = 0

**enter_root**(*root*)

Set self.focus for kwarg queries

**extract_queries**(*args*, *kwargs*)

This function normalizes the config block into a set of queries we can use. The return is a list of consistently laid out dicts.

**fetch**(*minion_id*, *pillar*, **args*, ***kwargs*)

Execute queries, merge and return as a dict.

**field_names** = None

**focus** = None

**ignore_null** = False

**num_fields** = 0

**process_fields**(*field_names*, *depth*)

The primary purpose of this function is to store the sql field list and the depth to which we process.

**process_results**(*rows*)
This function takes a list of database results and iterates over, merging them into a dict form.

**result** = None

**with_lists** = None

### 13.9.26 salt.pillar.sqlcipher module

Retrieve Pillar data by running a SQLCipher query

New in version 2016.3.0.

Python SQLCipher support is provided by the pysqlcipher Python package. You need this module installed to query Pillar data from a SQLCipher database.

This module is a concrete implementation of the sql_base ext_pillar for SQLCipher.

**maturity** new

**depends** pysqlcipher

**platform** all

#### Configuring the sqlcipher ext_pillar

Use the `sqlcipher' key under ext_pillar for configuration of queries.

SQLCipher database connection configuration requires the following values configured in the master config:

- `sqlcipher.database` - The SQLCipher database to connect to. Defaults to `'/var/lib/salt/pillar-sqlcipher.db'`.
- `sqlcipher.pass` - The SQLCipher database decryption password.
- `sqlcipher.timeout` - The connection timeout in seconds.

Example configuration

```
sqlcipher:
  database: /var/lib/salt/pillar-sqlcipher.db
  pass: strong_pass_phrase
  timeout: 5.0
```

#### Complete example

```
sqlcipher:
  database: '/var/lib/salt/pillar-sqlcipher.db'
  pass: strong_pass_phrase
  timeout: 5.0

ext_pillar:
  - sqlcipher:
      fromdb:
        query: 'SELECT col1,col2,col3,col4,col5,col6,col7
                  FROM some_random_table
                 WHERE minion_pattern LIKE ?'
        depth: 5
```

```
        as_list: True
        with_lists: [1,3]
```

**class** salt.pillar.sqlcipher.**SQLCipherExtPillar**
This class receives and processes the database rows from SQLCipher.

salt.pillar.sqlcipher.**ext_pillar**(*minion_id*, *pillar*, **args*, ***kwargs*)
Execute queries against SQLCipher, merge and return as a dict

### 13.9.27 salt.pillar.sqlite3 module

Retrieve Pillar data by doing a SQLite3 query

New in version 2015.8.0.

`sqlite3` is included in the stdlib since Python 2.5.

This module is a concrete implementation of the sql_base ext_pillar for SQLite3.

**platform** all

#### Configuring the sqlite3 ext_pillar

Use the `sqlite3' key under ext_pillar for configuration of queries.

SQLite3 database connection configuration requires the following values configured in the master config:

Note, timeout is in seconds.

```
sqlite3.database: /var/lib/salt/pillar.db
sqlite3.timeout: 5.0
```

#### Legacy Compatibility

SQLite3 database connection configuration previously had keys under pillar.

```
pillar.sqlite3.database: /var/lib/salt/pillar.db
pillar.sqlite3.timeout: 5.0
```

This has been deprecated in 2016.3.0 and will be removed in Salt Nitrogen.

#### Complete Example

```
sqlite3:
  database: '/var/lib/salt/pillar.db'
  timeout: 5.0

ext_pillar:
  - sqlite3:
      fromdb:
        query: 'SELECT col1,col2,col3,col4,col5,col6,col7
                  FROM some_random_table
                 WHERE minion_pattern LIKE ?'
        depth: 5
```

```
        as_list: True
        with_lists: [1,3]
```

**class** salt.pillar.sqlite3.**SQLite3ExtPillar**
This class receives and processes the database rows from SQLite3.

salt.pillar.sqlite3.**ext_pillar**(*minion_id*, *pillar*, **args*, ***kwargs*)
Execute queries against SQLite3, merge and return as a dict

### 13.9.28 salt.pillar.stack

Simple and flexible YAML ext_pillar which can read pillar from within pillar.

New in version 2016.3.0.

PillarStack is a custom saltstack `ext_pillar` which was inspired by varstack but is heavily based on Jinja2 for maximum flexibility.

Any issue should be reported to the upstream project at: https://github.com/bbinet/pillarstack/issues

It supports the following features:

- multiple config files that are jinja2 templates with support for `pillar`, `__grains__`, `__salt__`, `__opts__` objects
- a config file renders as an ordered list of files (paths of these files are relative to the current config file)
- this list of files are read in ordered as jinja2 templates with support for `stack`, `pillar`, `__grains__`, `__salt__`, `__opts__` objects
- all these rendered files are then parsed as `yaml`
- then all yaml dicts are merged in order with support for the following merging strategies: `merge-first`, `merge-last`, `remove`, and `overwrite`
- stack config files can be matched based on `pillar`, `grains`, or `opts` values, which make it possible to support kind of self-contained environments

#### Installation

PillarStack is already bundled with Salt since 2016.3.0 version so there is nothing to install from version 2016.3.0.

If you use an older Salt version or you want to override PillarStack with a more recent one, follow the installation procedure below.

Installing the PillarStack `ext_pillar` is as simple as dropping the `stack.py` file in the `<extension_modules>/pillar` directory (no external python module required), given that `extension_modules` is set in your salt-master configuration, see: http://docs.saltstack.com/en/latest/ref/configuration/master.html#extension-modules

#### Configuration in Salt

Like any other external pillar, its configuration takes place through the `ext_pillar` key in the master config file.

However, you can configure PillarStack in 3 different ways:

### Single config file

This is the simplest option, you just need to set the path to your single PillarStack config file like below:

```
ext_pillar:
  - stack: /path/to/stack.cfg
```

### List of config files

You can also provide a list of config files:

```
ext_pillar:
  - stack:
      - /path/to/stack1.cfg
      - /path/to/stack2.cfg
```

### Select config files through grains|pillar|opts matching

You can also opt for a much more flexible configuration: PillarStack allows one to select the config files for the current minion based on matching values from either grains, or pillar, or opts objects.

Here is an example of such a configuration, which should speak by itself:

```
ext_pillar:
  - stack:
      pillar:environment:
        dev: /path/to/dev/stack.cfg
        prod: /path/to/prod/stack.cfg
      grains:custom:grain:
        value:
          - /path/to/stack1.cfg
          - /path/to/stack2.cfg
      opts:custom:opt:
        value: /path/to/stack0.cfg
```

### PillarStack configuration files

The config files that are referenced in the above `ext_pillar` configuration are jinja2 templates which must render as a simple ordered list of `yaml` files that will then be merged to build pillar data.

The path of these `yaml` files must be relative to the directory of the PillarStack config file.

The following variables are available in jinja2 templating of PillarStack configuration files:

- `pillar`: the pillar data (as passed by Salt to our `ext_pillar` function)
- `minion_id`: the minion id ;-)
- `__opts__`: a dictionary of mostly Salt configuration options
- `__grains__`: a dictionary of the grains of the minion making this pillar call
- `__salt__`: a dictionary of Salt module functions, useful so you don't have to duplicate functions that already exist (note: runs on the master)

So you can use all the power of jinja2 to build your list of `yaml` files that will be merged in pillar data.

For example, you could have a PillarStack config file which looks like:

```
$ cat /path/to/stack/config.cfg
core.yml
osarchs/{{ __grains__['osarch'] }}.yml
oscodenames/{{ __grains__['oscodename'] }}.yml
{%- for role in pillar.get('roles', []) %}
roles/{{ role }}.yml
{%- endfor %}
minions/{{ minion_id }}.yml
```

And the whole directory structure could look like:

```
$ tree /path/to/stack/
/path/to/stack/
├── config.cfg
├── core.yml
├── osarchs/
│   ├── amd64.yml
│   └── armhf.yml
├── oscodenames/
│   ├── wheezy.yml
│   └── jessie.yml
├── roles/
│   ├── web.yml
│   └── db.yml
└── minions/
    ├── test-1-dev.yml
    └── test-2-dev.yml
```

### Overall process

In the above PillarStack configuration, given that test-1-dev minion is an amd64 platform running Debian Jessie, and which pillar `roles` is `["db"]`, the following `yaml` files would be merged in order:

- `core.yml`
- `osarchs/amd64.yml`
- `oscodenames/jessie.yml`
- `roles/db.yml`
- `minions/test-1-dev.yml`

Before merging, every files above will be preprocessed as Jinja2 templates. The following variables are available in Jinja2 templating of `yaml` files:

- `stack`: the PillarStack pillar data object that has currently been merged (data from previous `yaml` files in PillarStack configuration)
- `pillar`: the pillar data (as passed by Salt to our `ext_pillar` function)
- `minion_id`: the minion id ;-)
- `__opts__`: a dictionary of mostly Salt configuration options

- `__grains__`: a dictionary of the grains of the minion making this pillar call
- `__salt__`: a dictionary of Salt module functions, useful so you don't have to duplicate functions that already exist (note: runs on the master)

So you can use all the power of jinja2 to build your pillar data, and even use other pillar values that has already been merged by PillarStack (from previous `yaml` files in PillarStack configuration) through the `stack` variable.

Once a `yaml` file has been preprocessed by Jinja2, we obtain a Python dict - let's call it `yml_data` - then, PillarStack will merge this `yml_data` dict in the main `stack` dict (which contains already merged PillarStack pillar data). By default, PillarStack will deeply merge `yml_data` in `stack` (similarly to the `recurse` salt `pillar_source_merging_strategy`), but 3 merging strategies are currently available for you to choose (see next section).

Once every `yaml` files have been processed, the `stack` dict will contain your whole own pillar data, merged in order by PillarStack. So PillarStack `ext_pillar` returns the `stack` dict, the contents of which Salt takes care to merge in with all of the other pillars and finally return the whole pillar to the minion.

#### Merging strategies

The way the data from a new `yaml_data` dict is merged with the existing `stack` data can be controlled by specifying a merging strategy. Right now this strategy can either be `merge-last` (the default), `merge-first`, `remove`, or `overwrite`.

Note that scalar values like strings, integers, booleans, etc. are always evaluated using the `overwrite` strategy (other strategies don't make sense in that case).

The merging strategy can be set by including a dict in the form of:

```
__: <merging strategy>
```

as the first item of the dict or list. This allows fine grained control over the merging process.

#### `merge-last` (default) strategy

If the `merge-last` strategy is selected (the default), then content of dict or list variables is merged recursively with previous definitions of this variable (similarly to the `recurse` salt `pillar_source_merging_strategy`). This allows for extending previously defined data.

#### `merge-first` strategy

If the `merge-first` strategy is selected, then the content of dict or list variables are swapped between the `yaml_data` and `stack` objects before being merged recursively with the `merge-last` previous strategy.

#### `remove` strategy

If the `remove` strategy is selected, then content of dict or list variables in `stack` are removed only if the corresponding item is present in the `yaml_data` dict. This allows for removing items from previously defined data.

#### `overwrite` strategy

If the `overwrite` strategy is selected, then the content of dict or list variables in `stack` is overwritten by the content of `yaml_data` dict. So this allows one to overwrite variables from previous definitions.

### Merging examples

Let's go through small examples that should clarify what's going on when a `yaml_data` dict is merged in the `stack` dict.

When you don't specify any strategy, the default `merge-last` strategy is selected:

| `stack` | `yaml_data` | `stack` (after merge) |
|---|---|---|
| `users:`<br>`  tom:`<br>`  uid: 500`<br>`  roles:`<br>`  - sysadmin`<br>`  root:`<br>`  uid: 0` | `users:`<br>`  tom:`<br>`  uid: 1000`<br>`  roles:`<br>`  - developer`<br>`  mat:`<br>`  uid: 1001` | `users:`<br>`  tom:`<br>`  uid: 1000`<br>`  roles:`<br>`  - sysadmin`<br>`  - developer`<br>`  mat:`<br>`  uid: 1001`<br>`  root:`<br>`  uid: 0` |

Then you can select a custom merging strategy using the `__` key in a dict:

| stack | yaml_data | stack (after merge) |
|---|---|---|
| users:<br>  tom:<br>  uid: 500<br>  roles:<br>  - sysadmin<br>  root:<br>  uid: 0 | users:<br>  __: merge-last<br>  tom:<br>  uid: 1000<br>  roles:<br>  - developer<br>  mat:<br>  uid: 1001 | users:<br>  tom:<br>  uid: 1000<br>  roles:<br>  - sysadmin<br>  - developer<br>  mat:<br>  uid: 1001<br>  root:<br>  uid: 0 |
| users:<br>  tom:<br>  uid: 500<br>  roles:<br>  - sysadmin<br>  root:<br>  uid: 0 | users:<br>  __: merge-first<br>  tom:<br>  uid: 1000<br>  roles:<br>  - developer<br>  mat:<br>  uid: 1001 | users:<br>  tom:<br>  uid: 500<br>  roles:<br>  - developer<br>  - sysadmin<br>  mat:<br>  uid: 1001<br>  root:<br>  uid: 0 |
| users:<br>  tom:<br>  uid: 500<br>  roles:<br>  - sysadmin<br>  root:<br>  uid: 0 | users:<br>  __: remove<br>  tom:<br>  mat: | users:<br>  root:<br>  uid: 0 |
| users:<br>  tom:<br>  uid: 500<br>  roles:<br>  - sysadmin<br>  root:<br>  uid: 0 | users:<br>  __: overwrite<br>  tom:<br>  uid: 1000<br>  roles:<br>  - developer<br>  mat:<br>  uid: 1001 | users:<br>  tom:<br>  uid: 1000<br>  roles:<br>  - developer<br>  mat:<br>  uid: 1001 |

You can also select a custom merging strategy using a __ object in a list:

| stack | yaml_data | stack (after merge) |
|---|---|---|
| users:<br>- tom<br>- root | users:<br>- __: merge-last<br>- mat | users:<br>- tom<br>- root<br>- mat |
| users:<br>- tom<br>- root | users:<br>- __: merge-first<br>- mat | users:<br>- mat<br>- tom<br>- root |
| users:<br>- tom<br>- root | users:<br>- __: remove<br>- mat<br>- tom | users:<br>- root |
| users:<br>- tom<br>- root | users:<br>- __: overwrite<br>- mat | users:<br>- mat |

salt.pillar.stack.**ext_pillar**(*minion_id*, *pillar*, **args*, ***kwargs*)

### 13.9.29 salt.pillar.svn_pillar

Clone a remote SVN repository and use the filesystem as a Pillar source

This external Pillar source can be configured in the master config file like so:

```
ext_pillar:
  - svn: trunk svn://svnserver/repo root=subdirectory
```

The *root=* parameter is optional and used to set the subdirectory from where to look for Pillar files (such as `top.sls`).

Changed in version 2014.7.0: The optional `root` parameter will be added.

Note that this is not the same thing as configuring pillar data using the *`pillar_roots`* parameter. The branch referenced in the *`ext_pillar`* entry above (`master`), would evaluate to the `base` environment, so this branch needs to contain a `top.sls` with a `base` section in it, like this:

```
base:
  '*':
    - foo
```

To use other environments from the same SVN repo as svn_pillar sources, just add additional lines, like so:

```
ext_pillar:
  - svn: trunk svn://svnserver/repo
  - svn: dev svn://svnserver/repo
```

In this case, the `dev` branch would need its own `top.sls` with a `dev` section in it, like this:

```
dev:
  '*':
    - bar
```

class salt.pillar.svn_pillar.**SvnPillar**(*branch*, *repo_location*, *root*, *opts*)
Deal with the remote SVN repository for Pillar

**pillar_dir**()
Returns the directory of the pillars (repo cache + branch + root)

**update**()

salt.pillar.svn_pillar.**ext_pillar**(*minion_id*, *pillar*, *repo_string*)
Execute a command and read the output as YAML

### 13.9.30 salt.pillar.varstack_pillar

Use Varstack data as a Pillar source

#### Configuring Varstack

Using varstack in Salt is fairly simple. Just put the following into the config file of your master:

```
ext_pillar:
  - varstack: /etc/varstack.yaml
```

Varstack will then use /etc/varstack.yaml to determine which configuration data to return as pillar information. From there you can take a look at the README of varstack on how this file is evaluated.

salt.pillar.varstack_pillar.**ext_pillar**(*minion_id*, *pillar*, *conf*)
Parse varstack data and return the result

### 13.9.31 salt.pillar.virtkey

Accept a key from a hypervisor if the virt runner has already submitted an authorization request

salt.pillar.virtkey.**ext_pillar**(*hyper_id*, *pillar*, *name*, *key*)
Accept the key for the VM on the hyper, if authorized.

## 13.10 proxy modules

| | |
|---|---|
| *chronos* | Chronos |
| *esxi* | Proxy Minion interface module for managing VMWare ESXi hosts. |
| *fx2* | Dell FX2 chassis |
| *junos* | Interface with a Junos device via proxy-minion. |
| *marathon* | Marathon |
| *philips_hue* | Philips HUE lamps module for proxy. |
| *rest_sample* | This is a simple proxy-minion designed to connect to and communicate with |
| *ssh_sample* | This is a simple proxy-minion designed to connect to and communicate with a server that exposes functionality via SSH. |

### 13.10.1 salt.proxy.chronos module

#### Chronos

Proxy minion for managing a Chronos cluster.

#### Dependencies

- *chronos execution module (salt.modules.chronos)*

#### Pillar

The chronos proxy configuration requires a `base_url' property that points to the chronos endpoint:

```
proxy:
  proxytype: chronos
  base_url: http://my-chronos-master.mydomain.com:4400
```

New in version 2015.8.2.

`salt.proxy.chronos.`**`init`**(*opts*)
Perform any needed setup.

`salt.proxy.chronos.`**`ping`**()
Is the chronos api responding?

`salt.proxy.chronos.`**`shutdown`**(*opts*)
For this proxy shutdown is a no-op

### 13.10.2 salt.proxy.esxi

Proxy Minion interface module for managing VMWare ESXi hosts.

New in version 2015.8.4.

**Special Note: SaltStack thanks** Adobe Corporation **for their support in creating this Proxy Minion integration.**

This proxy minion enables VMware ESXi (hereafter referred to as simply `ESXi') hosts to be treated individually like a Salt Minion.

Since the ESXi host may not necessarily run on an OS capable of hosting a Python stack, the ESXi host can't run a Salt Minion directly. Salt's ``Proxy Minion'' functionality enables you to designate another machine to host a minion process that ``proxies'' communication from the Salt Master. The master does not know nor care that the target is not a ``real'' Salt Minion.

More in-depth conceptual reading on Proxy Minions can be found in the *Proxy Minion* section of Salt's documentation.

#### Dependencies

- pyVmomi Python Module
- ESXCLI

### pyVmomi

PyVmomi can be installed via pip:

```
pip install pyVmomi
```

**Note:** Version 6.0 of pyVmomi has some problems with SSL error handling on certain versions of Python. If using version 6.0 of pyVmomi, Python 2.6, Python 2.7.9, or newer must be present. This is due to an upstream dependency in pyVmomi 6.0 that is not supported in Python versions 2.7 to 2.7.8. If the version of Python is not in the supported range, you will need to install an earlier version of pyVmomi. See Issue #29537 for more information.

Based on the note above, to install an earlier version of pyVmomi than the version currently listed in PyPi, run the following:

```
pip install pyVmomi==5.5.0.2014.1.1
```

The 5.5.0.2014.1.1 is a known stable version that this original ESXi State Module was developed against.

### ESXCLI

Currently, about a third of the functions used in the vSphere Execution Module require the ESXCLI package be installed on the machine running the Proxy Minion process.

The ESXCLI package is also referred to as the VMware vSphere CLI, or vCLI. VMware provides vCLI package installation instructions for vSphere 5.5 and vSphere 6.0.

Once all of the required dependencies are in place and the vCLI package is installed, you can check to see if you can connect to your ESXi host or vCenter server by running the following command:

```
esxcli -s <host-location> -u <username> -p <password> system syslog config get
```

If the connection was successful, ESXCLI was successfully installed on your system. You should see output related to the ESXi host's syslog configuration.

### Configuration

To use this integration proxy module, please configure the following:

### Pillar

Proxy minions get their configuration from Salt's Pillar. Every proxy must have a stanza in Pillar and a reference in the Pillar top-file that matches the ID. At a minimum for communication with the ESXi host, the pillar should look like this:

```
proxy:
  proxytype: esxi
  host: <ip or dns name of esxi host>
  username: <ESXi username>
  passwords:
    - first_password
    - second_password
    - third_password
```

#### proxytype

The `proxytype` key and value pair is critical, as it tells Salt which interface to load from the `proxy` directory in Salt's install hierarchy, or from `/srv/salt/_proxy` on the Salt Master (if you have created your own proxy module, for example). To use this ESXi Proxy Module, set this to `esxi`.

#### host

The location, or ip/dns, of the ESXi host. Required.

#### username

The username used to login to the ESXi host, such as `root`. Required.

#### passwords

A list of passwords to be used to try and login to the ESXi host. At least one password in this list is required.

The proxy integration will try the passwords listed in order. It is configured this way so you can have a regular password and the password you may be updating for an ESXi host either via the *vsphere.update_host_password* execution module function or via the *esxi.password_present* state function. This way, after the password is changed, you should not need to restart the proxy minion--it should just pick up the the new password provided in the list. You can then change pillar at will to move that password to the front and retire the unused ones.

This also allows you to use any number of potential fallback passwords.

---

**Note:** When a password is changed on the host to one in the list of possible passwords, the further down on the list the password is, the longer individual commands will take to return. This is due to the nature of pyVmomi's login system. We have to wait for the first attempt to fail before trying the next password on the list.

This scenario is especially true, and even slower, when the proxy minion first starts. If the correct password is not the first password on the list, it may take up to a minute for `test.ping` to respond with a `True` result. Once the initial authorization is complete, the responses for commands will be a little faster.

To avoid these longer waiting periods, SaltStack recommends moving the correct password to the top of the list and restarting the proxy minion at your earliest convenience.

---

#### protocol

If the ESXi host is not using the default protocol, set this value to an alternate protocol. Default is `https`.

#### port

If the ESXi host is not using the default port, set this value to an alternate port. Default is `443`.

### Salt Proxy

After your pillar is in place, you can test the proxy. The proxy can run on any machine that has network connectivity to your Salt Master and to the ESXi host in question. SaltStack recommends that the machine running the salt-proxy process also run a regular minion, though it is not strictly necessary.

On the machine that will run the proxy, make sure there is an `/etc/salt/proxy` file with at least the following in it:

```
master: <ip or hostname of salt-master>
```

You can then start the salt-proxy process with:

```
salt-proxy --proxyid <id you want to give the host>
```

You may want to add `-l debug` to run the above in the foreground in debug mode just to make sure everything is OK.

Next, accept the key for the proxy on your salt-master, just like you would for a regular minion:

```
salt-key -a <id you gave the esxi host>
```

You can confirm that the pillar data is in place for the proxy:

```
salt <id> pillar.items
```

And now you should be able to ping the ESXi host to make sure it is responding:

```
salt <id> test.ping
```

At this point you can execute one-off commands against the host. For example, you can get the ESXi host's system information:

```
salt <id> esxi.cmd system_info
```

Note that you don't need to provide credentials or an ip/hostname. Salt knows to use the credentials you stored in Pillar.

It's important to understand how this particular proxy works. *Salt.modules.vsphere* is a standard Salt execution module. If you pull up the docs for it you'll see that almost every function in the module takes credentials and a target host. When credentials and a host aren't passed, Salt runs commands through `pyVmomi` against the local machine. If you wanted, you could run functions from this module on any host where an appropriate version of `pyVmomi` is installed, and that host would reach out over the network and communicate with the ESXi host.

`esxi.cmd` acts as a ``shim'' between the execution module and the proxy. Its first parameter is always the function from salt.modules.vsphere. If the function takes more positional or keyword arguments you can append them to the call. It's this shim that speaks to the ESXi host through the proxy, arranging for the credentials and hostname to be pulled from the Pillar section for this Proxy Minion.

Because of the presence of the shim, to lookup documentation for what functions you can use to interface with the ESXi host, you'll want to look in *salt.modules.vsphere* instead of *salt.modules.esxi*.

### States

Associated states are thoroughly documented in *salt.states.esxi*. Look there to find an example structure for Pillar as well as an example `.sls` file for standing up an ESXi host from scratch.

salt.proxy.esxi.**ch_config**(*cmd*, **args*, ***kwargs*)
This function is called by the *salt.modules.esxi.cmd* shim. It then calls whatever is passed in `cmd` inside the *salt.modules.vsphere* module. Passes the return through from the vsphere module.
**cmd** The command to call inside salt.modules.vsphere
**args** Arguments that need to be passed to that command.
**kwargs** Keyword arguments that need to be passed to that command.

salt.proxy.esxi.**find_credentials**(*host*)
Cycle through all the possible credentials and return the first one that works.

salt.proxy.esxi.**grains**()
Get the grains from the proxy device.

salt.proxy.esxi.**grains_refresh**()
Refresh the grains from the proxy device.

salt.proxy.esxi.**init**(*opts*)
This function gets called when the proxy starts up. For ESXi devices, the host, login credentials, and, if configured, the protocol and port are cached.

salt.proxy.esxi.**ping**()
Check to see if the host is responding. Returns False if the host didn't respond, True otherwise.

CLI Example:

```
salt esxi-host test.ping
```

salt.proxy.esxi.**shutdown**()
Shutdown the connection to the proxy device. For this proxy, shutdown is a no-op.

### 13.10.3 salt.proxy.fx2

#### Dell FX2 chassis

New in version 2015.8.2.

Proxy minion interface module for managing Dell FX2 chassis (Dell Chassis Management Controller version 1.2 and above, iDRAC8 version 2.00 and above)

#### Dependencies

- *iDRAC Remote execution module (salt.modules.dracr)*
- *Chassis command shim (salt.modules.chassis)*
- *Dell Chassis States (salt.states.dellchassis)*
- Dell's `racadm` command line interface to CMC and iDRAC devices.

**Special Note: SaltStack thanks** Adobe Corporation **for their support in creating this proxy minion integration.**

This proxy minion enables Dell FX2 and FX2s (hereafter referred to as simply ``chassis'', ``CMC'', or ``FX2'') chassis to be treated individually like a salt-minion.

Since the CMC embedded in the chassis does not run an OS capable of hosting a Python stack, the chassis can't run a minion directly. Salt's ``Proxy Minion'' functionality enables you to designate another machine to host a minion process that ``proxies'' communication from the salt-master. The master does not know nor care that the target is not a real minion.

More in-depth conceptual reading on Proxy Minions can be found *in the Proxy Minion section* of Salt's documentation.

To configure this integration, follow these steps:

### Pillar

Proxy minions get their configuration from Salt's Pillar. Every proxy must have a stanza in Pillar, and a reference in the Pillar topfile that matches the ID. At a minimum for communication with the chassis the pillar should look like this:

```
proxy:
  host: <ip or dns name of chassis controller>
  admin_username: <iDRAC username for the CMC, usually 'root'>
  fallback_admin_username: <username to try if the first fails>
  passwords:
    - first_password
    - second_password
    - third-password
  proxytype: fx2
```

The `proxytype` line above is critical, it tells Salt which interface to load from the `proxy` directory in Salt's install hierarchy, or from `/srv/salt/_proxy` on the salt-master (if you have created your own proxy module, for example).

The proxy integration will try the passwords listed in order. It is configured this way so you can have a regular password, a potential fallback password, and the third password can be the one you intend to change the chassis to use. This way, after it is changed, you should not need to restart the proxy minion--it should just pick up the third password in the list. You can then change pillar at will to move that password to the front and retire the unused ones.

Beware, many Dell CMC and iDRAC units are configured to lockout IP addresses or users after too many failed password attempts. This can generate user panic in the form of ``I no longer know what the password is!!!''. To mitigate panic try the web interface from a different IP, or setup a emergency administrator user in the CMC before doing a wholesale password rotation.

The automatic lockout can be disabled via Salt with the following:

```
salt <cmc> chassis.cmd set_general cfgRacTuning cfgRacTuneIpBlkEnable 0
```

and then verified with

```
salt <cmc> chassis.cmd get_general cfgRacTuning cfgRacTuneIpBlkEnable
```

### salt-proxy

After your pillar is in place, you can test the proxy. The proxy can run on any machine that has network connectivity to your salt-master and to the chassis in question. SaltStack recommends that this machine also run a regular minion, though it is not strictly necessary.

On the machine that will run the proxy, make sure there is an `/etc/salt/proxy` file with at least the following in it:

```
master: <ip or hostname of salt-master>
```

You can start the proxy with

```
salt-proxy --proxyid <id you want to give the chassis>
```

You may want to add `-l debug` to run the above in the foreground in debug mode just to make sure everything is OK.

Next, accept the key for the proxy on your salt-master, just like you would for a regular minion:

```
salt-key -a <id you want to give the chassis>
```

You can confirm that the pillar data is in place for the proxy:

```
salt <id> pillar.items
```

And now you should be able to ping the chassis to make sure it is responding:

```
salt <id> test.ping
```

At this point you can execute one-off commands against the chassis. For example, you can get the chassis inventory:

```
salt <id> chassis.cmd inventory
```

Note that you don't need to provide credentials or an ip/hostname. Salt knows to use the credentials you stored in Pillar.

It's important to understand how this particular proxy works. *salt.modules.dracr* is a standard Salt execution module. If you pull up the docs for it you'll see that almost every function in the module takes credentials and a target host. When credentials and a host aren't passed, Salt runs `racadm` against the local machine. If you wanted you could run functions from this module on any host where an appropriate version of `racadm` is installed, and that host would reach out over the network and communicate with the chassis.

`Chassis.cmd` acts as a ``shim'' between the execution module and the proxy. It's first parameter is always the function from salt.modules.dracr to execute. If the function takes more positional or keyword arguments you can append them to the call. It's this shim that speaks to the chassis through the proxy, arranging for the credentials and hostname to be pulled from the pillar section for this proxy minion.

Because of the presence of the shim, to lookup documentation for what functions you can use to interface with the chassis, you'll want to look in *salt.modules.dracr* instead of *salt.modules.chassis*.

### States

Associated states are thoroughly documented in *salt.states.dellchassis*. Look there to find an example structure for pillar as well as an example `.sls` file for standing up a Dell Chassis from scratch.

`salt.proxy.fx2.`**`admin_password`**`()`
Return the admin_password in the DETAILS dictionary, or `calvin' (the Dell default) if there is none present

`salt.proxy.fx2.`**`admin_username`**`()`
Return the admin_username in the DETAILS dictionary, or root if there is none present

`salt.proxy.fx2.`**`chconfig`**`(`*cmd*, **args*, ***kwargs*`)`
This function is called by the *salt.modules.chassis.cmd* shim. It then calls whatever is passed in `cmd` inside the *salt.modules.dracr* module.

**Parameters**

- **`cmd`** -- The command to call inside salt.modules.dracr
- **`args`** -- Arguments that need to be passed to that command
- **`kwargs`** -- Keyword arguments that need to be passed to that command

**Returns** Passthrough the return from the dracr module.

salt.proxy.fx2.**find_credentials**()
Cycle through all the possible credentials and return the first one that works

salt.proxy.fx2.**grains**()
Get the grains from the proxied device

salt.proxy.fx2.**grains_refresh**()
Refresh the grains from the proxied device

salt.proxy.fx2.**host**()

salt.proxy.fx2.**init**(*opts*)
This function gets called when the proxy starts up. We check opts to see if a fallback user and password are supplied. If they are present, and the primary credentials don't work, then we try the backup before failing.

Whichever set of credentials works is placed in the persistent DETAILS dictionary and will be used for further communication with the chassis.

salt.proxy.fx2.**ping**()
Is the chassis responding?
**Returns** Returns False if the chassis didn't respond, True otherwise.

salt.proxy.fx2.**shutdown**(*opts*)
Shutdown the connection to the proxied device. For this proxy shutdown is a no-op.

### 13.10.4 salt.proxy.junos

Interface with a Junos device via proxy-minion.

salt.proxy.junos.**conn**()

salt.proxy.junos.**facts**()

salt.proxy.junos.**id**(*opts*)
Returns a unique ID for this proxy minion

salt.proxy.junos.**init**(*opts*)
Open the connection to the Junos device, login, and bind to the Resource class

salt.proxy.junos.**ping**()
Ping? Pong!

salt.proxy.junos.**proxytype**()
Returns the name of this proxy

salt.proxy.junos.**refresh**()

salt.proxy.junos.**rpc**()

salt.proxy.junos.**shutdown**(*opts*)
This is called when the proxy-minion is exiting to make sure the connection to the device is closed cleanly.

### 13.10.5 salt.proxy.marathon module

#### Marathon

Proxy minion for managing a Marathon cluster.

#### Dependencies

- *marathon execution module (salt.modules.marathon)*

#### Pillar

The marathon proxy configuration requires a `base_url' property that points to the marathon endpoint:

```
proxy:
  proxytype: marathon
  base_url: http://my-marathon-master.mydomain.com:8080
```

New in version 2015.8.2.

salt.proxy.marathon.**init**(*opts*)
Perform any needed setup.

salt.proxy.marathon.**ping**()
Is the marathon api responding?

salt.proxy.marathon.**shutdown**(*opts*)
For this proxy shutdown is a no-op

### 13.10.6 salt.proxy.philips_hue module

Philips HUE lamps module for proxy.

New in version 2015.8.3.

**class** salt.proxy.philips_hue.**Const**
Constants for the lamp operations.

**COLOR_BLUE** = {`hue': 46920, `sat': 254}

**COLOR_DAYLIGHT** = {`xy': [0.3806, 0.3576]}

**COLOR_GREEN** = {`hue': 25500, `sat': 254}

**COLOR_ORANGE** = {`hue': 12000, `sat': 254}

**COLOR_PINK** = {`xy': [0.3688, 0.2095]}

**COLOR_PURPLE** = {`xy': [0.3787, 0.1724]}

**COLOR_RED** = {`hue': 0, `sat': 254}

**COLOR_WHITE** = {`xy': [0.3227, 0.329]}

**COLOR_YELLOW** = {`xy': [0.4432, 0.5154]}

**LAMP_OFF** = {`transitiontime': 0, `on': False}

**LAMP_ON** = {`transitiontime': 0, `on': True}

salt.proxy.philips_hue.**call_alert**(**args*, ***kwargs*)
Lamp alert

Options:
- **id**: Specifies a device ID. Can be a comma-separated values. All, if omitted.
- **on**: Turns on or off an alert. Default is True.

CLI Example:

```
salt '*' hue.alert
salt '*' hue.alert id=1
salt '*' hue.alert id=1,2,3 on=false
```

salt.proxy.philips_hue.**call_blink**(**args*, ***kwargs*)

Blink a lamp. If lamp is ON, then blink ON-OFF-ON, otherwise OFF-ON-OFF.

Options:

- **id**: Specifies a device ID. Can be a comma-separated values. All, if omitted.
- **pause**: Time in seconds. Can be less than 1, i.e. 0.7, 0.5 sec.

CLI Example:

```
salt '*' hue.blink id=1
salt '*' hue.blink id=1,2,3
```

salt.proxy.philips_hue.**call_brightness**(**args*, ***kwargs*)

Set an effect to the lamp.

Arguments:

- **value**: 0~255 brightness of the lamp.

Options:

- **id**: Specifies a device ID. Can be a comma-separated values. All, if omitted.
- **transition**: Transition 0~200. Default 0.

CLI Example:

```
salt '*' hue.brightness value=100
salt '*' hue.brightness id=1 value=150
salt '*' hue.brightness id=1,2,3 value=255
```

salt.proxy.philips_hue.**call_color**(**args*, ***kwargs*)

Set a color to the lamp.

Options:

- **id**: Specifies a device ID. Can be a comma-separated values. All, if omitted.
- **color**: **Fixed color. Values are: red, green, blue, orange, pink, white**, yellow, daylight, purple. Default white.
- **transition**: Transition 0~200.

Advanced:

- **gamut**: **XY coordinates. Use gamut according to the Philips HUE devices documentation.** More: http://www.developers.meethue.com/documentation/hue-xy-values

CLI Example:

```
salt '*' hue.color
salt '*' hue.color id=1
salt '*' hue.color id=1,2,3 oolor=red transition=30
salt '*' hue.color id=1 gamut=0.3,0.5
```

salt.proxy.philips_hue.**call_effect**(**args*, ***kwargs*)

Set an effect to the lamp.

Options:

- **id**: Specifies a device ID. Can be a comma-separated values. All, if omitted.
- **type**: Type of the effect. Possible values are ``none'' or ``colorloop''. Default ``none''.

CLI Example:

```
salt '*' hue.effect
salt '*' hue.effect id=1
salt '*' hue.effect id=1,2,3 type=colorloop
```

salt.proxy.philips_hue.**call_lights**(**args*, ***kwargs*)

Get info about all available lamps.

Options:

- **id**: Specifies a device ID. Can be a comma-separated values. All, if omitted.

CLI Example:

```
salt '*' hue.lights
salt '*' hue.lights id=1
salt '*' hue.lights id=1,2,3
```

salt.proxy.philips_hue.**call_ping**(**args*, ***kwargs*)

Ping the lamps by issuing a short inversion blink to all available devices.

CLI Example:

```
salt '*' hue.ping
```

salt.proxy.philips_hue.**call_rename**(**args*, ***kwargs*)

Rename a device.

Options:

- **id**: Specifies a device ID. Only one device at a time.
- **title**: Title of the device.

CLI Example:

```
salt '*' hue.rename id=1 title='WC for cats'
```

salt.proxy.philips_hue.**call_status**(**args*, ***kwargs*)

Return the status of the lamps.

Options:

- **id**: Specifies a device ID. Can be a comma-separated values. All, if omitted.

CLI Example:

```
salt '*' hue.status
salt '*' hue.status id=1
salt '*' hue.status id=1,2,3
```

salt.proxy.philips_hue.**call_switch**(**args*, ***kwargs*)

Switch lamp ON/OFF.

If no particular state is passed, then lamp will be switched to the opposite state.

Options:

- **id**: Specifies a device ID. Can be a comma-separated values. All, if omitted.
- **on**: True or False. Inverted current, if omitted

CLI Example:

```
salt '*' hue.switch
salt '*' hue.switch id=1
salt '*' hue.switch id=1,2,3 on=True
```

salt.proxy.philips_hue.**call_temperature**(**args*, ***kwargs*)

Set the mired color temperature. More: http://en.wikipedia.org/wiki/Mired

Arguments:

- **value**: 150~500.

Options:

- **id**: Specifies a device ID. Can be a comma-separated values. All, if omitted.

CLI Example:

```
salt '*' hue.temperature value=150
salt '*' hue.temperature value=150 id=1
salt '*' hue.temperature value=150 id=1,2,3
```

salt.proxy.philips_hue.**init**(*cnf*)
Initialize the module.

salt.proxy.philips_hue.**ping**(**args*, ***kw*)
Ping the lamps.

salt.proxy.philips_hue.**shutdown**(*opts*, **args*, ***kw*)
Shuts down the service.

### 13.10.7 salt.proxy.rest_sample

This is a simple proxy-minion designed to connect to and communicate with the bottle-based web service contained in https://github.com/saltstack/salt-contrib/tree/master/proxyminion_rest_example

salt.proxy.rest_sample.**fix_outage**()

salt.proxy.rest_sample.**fns**()

salt.proxy.rest_sample.**grains**()
Get the grains from the proxied device

salt.proxy.rest_sample.**grains_refresh**()
Refresh the grains from the proxied device

salt.proxy.rest_sample.**id**(*opts*)
Return a unique ID for this proxy minion. This ID MUST NOT CHANGE. If it changes while the proxy is running the salt-master will get really confused and may stop talking to this minion

salt.proxy.rest_sample.**init**(*opts*)

salt.proxy.rest_sample.**initialized**()
Since grains are loaded in many different places and some of those places occur before the proxy can be initialized, return whether our init() function has been called

salt.proxy.rest_sample.**package_install**(*name*, ***kwargs*)
Install a ``package'' on the REST server

salt.proxy.rest_sample.**package_list**()
List ``packages'' installed on the REST server

salt.proxy.rest_sample.**package_remove**(*name*)
Remove a ``package'' on the REST server

salt.proxy.rest_sample.**package_status**(*name*)
Check the installation status of a package on the REST server

salt.proxy.rest_sample.**ping**()
Is the REST server up?

salt.proxy.rest_sample.**service_list**()
List ``services'' on the REST server

salt.proxy.rest_sample.**service_restart**(*name*)
Restart a ``service'' on the REST server

salt.proxy.rest_sample.**service_start**(*name*)
Start a ``service'' on the REST server

salt.proxy.rest_sample.**service_status**(*name*)
Check if a service is running on the REST server

salt.proxy.rest_sample.**service_stop**(*name*)
Stop a ``service'' on the REST server

salt.proxy.rest_sample.**shutdown**(*opts*)
For this proxy shutdown is a no-op

salt.proxy.rest_sample.**test_from_state**()
Test function so we have something to call from a state :return:

salt.proxy.rest_sample.**uptodate**(*name*)
Call the REST endpoint to see if the packages on the ``server'' are up to date.

### 13.10.8 salt.proxy.ssh_sample

This is a simple proxy-minion designed to connect to and communicate with a server that exposes functionality via SSH. This can be used as an option when the device does not provide an api over HTTP and doesn't have the python stack to run a minion.

salt.proxy.ssh_sample.**fns**()

salt.proxy.ssh_sample.**grains**()
Get the grains from the proxied device

salt.proxy.ssh_sample.**grains_refresh**()
Refresh the grains from the proxied device

salt.proxy.ssh_sample.**init**(*opts*)
Required. Can be used to initialize the server connection.

salt.proxy.ssh_sample.**initialized**()
Since grains are loaded in many different places and some of those places occur before the proxy can be initialized, return whether our init() function has been called

salt.proxy.ssh_sample.**package_install**(*name*, ***kwargs*)
Install a ``package'' on the ssh server

salt.proxy.ssh_sample.**package_list**()
List ``packages'' by executing a command via ssh This function is called in response to the salt command
..**code-block**::**bash** salt target_minion pkg.list_pkgs

salt.proxy.ssh_sample.**package_remove**(*name*)
Remove a ``package'' on the ssh server

salt.proxy.ssh_sample.**parse**(*out*)
Extract json from out.
**Parameter** out: Type string. The data returned by the ssh command.

salt.proxy.ssh_sample.**ping**()
Required. Ping the device on the other end of the connection

salt.proxy.ssh_sample.**service_list**()
Start a ``service'' on the ssh server

New in version 2015.8.2.

salt.proxy.ssh_sample.**service_restart**(*name*)
Restart a ``service'' on the ssh server

New in version 2015.8.2.

salt.proxy.ssh_sample.**service_start**(*name*)
Start a ``service'' on the ssh server

New in version 2015.8.2.

salt.proxy.ssh_sample.**service_stop**(*name*)
Stop a ``service'' on the ssh server

New in version 2015.8.2.

salt.proxy.ssh_sample.**shutdown**(*opts*)
Disconnect

## 13.11 queue modules

| | |
|---|---|
| *pgjsonb_queue* | New in version 2016.3.0. |
| *sqlite_queue* | New in version 2014.7.0. |

### 13.11.1 salt.queues.pgjsonb_queue module

New in version 2016.3.0.

This is a queue with postgres as the backend. It uses the jsonb store to store information for queues.

**depends** python-psycopg2

To enable this queue, the following needs to be configured in your master config. These are the defaults:

```
queue.pgjsonb.host: 'salt'
queue.pgjsonb.user: 'salt'
queue.pgjsonb.pass: 'salt'
queue.pgjsonb.db: 'salt'
queue.pgjsonb.port: 5432
```

Use the following Pg database schema:

```
CREATE DATABASE  salt WITH ENCODING 'utf-8';

--
-- Table structure for table `salt`
--
DROP TABLE IF EXISTS salt;
CREATE OR REPLACE TABLE salt(
   id SERIAL PRIMARY KEY,
   data jsonb NOT NULL
);
```

```
salt-run queue.insert test '{"name": "redis", "host": "172.16.0.8", "port": 6379}'
 ↪backend=pgjsonb
salt-run queue.process_queue test all backend=pgjsonb
```

salt.queues.pgjsonb_queue.**delete**(*queue*, *items*)
Delete an item or items from a queue

salt.queues.pgjsonb_queue.**handle_queue_creation**(*queue*)

salt.queues.pgjsonb_queue.**insert**(*queue*, *items*)
Add an item or items to a queue

salt.queues.pgjsonb_queue.**list_items**(*queue*)
List contents of a queue

salt.queues.pgjsonb_queue.**list_length**(*queue*)
Provide the number of items in a queue

salt.queues.pgjsonb_queue.**list_queues**()
Return a list of Salt Queues on the Salt Master

salt.queues.pgjsonb_queue.**pop**(*queue*, *quantity=1*)
Pop one or more or all items from the queue return them.

### 13.11.2 salt.queues.sqlite_queue module

New in version 2014.7.0.

This is the default local master event queue built on sqlite. By default, an sqlite3 database file is created in the *sqlite_queue_dir* which is found at:

```
/var/cache/salt/master/queues
```

It's possible to store the sqlite3 database files by setting *sqlite_queue_dir* to another location:

```
sqlite_queue_dir: /home/myuser/salt/master/queues
```

salt.queues.sqlite_queue.**delete**(*queue*, *items*)
Delete an item or items from a queue

salt.queues.sqlite_queue.**insert**(*queue*, *items*)
Add an item or items to a queue

salt.queues.sqlite_queue.**list_items**(*queue*)
List contents of a queue

salt.queues.sqlite_queue.**list_length**(*queue*)
Provide the number of items in a queue

salt.queues.sqlite_queue.**list_queues**()
Return a list of Salt Queues on the Salt Master

salt.queues.sqlite_queue.**pop**(*queue*, *quantity=1*)
Pop one or more or all items from the queue return them.

## 13.12 roster modules

| | |
|---|---|
| *ansible* | Read in an Ansible inventory file or script |
| *cache* | Use the minion cache on the master to derive IP addresses based on minion ID. |
| *cloud* | Use the cloud cache on the master to derive IPv4 addresses based on minion ID. |
| *clustershell* | This roster resolves hostname in a pdsh/clustershell style. |
| *flat* | Read in the roster from a flat file using the renderer system |
| *range* | This roster resolves targets from a range server. |
| *scan* | Scan a netmask or ipaddr for open ssh ports |

### 13.12.1 salt.roster.ansible

Read in an Ansible inventory file or script

Flat inventory files should be in the regular ansible inventory format.

```
[servers]
salt.gtmanfred.com ansible_ssh_user=gtmanfred ansible_ssh_host=127.0.0.1 ansible_ssh_
 ↪port=22 ansible_ssh_pass='password'

[desktop]
home ansible_ssh_user=gtmanfred ansible_ssh_host=12.34.56.78 ansible_ssh_port=23
 ↪ansible_ssh_pass='password'

[computers:children]
desktop
servers

[names:vars]
http_port=80
```

then salt-ssh can be used to hit any of them

```
[~]# salt-ssh all test.ping
salt.gtmanfred.com:
    True
home:
    True
[~]# salt-ssh desktop test.ping
home:
    True
[~]# salt-ssh computers test.ping
salt.gtmanfred.com:
    True
home:
    True
[~]# salt-ssh salt.gtmanfred.com test.ping
salt.gtmanfred.com:
    True
```

There is also the option of specifying a dynamic inventory, and generating it on the fly

```
#!/bin/bash
echo '{
  "servers": {
    "hosts": [
```

```
      "salt.gtmanfred.com"
    ]
  },
  "desktop": {
    "hosts": [
      "home"
    ]
  },
  "computers": {
    "hosts":{},
    "children": [
      "desktop",
      "servers"
    ]
  },
  "_meta": {
    "hostvars": {
      "salt.gtmanfred.com": {
        "ansible_ssh_user": "gtmanfred",
        "ansible_ssh_host": "127.0.0.1",
        "ansible_sudo_pass": "password",
        "ansible_ssh_port": 22
      },
      "home": {
        "ansible_ssh_user": "gtmanfred",
        "ansible_ssh_host": "12.34.56.78",
        "ansible_sudo_pass": "password",
        "ansible_ssh_port": 23
      }
    }
  }
}'
```

This is the format that an inventory script needs to output to work with ansible, and thus here.

```
[~]# salt-ssh --roster-file /etc/salt/hosts salt.gtmanfred.com test.ping
salt.gtmanfred.com:
        True
```

Any of the [groups] or direct hostnames will return. The `all' is special, and returns everything.

**class** salt.roster.ansible.**Inventory**(*tgt*, *tgt_type='glob'*, *inventory_file='/etc/salt/roster'*)
Matcher for static inventory files

**class** salt.roster.ansible.**Script**(*tgt*, *tgt_type='glob'*, *inventory_file='/etc/salt/roster'*)
Matcher for Inventory scripts

**class** salt.roster.ansible.**Target**

**get_glob**()
Return minions that match via glob

**targets**()
Execute the correct tgt_type routine and return

salt.roster.ansible.**targets**(*tgt*, *tgt_type='glob'*, ***kwargs*)
Return the targets from the ansible inventory_file Default: /etc/salt/roster

### 13.12.2 salt.roster.cache

Use the minion cache on the master to derive IP addresses based on minion ID.

Currently only contains logic to return an IPv4 address; does not handle IPv6, or authentication (passwords, keys, etc).

It is possible to configure this roster to prefer a particular type of IP over another. To configure the order, set the roster_order in the master config file. The default for this is:

```
roster_order:
  - public
  - private
  - local
```

`salt.roster.cache.`**`extract_ipv4`**(*roster_order*, *ipv4*)
Extract the preferred IP address from the ipv4 grain

`salt.roster.cache.`**`targets`**(*tgt*, *tgt_type='glob'*, ***kwargs*)
Return the targets from the flat yaml file, checks opts for location but defaults to /etc/salt/roster

### 13.12.3 salt.roster.cloud

Use the cloud cache on the master to derive IPv4 addresses based on minion ID.

This roster requires that the minion in question was created using at least the 2015.5.0 version of Salt Cloud. Starting with the 2015.5.0 release, Salt Cloud maintains an index of minions that it creates and deletes. This index tracks the provider and profile configuration used to provision the minion, including authentication information. So long as this configuration remains current, it can be used by Salt SSH to log into any minion in the index.

To connect as a user other than root, modify the cloud configuration file usually located at /etc/salt/cloud. For example, add the following:

```
ssh_username: my_user
sudo: True
```

`salt.roster.cloud.`**`extract_ipv4`**(*roster_order*, *ipv4*)
Extract the preferred IP address from the ipv4 grain

`salt.roster.cloud.`**`targets`**(*tgt*, *tgt_type='glob'*, ***kwargs*)
Return the targets from the flat yaml file, checks opts for location but defaults to /etc/salt/roster

### 13.12.4 salt.roster.clustershell

This roster resolves hostname in a pdsh/clustershell style.

**depends** clustershell, https://github.com/cea-hpc/clustershell

When you want to use host globs for target matching, use `--roster clustershell`. For example:

```
salt-ssh --roster clustershell 'server_[1-10,21-30],test_server[5,7,9]' test.ping
```

`salt.roster.clustershell.`**`targets`**(*tgt*, *tgt_type='glob'*, ***kwargs*)
Return the targets

### 13.12.5 salt.roster.flat

Read in the roster from a flat file using the renderer system

**class** salt.roster.flat.**RosterMatcher**(*raw*, *tgt*, *tgt_type*, *ipv='ipv4'*)
Matcher for the roster data structure

**get_data**(*minion*)
Return the configured ip

**ret_glob_minions**()
Return minions that match via glob

**ret_list_minions**()
Return minions that match via list

**ret_nodegroup_minions**()
Return minions which match the special list-only groups defined by ssh_list_nodegroups

**ret_pcre_minions**()
Return minions that match via pcre

**ret_range_minions**()
Return minions that are returned by a range query

**targets**()
Execute the correct tgt_type routine and return

salt.roster.flat.**targets**(*tgt*, *tgt_type='glob'*, ***kwargs*)
Return the targets from the flat yaml file, checks opts for location but defaults to /etc/salt/roster

### 13.12.6 salt.roster.range module

This roster resolves targets from a range server.

**depends** seco.range, https://github.com/ytoolshed/range

When you want to use a range query for target matching, use `--roster range`. For example:

```
salt-ssh --roster range '%%%example.range.cluster' test.ping
```

salt.roster.range.**target_glob**(*tgt*, *hosts*)

salt.roster.range.**target_range**(*tgt*, *hosts*)

salt.roster.range.**targets**(*tgt*, *tgt_type='range'*, ***kwargs*)
Return the targets from a range query

### 13.12.7 salt.roster.scan

Scan a netmask or ipaddr for open ssh ports

**class** salt.roster.scan.**RosterMatcher**(*tgt*, *tgt_type*)
Matcher for the roster data structure

**targets**()
Return ip addrs based on netmask, sitting in the ``glob'' spot because it is the default

salt.roster.scan.**targets**(*tgt*, *tgt_type='glob'*, ***kwargs*)
Return the targets from the flat yaml file, checks opts for location but defaults to /etc/salt/roster

## 13.13 runner modules

| | |
|---|---|
| asam | Novell ASAM Runner |
| cache | Return cached data from minions |
| cloud | The Salt Cloud Runner |
| ddns | Dynamic DNS Runner |
| doc | A runner module to collect and display the inline documentation from the |
| drac | Manage Dell DRAC from the Master |
| error | Error generator to enable integration testing of salt runner error handling |
| f5 | Runner to provide F5 Load Balancer functionality |
| fileserver | Directly manage the Salt fileserver plugins |
| git_pillar | Runner module to directly manage the git external pillar |
| http | Module for making various web calls. |
| jobs | A convenience system to manage jobs, both active and already run |
| launchd | Manage launchd plist files |
| lxc | Control Linux Containers via Salt |
| manage | General management functions for salt, tools like seeing what hosts are up |
| mine | A runner to access data from the salt mine |
| nacl | This runner helps create encrypted passwords that can be included in pillars. |
| network | Network tools to run from the Master |
| pagerduty | Runner Module for Firing Events via PagerDuty |
| pillar | Functions to interact with the pillar compiler on the master |
| pkg | Package helper functions using `salt.modules.pkg` |
| queue | General management and processing of queues. |
| reactor | A convenience system to manage reactors |
| saltutil | Sync custom types to the Master |
| sdb | Runner for setting and querying data via the sdb API on the master |
| search | Runner frontend to search system |
| spacewalk | Spacewalk Runner |
| ssh | A Runner module interface on top of the salt-ssh Python API. |
| state | Execute orchestration functions |
| survey | A general map/reduce style salt runner for aggregating results returned by several different minions. |
| test | This runner is used only for test purposes and servers no production purpose |
| thin | The thin runner is used to manage the salt thin systems. |
| virt | Control virtual machines via Salt |
| winrepo | Runner to manage Windows software repo |

### 13.13.1 salt.runners.asam

#### Novell ASAM Runner

New in version Beryllium.

Runner to interact with Novell ASAM Fan-Out Driver

**codeauthor** Nitin Madhok <nmadhok@clemson.edu>

To use this runner, set up the Novell Fan-Out Driver URL, username and password in the master configuration at `/etc/salt/master` or `/etc/salt/master.d/asam.conf`:

```
asam:
  prov1.domain.com
    username: "testuser"
    password: "verybadpass"
  prov2.domain.com
    username: "testuser"
    password: "verybadpass"
```

**Note:** Optionally, `protocol` and `port` can be specified if the Fan-Out Driver server is not using the defaults. Default is `protocol: https` and `port: 3451`.

`salt.runners.asam.`**`add_platform`**(*name*, *platform_set*, *server_url*)

To add an ASAM platform using the specified ASAM platform set on the Novell Fan-Out Driver

CLI Example:

```
salt-run asam.add_platform my-test-vm test-platform-set prov1.domain.com
```

`salt.runners.asam.`**`list_platform_sets`**(*server_url*)

To list all ASAM platform sets present on the Novell Fan-Out Driver

CLI Example:

```
salt-run asam.list_platform_sets prov1.domain.com
```

`salt.runners.asam.`**`list_platforms`**(*server_url*)

To list all ASAM platforms present on the Novell Fan-Out Driver

CLI Example:

```
salt-run asam.list_platforms prov1.domain.com
```

`salt.runners.asam.`**`remove_platform`**(*name*, *server_url*)

To remove specified ASAM platform from the Novell Fan-Out Driver

CLI Example:

```
salt-run asam.remove_platform my-test-vm prov1.domain.com
```

### 13.13.2 salt.runners.cache

Return cached data from minions

salt.runners.cache.**clear_all**(*tgt=None*, *expr_form='glob'*)
Clear the cached pillar, grains, and mine data of the targeted minions

CLI Example:

```
salt-run cache.clear_all
```

salt.runners.cache.**clear_git_lock**(*role*, *remote=None*, ***kwargs*)
New in version 2015.8.2.

Remove the update locks for Salt components (gitfs, git_pillar, winrepo) which use gitfs backend code from salt.utils.gitfs.

---

**Note:** Running *cache.clear_all* will not include this function as it does for pillar, grains, and mine.

Additionally, executing this function with a `role` of `gitfs` is equivalent to running `salt-run fileserver.clear_lock backend=git`.

---

**role** Which type of lock to remove (`gitfs`, `git_pillar`, or `winrepo`)
**remote** If specified, then any remotes which contain the passed string will have their lock cleared. For example, a `remote` value of **github** will remove the lock from all github.com remotes.
**type** [update,checkout] The types of lock to clear. Can be `update`, `checkout`, or both of

et (either comma-separated or as a Python list).
New in version 2015.8.8.
CLI Example:

```
salt-run cache.clear_git_lock git_pillar
```

salt.runners.cache.**clear_grains**(*tgt=None*, *expr_form='glob'*)
Clear the cached grains data of the targeted minions

CLI Example:

```
salt-run cache.clear_grains
```

salt.runners.cache.**clear_mine**(*tgt=None*, *expr_form='glob'*)
Clear the cached mine data of the targeted minions

CLI Example:

```
salt-run cache.clear_mine
```

salt.runners.cache.**clear_mine_func**(*tgt=None*, *expr_form='glob'*, *clear_mine_func_flag=None*)
Clear the cached mine function data of the targeted minions

CLI Example:

```
salt-run cache.clear_mine_func tgt='*' clear_mine_func_flag='network.interfaces'
```

salt.runners.cache.**clear_pillar**(*tgt=None*, *expr_form='glob'*)
Clear the cached pillar data of the targeted minions

CLI Example:

```
salt-run cache.clear_pillar
```

salt.runners.cache.**grains**(*tgt=None*, *expr_form='glob'*, *outputter=None*, ***kwargs*)
Return cached grains of the targeted minions

CLI Example:

```
salt-run cache.grains
```

salt.runners.cache.**mine**(*tgt=None*, *expr_form='glob'*, *outputter=None*, ***kwargs*)
Return cached mine data of the targeted minions

CLI Example:

```
salt-run cache.mine
```

salt.runners.cache.**pillar**(*tgt=None*, *expr_form='glob'*, *outputter=None*, ***kwargs*)
Return cached pillars of the targeted minions

CLI Example:

```
salt-run cache.pillar
```

### 13.13.3 salt.runners.cloud

#### The Salt Cloud Runner

This runner wraps the functionality of salt cloud making salt cloud routines available to all internal apis via the runner system

salt.runners.cloud.**action**(*func=None*, *cloudmap=None*, *instances=None*, *provider=None*, *instance=None*, ***kwargs*)
Execute a single action on the given map/provider/instance

CLI Example:

```
salt-run cloud.actions start my-salt-vm
```

salt.runners.cloud.**create**(*provider*, *instances*, ***kwargs*)
Create an instance using Salt Cloud

CLI Example:

```
salt-run cloud.create my-ec2-config myinstance image=ami-1624987f size=
↪'t1.micro' ssh_username=ec2-user securitygroup=default delvol_on_
↪destroy=True
```

salt.runners.cloud.**destroy**(*instances*)
Destroy the named vm(s)

salt.runners.cloud.**full_query**(*query_type='list_nodes_full'*)
List all available cloud provider data

salt.runners.cloud.**list_images**(*provider='all'*)
List cloud provider images for the given providers

salt.runners.cloud.**list_locations**(*provider='all'*)
List cloud provider sizes for the given providers

salt.runners.cloud.**list_sizes**(*provider='all'*)
List cloud provider sizes for the given providers

salt.runners.cloud.**map_run**(*path*, ***kwargs*)
Execute a salt cloud map file

salt.runners.cloud.**profile**(*prof=None*, *instances=None*, ***kwargs*)
Create a cloud vm with the given profile and instances, instances can be a list or comma-delimited string

CLI Example:

```
salt-run cloud.profile prof=my-ec2 instances=node1,node2,node3
```

salt.runners.cloud.**query**(*query_type='list_nodes'*)
List cloud provider data for all providers

salt.runners.cloud.**select_query**(*query_type='list_nodes_select'*)
List selected nodes

### 13.13.4 salt.runners.ddns

#### Dynamic DNS Runner

New in version Beryllium.

Runner to interact with DNS server and create/delete/update DNS records

**codeauthor** Nitin Madhok <nmadhok@clemson.edu>

salt.runners.ddns.**add_host**(*zone*, *name*, *ttl*, *ip*, *keyname*, *keyfile*, *nameserver*)
Create both A and PTR (reverse) records for a host.

CLI Example:

```
salt-run ddns.add_host domain.com my-test-vm 3600 10.20.30.40 my-tsig-key /etc/
↪salt/tsig.keyring 10.0.0.1
```

salt.runners.ddns.**create**(*zone*, *name*, *ttl*, *rdtype*, *data*, *keyname*, *keyfile*, *nameserver*)
Create a DNS record. The nameserver must be an IP address and the master running this runner must have create privileges on that server.

CLI Example:

```
salt-run ddns.create domain.com my-test-vm 3600 A 10.20.30.40 my-tsig-key /etc/
↪salt/tsig.keyring 10.0.0.1
```

salt.runners.ddns.**delete**(*zone*, *name*, *keyname*, *keyfile*, *nameserver*, *rdtype=None*, *data=None*)
Delete a DNS record.

CLI Example:

```
salt-run ddns.delete domain.com my-test-vm my-tsig-key /etc/salt/tsig.keyring 10.
↪0.0.1 A
```

salt.runners.ddns.**delete_host**(*zone*, *name*, *keyname*, *keyfile*, *nameserver*)
Delete both forward (A) and reverse (PTR) records for a host only if the forward (A) record exists.

CLI Example:

```
salt-run ddns.delete_host domain.com my-test-vm my-tsig-key /etc/salt/tsig.
↪keyring 10.0.0.1
```

salt.runners.ddns.**update**(*zone*, *name*, *ttl*, *rdtype*, *data*, *keyname*, *keyfile*, *nameserver*, *replace=False*)
Replace, or update a DNS record. The nameserver must be an IP address and the master running this runner must have update privileges on that server.

**Note:** If `replace` is set to True, all records for this name and type will first be deleted and then recreated. Default is `replace=False`.

CLI Example:

```
salt-run ddns.update domain.com my-test-vm 3600 A 10.20.30.40 my-tsig-key /etc/
↪salt/tsig.keyring 10.0.0.1
```

### 13.13.5 salt.runners.doc

A runner module to collect and display the inline documentation from the various module types

`salt.runners.doc.`**`execution`**`()`
Collect all the sys.doc output from each minion and return the aggregate

CLI Example:

```
salt-run doc.execution
```

`salt.runners.doc.`**`runner`**`()`
Return all inline documentation for runner modules

CLI Example:

```
salt-run doc.runner
```

`salt.runners.doc.`**`wheel`**`()`
Return all inline documentation for wheel modules

CLI Example:

```
salt-run doc.wheel
```

### 13.13.6 salt.runners.drac

Manage Dell DRAC from the Master

The login credentials need to be configured in the Salt master configuration file.

`salt.runners.drac.`**`poweroff`**`(`*hostname*, *timeout=20*, *username=None*, *password=None*`)`
Power server off

CLI Example:

```
salt-run drac.poweroff example.com
```

`salt.runners.drac.`**`poweron`**`(`*hostname*, *timeout=20*, *username=None*, *password=None*`)`
Power server on

CLI Example:

```
salt-run drac.poweron example.com
```

`salt.runners.drac.`**`pxe`**`(`*hostname*, *timeout=20*, *username=None*, *password=None*`)`
Connect to the Dell DRAC and have the boot order set to PXE and power cycle the system to PXE boot

CLI Example:

```
salt-run drac.pxe example.com
```

salt.runners.drac.**reboot**(*hostname*, *timeout=20*, *username=None*, *password=None*)
Reboot a server using the Dell DRAC

CLI Example:

```
salt-run drac.reboot example.com
```

salt.runners.drac.**version**(*hostname*, *timeout=20*, *username=None*, *password=None*)
Display the version of DRAC

CLI Example:

```
salt-run drac.version example.com
```

### 13.13.7 salt.runners.error

Error generator to enable integration testing of salt runner error handling

salt.runners.error.**error**(*name=None*, *message=''*)
If name is None Then return empty dict

Otherwise raise an exception with __name__ from name, message from message

CLI Example:

```
salt-run error
salt-run error.error name="Exception" message="This is an error."
```

### 13.13.8 salt.runners.f5

Runner to provide F5 Load Balancer functionality

**depends**

- pycontrol Python module

**configuration** In order to connect to a F5 Load Balancer, you must specify in the Salt master configuration the currently available load balancers

```
load_balancers:
  bigip1.example.com
    username: admin
    password: secret
  bigip2.example.com:
    username: admin
    password: secret
```

class salt.runners.f5.**F5Mgmt**(*lb*, *username*, *password*)

**add_pool_member**(*name*, *port*, *pool_name*)
Add a node to a pool

**check_member_pool**(*member*, *pool_name*)
Check a pool member exists in a specific pool

**check_pool**(*name*)
Check to see if a pool exists

**check_virtualserver**(*name*)
Check to see if a virtual server exists

**create_pool**(*name*, *method='ROUND_ROBIN'*)
Create a pool on the F5 load balancer

**create_vs**(*name*, *ip*, *port*, *protocol*, *profile*, *pool_name*)
Create a virtual server

**lbmethods**()
List all the load balancer methods

salt.runners.f5.**add_pool_member**(*lb*, *name*, *port*, *pool_name*)
Add a node to a pool

CLI Examples:

```
salt-run f5.add_pool_member load_balancer 10.0.0.1 80 my_pool
```

salt.runners.f5.**check_member_pool**(*lb*, *member*, *pool_name*)
Check a pool member exists in a specific pool

CLI Examples:

```
salt-run f5.check_member_pool load_balancer 10.0.0.1 my_pool
```

salt.runners.f5.**check_pool**(*lb*, *name*)
Check to see if a pool exists

CLI Examples:

```
salt-run f5.check_pool load_balancer pool_name
```

salt.runners.f5.**check_virtualserver**(*lb*, *name*)
Check to see if a virtual server exists

CLI Examples:

```
salt-run f5.check_virtualserver load_balancer virtual_server
```

salt.runners.f5.**create_pool**(*lb*, *name*, *method='ROUND_ROBIN'*)
Create a pool on the F5 load balancer

CLI Examples:

```
salt-run f5.create_pool load_balancer pool_name loadbalance_method
salt-run f5.create_pool load_balancer my_pool ROUND_ROBIN
```

salt.runners.f5.**create_vs**(*lb*, *name*, *ip*, *port*, *protocol*, *profile*, *pool_name*)
Create a virtual server

CLI Examples:

```
salt-run f5.create_vs lbalancer vs_name 10.0.0.1 80 tcp http poolname
```

### 13.13.9 salt.runners.fileserver

Directly manage the Salt fileserver plugins

`salt.runners.fileserver.`**`clear_cache`**(*backend=None*)

New in version 2015.5.0.

Clear the fileserver cache from VCS fileserver backends (`git`, `hg`, `svn`). Executing this runner with no arguments will clear the cache for all enabled VCS fileserver backends, but this can be narrowed using the `backend` argument.

**backend** Only clear the update lock for the specified backend(s). If all passed backends start with a minus sign (`-`), then these backends will be excluded from the enabled backends. However, if there is a mix of backends with and without a minus sign (ex: `backend=-roots,git`) then the ones starting with a minus sign will be disregarded.

CLI Example:

```
salt-run fileserver.clear_cache
salt-run fileserver.clear_cache backend=git,hg
salt-run fileserver.clear_cache hg
salt-run fileserver.clear_cache -roots
```

`salt.runners.fileserver.`**`clear_lock`**(*backend=None*, *remote=None*)

New in version 2015.5.0.

Clear the fileserver update lock from VCS fileserver backends (`git`, `hg`, `svn`). This should only need to be done if a fileserver update was interrupted and a remote is not updating (generating a warning in the Master's log file). Executing this runner with no arguments will remove all update locks from all enabled VCS fileserver backends, but this can be narrowed by using the following arguments:

**backend** Only clear the update lock for the specified backend(s).

**remote** If specified, then any remotes which contain the passed string will have their lock cleared. For example, a `remote` value of **github** will remove the lock from all github.com remotes.

CLI Example:

```
salt-run fileserver.clear_lock
salt-run fileserver.clear_lock backend=git,hg
salt-run fileserver.clear_lock backend=git remote=github
salt-run fileserver.clear_lock remote=bitbucket
```

`salt.runners.fileserver.`**`dir_list`**(*saltenv='base'*, *backend=None*, *outputter=None*)

Return a list of directories in the given environment

**saltenv** [base] The salt fileserver environment to be listed

**backend** Narrow fileserver backends to a subset of the enabled ones. If all passed backends start with a minus sign (`-`), then these backends will be excluded from the enabled backends. However, if there is a mix of backends with and without a minus sign (ex: `backend=-roots,git`) then the ones starting with a minus sign will be disregarded.

New in version 2015.5.0.

CLI Example:

```
salt-run fileserver.dir_list
salt-run fileserver.dir_list saltenv=prod
salt-run fileserver.dir_list saltenv=dev backend=git
salt-run fileserver.dir_list base hg,roots
salt-run fileserver.dir_list -git
```

`salt.runners.fileserver.`**`empty_dir_list`**(*saltenv='base'*, *backend=None*, *outputter=None*)

New in version 2015.5.0.

Return a list of empty directories in the given environment

**saltenv** [base] The salt fileserver environment to be listed

**backend** Narrow fileserver backends to a subset of the enabled ones. If all passed backends start with a minus sign (-), then these backends will be excluded from the enabled backends. However, if there is a mix of backends with and without a minus sign (ex: `backend=-roots,git`) then the ones starting with a minus sign will be disregarded.

> **Note:** Some backends (such as *git* and *hg*) do not support empty directories. So, passing `backend=git` or `backend=hg` will result in an empty list being returned.

CLI Example:

```
salt-run fileserver.empty_dir_list
salt-run fileserver.empty_dir_list saltenv=prod
salt-run fileserver.empty_dir_list backend=roots
```

`salt.runners.fileserver.`**`envs`**(*backend=None*, *sources=False*, *outputter=None*)

Return the available fileserver environments. If no backend is provided, then the environments for all configured backends will be returned.

**backend** Narrow fileserver backends to a subset of the enabled ones.

Changed in version 2015.5.0: If all passed backends start with a minus sign (-), then these backends will be excluded from the enabled backends. However, if there is a mix of backends with and without a minus sign (ex: `backend=-roots,git`) then the ones starting with a minus sign will be disregarded.

Additionally, fileserver backends can now be passed as a comma-separated list. In earlier versions, they needed to be passed as a python list (ex: `backend="['roots','git']"`)

CLI Example:

```
salt-run fileserver.envs
salt-run fileserver.envs backend=roots,git
salt-run fileserver.envs git
```

`salt.runners.fileserver.`**`file_list`**(*saltenv='base'*, *backend=None*, *outputter=None*)

Return a list of files from the salt fileserver

**saltenv** [base] The salt fileserver environment to be listed

**backend** Narrow fileserver backends to a subset of the enabled ones. If all passed backends start with a minus sign (-), then these backends will be excluded from the enabled backends. However, if there is a mix of backends with and without a minus sign (ex: `backend=-roots,git`) then the ones starting with a minus sign will be disregarded.

New in version 2015.5.0.

CLI Examples:

```
salt-run fileserver.file_list
salt-run fileserver.file_list saltenv=prod
salt-run fileserver.file_list saltenv=dev backend=git
salt-run fileserver.file_list base hg,roots
salt-run fileserver.file_list -git
```

`salt.runners.fileserver.`**`lock`**(*backend=None*, *remote=None*)

New in version 2015.5.0.

Set a fileserver update lock for VCS fileserver backends (*git*, *hg*, *svn*).

> **Note:** This will only operate on enabled backends (those configured in *fileserver_backend*).

**backend** Only set the update lock for the specified backend(s).

**remote** If not None, then any remotes which contain the passed string will have their lock cleared. For example, a `remote` value of `*github.com*` will remove the lock from all github.com remotes.

CLI Example:

```
salt-run fileserver.lock
salt-run fileserver.lock backend=git,hg
salt-run fileserver.lock backend=git remote='*github.com*'
salt-run fileserver.lock remote=bitbucket
```

`salt.runners.fileserver.`**`symlink_list`**(*saltenv='base'*, *backend=None*, *outputter=None*)

Return a list of symlinked files and dirs

**saltenv** [base] The salt fileserver environment to be listed

**backend** Narrow fileserver backends to a subset of the enabled ones. If all passed backends start with a minus sign (-), then these backends will be excluded from the enabled backends. However, if there is a mix of backends with and without a minus sign (ex: `backend=-roots,git`) then the ones starting with a minus sign will be disregarded.

New in version 2015.5.0.

CLI Example:

```
salt-run fileserver.symlink_list
salt-run fileserver.symlink_list saltenv=prod
salt-run fileserver.symlink_list saltenv=dev backend=git
salt-run fileserver.symlink_list base hg,roots
salt-run fileserver.symlink_list -git
```

`salt.runners.fileserver.`**`update`**(*backend=None*)

Update the fileserver cache. If no backend is provided, then the cache for all configured backends will be updated.

**backend** Narrow fileserver backends to a subset of the enabled ones.

Changed in version 2015.5.0: If all passed backends start with a minus sign (-), then these backends will be excluded from the enabled backends. However, if there is a mix of backends with and without a minus sign (ex: `backend=-roots,git`) then the ones starting with a minus sign will be disregarded.

Additionally, fileserver backends can now be passed as a comma-separated list. In earlier versions, they needed to be passed as a python list (ex: `backend="['roots','git']"`)

CLI Example:

```
salt-run fileserver.update
salt-run fileserver.update backend=roots,git
```

### 13.13.10 salt.runners.git_pillar

Runner module to directly manage the git external pillar

`salt.runners.git_pillar.`**`update`**(*branch=None*, *repo=None*)

New in version 2014.1.0.

Changed in version 2015.8.4: This runner function now supports the *new git_pillar configuration schema* introduced in 2015.8.0. Additionally, the branch and repo can now be omitted to update all git_pillar remotes. The return data has also changed. For releases 2015.8.3 and earlier, there is no value returned. Starting with 2015.8.4, the return data is a dictionary. If using the *old git_pillar configuration schema*, then the dictionary values will be `True` if the update completed without error, and `False` if an error occurred. If using the *new*

*git_pillar configuration schema*, the values will be `True` only if new commits were fetched, and `False` if there were errors or no new commits were fetched.

Fetch one or all configured git_pillar remotes.

---

**Note:** This will *not* fast-forward the git_pillar cachedir on the master. All it does is perform a `git fetch`. If this runner is executed with `-l debug`, you may see a log message that says that the repo is up-to-date. Keep in mind that Salt automatically fetches git_pillar repos roughly every 60 seconds (or whatever *`loop_interval`* is set to). So, it is possible that the repo was fetched automatically in the time between when changes were pushed to the repo, and when this runner was executed. When in doubt, simply refresh pillar data using *`saltutil.refresh_pillar`* and then use *`pillar.item`* to check if the pillar data has changed as expected.

---

CLI Example:

```
# Update specific branch and repo
salt-run git_pillar.update branch='branch' repo='https://foo.com/bar.git'
# Update all repos (2015.8.4 and later)
salt-run git_pillar.update
# Run with debug logging
salt-run git_pillar.update -l debug
```

### 13.13.11 salt.runners.http

Module for making various web calls. Primarily designed for webhooks and the like, but also useful for basic http testing.

New in version 2015.5.0.

`salt.runners.http.`**`query`**(*url*, *output=True*, ***kwargs*)

Query a resource, and decode the return data

New in version 2015.5.0.

CLI Example:

```
salt-run http.query http://somelink.com/
salt-run http.query http://somelink.com/ method=POST             params='key1=val1&
↪key2=val2'
salt-run http.query http://somelink.com/ method=POST              data='<xml>
↪somecontent</xml>'
```

`salt.runners.http.`**`update_ca_bundle`**(*target=None*, *source=None*, *merge_files=None*)

Update the local CA bundle file from a URL

New in version 2015.5.0.

CLI Example:

```
salt-run http.update_ca_bundle
salt-run http.update_ca_bundle target=/path/to/cacerts.pem
salt-run http.update_ca_bundle source=https://example.com/cacerts.pem
```

If the `target` is not specified, it will be pulled from the `ca_cert` configuration variable available to the master. If it cannot be found there, it will be placed at `<<FILE_ROOTS>>/cacerts.pem`.

If the `source` is not specified, it will be pulled from the `ca_cert_url` configuration variable available to the master. If it cannot be found, it will be downloaded from the cURL website, using an http (not https) URL. USING THE DEFAULT URL SHOULD BE AVOIDED!

`merge_files` may also be specified, which includes a string or list of strings representing a file or files to be appended to the end of the CA bundle, once it is downloaded.

CLI Example:

```
salt-run http.update_ca_bundle merge_files=/path/to/mycert.pem
```

### 13.13.12 salt.runners.jobs

A convenience system to manage jobs, both active and already run

`salt.runners.jobs.`**`active`**(*outputter=None*, *display_progress=False*)

Return a report on all actively running jobs from a job id centric perspective

CLI Example:

```
salt-run jobs.active
```

`salt.runners.jobs.`**`exit_success`**(*jid*, *ext_source=None*)

Check if a job has been executed and exit successfully

**jid** The jid to look up.

**ext_source** The external job cache to use. Default: *None*.

CLI Example: .. code-block:: bash

salt-run jobs.exit_success 20160520145827701627

`salt.runners.jobs.`**`last_run`**(*ext_source=None*, *outputter=None*, *metadata=None*, *function=None*, *target=None*, *display_progress=False*)

New in version 2015.8.0.

List all detectable jobs and associated functions

CLI Example:

```
salt-run jobs.last_run
salt-run jobs.last_run target=nodename
salt-run jobs.last_run function='cmd.run'
salt-run jobs.last_run metadata="{'foo': 'bar'}"
```

`salt.runners.jobs.`**`list_job`**(*jid*, *ext_source=None*, *outputter=None*, *display_progress=False*)

List a specific job given by its jid

**ext_source** If provided, specifies which external job cache to use.

**display_progress** [False] If `True`, fire progress events.

New in version 2015.8.8.

CLI Example:

```
salt-run jobs.list_job 20130916125524463507
salt-run jobs.list_job 20130916125524463507 --out=pprint
```

`salt.runners.jobs.`**`list_jobs`**(*ext_source=None*, *outputter=None*, *search_metadata=None*, *search_function=None*, *search_target=None*, *start_time=None*, *end_time=None*, *display_progress=False*)

List all detectable jobs and associated functions

**ext_source** If provided, specifies which external job cache to use.

FILTER OPTIONS

**Note:** If more than one of the below options are used, only jobs which match *all* of the filters will be returned.

**search_metadata** Specify a dictionary to match to the job's metadata. If any of the key-value pairs in this dictionary match, the job will be returned. Example:

```
salt-run jobs.list_jobs search_metadata='{"foo": "bar", "baz": "qux"}'
```

**search_function** Can be passed as a string or a list. Returns jobs which match the specified function. Globbing is allowed. Example:

```
salt-run jobs.list_jobs search_function='test.*'
salt-run jobs.list_jobs search_function='["test.*", "pkg.install"]'
```

Changed in version 2015.8.8: Multiple targets can now also be passed as a comma-separated list. For example:

```
salt-run jobs.list_jobs search_function='test.*,pkg.install'
```

**search_target** Can be passed as a string or a list. Returns jobs which match the specified minion name. Globbing is allowed. Example:

```
salt-run jobs.list_jobs search_target='*.mydomain.tld'
salt-run jobs.list_jobs search_target='["db*", "myminion"]'
```

Changed in version 2015.8.8: Multiple targets can now also be passed as a comma-separated list. For example:

```
salt-run jobs.list_jobs search_target='db*,myminion'
```

**start_time** Accepts any timestamp supported by the dateutil Python module (if this module is not installed, this argument will be ignored). Returns jobs which started after this timestamp.

**end_time** Accepts any timestamp supported by the dateutil Python module (if this module is not installed, this argument will be ignored). Returns jobs which started before this timestamp.

CLI Example:

```
salt-run jobs.list_jobs
salt-run jobs.list_jobs search_function='test.*' search_target='localhost' search_
↪metadata='{"bar": "foo"}'
salt-run jobs.list_jobs start_time='2015, Mar 16 19:00' end_time='2015, Mar 18 22:
↪00'
```

`salt.runners.jobs.`**`list_jobs_filter`**(*count*, *filter_find_job=True*, *ext_source=None*, *outputter=None*, *display_progress=False*)

List all detectable jobs and associated functions

**ext_source** The external job cache to use. Default: *None*.

CLI Example:

```
salt-run jobs.list_jobs_filter 50
salt-run jobs.list_jobs_filter 100 filter_find_job=False
```

`salt.runners.jobs.`**`lookup_jid`**(*jid*, *ext_source=None*, *returned=True*, *missing=False*, *outputter=None*, *display_progress=False*)

Return the printout from a previously executed job

**jid** The jid to look up.

**ext_source** The external job cache to use. Default: *None*.

**returned** [True] If `True`, include the minions that did return from the command.

New in version 2015.8.0.

**missing** [False] If `True`, include the minions that did *not* return from the command.

**display_progress** [False] If `True`, fire progress events.

New in version 2015.5.0.

CLI Example:

```
salt-run jobs.lookup_jid 20130916125524463507
salt-run jobs.lookup_jid 20130916125524463507 --out=highstate
```

`salt.runners.jobs.`**`print_job`**(*jid*, *ext_source=None*, *outputter=None*)

Print a specific job's detail given by it's jid, including the return data.

CLI Example:

```
salt-run jobs.print_job 20130916125524463507
```

### 13.13.13 salt.runners.launchd

Manage launchd plist files

`salt.runners.launchd.`**`write_launchd_plist`**(*program*)

Write a launchd plist for managing salt-master or salt-minion

CLI Example:

```
salt-run launchd.write_launchd_plist salt-master
```

### 13.13.14 salt.runners.lxc

Control Linux Containers via Salt

**depends** lxc execution module

`salt.runners.lxc.`**`cloud_init`**(*names*, *host=None*, *quiet=False*, ***kwargs*)

Wrapper for using lxc.init in saltcloud compatibility mode

**names** Name of the containers, supports a single name or a comma delimited list of names.

**host** Minion to start the container on. Required.

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

**saltcloud_mode** init the container with the saltcloud opts format instead

`salt.runners.lxc.`**`find_guest`**(*name*, *quiet=False*, *path=None*)

Returns the host for a container.

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

```
salt-run lxc.find_guest name
```

`salt.runners.lxc.`**`find_guests`**(*names*, *path=None*)

Return a dict of hosts and named guests

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

salt.runners.lxc.**freeze**(*name*, *quiet=False*, *path=None*)

Freeze the named container

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

```
salt-run lxc.freeze name
```

salt.runners.lxc.**info**(*name*, *quiet=False*, *path=None*)

Returns information about a container.

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

```
salt-run lxc.info name
```

salt.runners.lxc.**init**(*names*, *host=None*, *saltcloud_mode=False*, *quiet=False*, ***kwargs*)

Initialize a new container

```
salt-run lxc.init name host=minion_id [cpuset=cgroups_cpuset] \
        [cpushare=cgroups_cpushare] [memory=cgroups_memory] \
        [template=lxc_template_name] [clone=original name] \
        [profile=lxc_profile] [network_proflile=network_profile] \
        [nic=network_profile] [nic_opts=nic_opts] \
        [start=(true|false)] [seed=(true|false)] \
        [install=(true|false)] [config=minion_config] \
        [snapshot=(true|false)]
```

**names** Name of the containers, supports a single name or a comma delimited list of names.

**host** Minion on which to initialize the container **(required)**

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

**saltcloud_mode** init the container with the saltcloud opts format instead See lxc.init_interface module documentation

**cpuset** cgroups cpuset.

**cpushare** cgroups cpu shares.

**memory** cgroups memory limit, in MB

Changed in version 2015.5.0: If no value is passed, no limit is set. In earlier Salt versions, not passing this value causes a 1024MB memory limit to be set, and it was necessary to pass `memory=0` to set no limit.

**template** Name of LXC template on which to base this container

**clone** Clone this container from an existing container

**profile** A LXC profile (defined in config or pillar).

**network_profile** Network profile to use for the container

New in version 2015.5.2.

**nic** Deprecated since version 2015.5.0: Use `network_profile` instead

**nic_opts** Extra options for network interfaces. E.g.:

```
{"eth0": {"mac": "aa:bb:cc:dd:ee:ff","ipv4": "10.1.1.1","ipv6":
"2001:db8::ff00:42:8329"}}
```

**start** Start the newly created container.

**seed** Seed the container with the minion config and autosign its key. Default: true

**install** If salt-minion is not already installed, install it. Default: true

**config** Optional config parameters. By default, the id is set to the name of the container.

salt.runners.lxc.**list**(*host=None*, *quiet=False*, *path=None*)
List defined containers (running, stopped, and frozen) for the named (or all) host(s).
**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

```
salt-run lxc.list [host=minion_id]
```

salt.runners.lxc.**purge**(*name*, *delete_key=True*, *quiet=False*, *path=None*)
Purge the named container and delete its minion key if present. WARNING: Destroys all data associated with the container.
**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

```
salt-run lxc.purge name
```

salt.runners.lxc.**start**(*name*, *quiet=False*, *path=None*)
Start the named container.
**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

```
salt-run lxc.start name
```

salt.runners.lxc.**stop**(*name*, *quiet=False*, *path=None*)
Stop the named container.
**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

```
salt-run lxc.stop name
```

salt.runners.lxc.**unfreeze**(*name*, *quiet=False*, *path=None*)
Unfreeze the named container
**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

```
salt-run lxc.unfreeze name
```

### 13.13.15 salt.runners.manage

General management functions for salt, tools like seeing what hosts are up and what hosts are down

salt.runners.manage.**alived**(*subset=None*, *show_ipv4=False*)
New in version 2015.8.0.

Print a list of all minions that are up according to Salt's presence detection (no commands will be sent to minions)
**subset** [None] Pass in a CIDR range to filter minions by IP address.
**show_ipv4** [False] Also show the IP address each minion is connecting from.
CLI Example:

```
salt-run manage.alived
```

salt.runners.manage.**allowed**(*subset=None*, *show_ipv4=False*)
New in version 2015.8.0.

Print a list of all minions that are up according to Salt's presence detection (no commands will be sent to minions)
**subset** [None] Pass in a CIDR range to filter minions by IP address.
**show_ipv4** [False] Also show the IP address each minion is connecting from.
CLI Example:

```
salt-run manage.allowed
```

salt.runners.manage.**bootstrap**(*version='develop'*, *script=None*, *hosts=''*, *root_user=True*)
Bootstrap minions with salt-bootstrap
**version** [develop] Git tag of version to install
**script** [https://bootstrap.saltstack.com] Script to execute
**hosts** Comma-separated hosts [example: hosts='host1.local,host2.local']
**root_user** [True] Prepend `root@` to each host.
CLI Example:

```
salt-run manage.bootstrap hosts='host1,host2'
salt-run manage.bootstrap hosts='host1,host2' version='v0.17'
salt-run manage.bootstrap hosts='host1,host2' version='v0.17' script='https://
↪bootstrap.saltstack.com/develop'
salt-run manage.bootstrap hosts='ec2-user@host1,ec2-user@host2' root_user=False
```

salt.runners.manage.**bootstrap_psexec**(*hosts=''*, *master=None*, *version=None*, *arch='win32'*, *installer_url=None*, *username=None*, *password=None*)
Bootstrap Windows minions via PsExec.
**hosts** Comma separated list of hosts to deploy the Windows Salt minion.
**master** Address of the Salt master passed as an argument to the installer.
**version** Point release of installer to download. Defaults to the most recent.
**arch** Architecture of installer to download. Defaults to win32.
**installer_url** URL of minion installer executable. Defaults to the latest version from https://repo.saltstack.com/windows/
**username** Optional user name for login on remote computer.
**password** Password for optional username. If omitted, PsExec will prompt for one to be entered for each host.
CLI Example:

```
salt-run manage.bootstrap_psexec hosts='host1,host2'
salt-run manage.bootstrap_psexec hosts='host1,host2' version='0.17' username=
↪'DOMAIN\Administrator'
salt-run manage.bootstrap_psexec hosts='host1,host2' installer_url='http://
↪exampledomain/salt-installer.exe'
```

salt.runners.manage.**down**(*removekeys=False*)
Print a list of all the down or unresponsive salt minions Optionally remove keys of down minions

CLI Example:

```
salt-run manage.down
salt-run manage.down removekeys=True
```

salt.runners.manage.**get_stats**(*estate=None*, *stack='road'*)
Print the stack stats
**estate** [None] The name of the target estate. Master stats would be requested by default
**stack** [`road'] Show stats on either road or lane stack Allowed values are `road' or `lane'.
CLI Example:

```
salt-run manage.get_stats [estate=alpha_minion] [stack=lane]
```

salt.runners.manage.**joined**(*subset=None*, *show_ipv4=False*)

New in version 2015.8.0.

Print a list of all minions that are up according to Salt's presence detection (no commands will be sent to minions)

**subset** [None] Pass in a CIDR range to filter minions by IP address.

**show_ipv4** [False] Also show the IP address each minion is connecting from.

CLI Example:

```
salt-run manage.joined
```

salt.runners.manage.**key_regen**()

This routine is used to regenerate all keys in an environment. This is invasive! ALL KEYS IN THE SALT ENVIRONMENT WILL BE REGENERATED!!

The key_regen routine sends a command out to minions to revoke the master key and remove all minion keys, it then removes all keys from the master and prompts the user to restart the master. The minions will all reconnect and keys will be placed in pending.

After the master is restarted and minion keys are in the pending directory execute a salt-key -A command to accept the regenerated minion keys.

The master *must* be restarted within 60 seconds of running this command or the minions will think there is something wrong with the keys and abort.

Only Execute this runner after upgrading minions and master to 0.15.1 or higher!

CLI Example:

```
salt-run manage.key_regen
```

salt.runners.manage.**lane_stats**(*estate=None*)

Print the estate manor lane stack stats

**estate** [None] The name of the target estate. Master stats would be requested by default

CLI Example:

```
salt-run manage.lane_stats [estate=alpha_minion]
```

salt.runners.manage.**list_not_state**(*subset=None*, *show_ipv4=False*, *state=None*)

New in version 2015.8.0.

Print a list of all minions that are NOT up according to Salt's presence detection (no commands will be sent to minions)

**subset** [None] Pass in a CIDR range to filter minions by IP address.

**show_ipv4** [False] Also show the IP address each minion is connecting from.

**state** [`available'] Show minions being in specific state that is one of `available', `joined', `allowed', `alived' or `reaped'.

CLI Example:

```
salt-run manage.list_not_state
```

salt.runners.manage.**list_state**(*subset=None*, *show_ipv4=False*, *state=None*)

New in version 2015.8.0.

Print a list of all minions that are up according to Salt's presence detection (no commands will be sent to minions)

**subset** [None] Pass in a CIDR range to filter minions by IP address.

**show_ipv4** [False] Also show the IP address each minion is connecting from.

**state** [`available'] Show minions being in specific state that is one of `available', `joined', `allowed', `alived' or `reaped'.
CLI Example:

```
salt-run manage.list_state
```

salt.runners.manage.**not_alived**(*subset=None*, *show_ipv4=False*)
New in version 2015.8.0.

Print a list of all minions that are NOT up according to Salt's presence detection (no commands will be sent)
**subset** [None] Pass in a CIDR range to filter minions by IP address.
**show_ipv4** [False] Also show the IP address each minion is connecting from.
CLI Example:

```
salt-run manage.not_alived
```

salt.runners.manage.**not_allowed**(*subset=None*, *show_ipv4=False*)
New in version 2015.8.0.

Print a list of all minions that are NOT up according to Salt's presence detection (no commands will be sent)
**subset** [None] Pass in a CIDR range to filter minions by IP address.
**show_ipv4** [False] Also show the IP address each minion is connecting from.
CLI Example:

```
salt-run manage.not_allowed
```

salt.runners.manage.**not_joined**(*subset=None*, *show_ipv4=False*)
New in version 2015.8.0.

Print a list of all minions that are NOT up according to Salt's presence detection (no commands will be sent)
**subset** [None] Pass in a CIDR range to filter minions by IP address.
**show_ipv4** [False] Also show the IP address each minion is connecting from.
CLI Example:

```
salt-run manage.not_joined
```

salt.runners.manage.**not_present**(*subset=None*, *show_ipv4=False*)
New in version 2015.5.0.

Print a list of all minions that are NOT up according to Salt's presence detection (no commands will be sent)
**subset** [None] Pass in a CIDR range to filter minions by IP address.
**show_ipv4** [False] Also show the IP address each minion is connecting from.
CLI Example:

```
salt-run manage.not_present
```

salt.runners.manage.**not_reaped**(*subset=None*, *show_ipv4=False*)
New in version 2015.8.0.

Print a list of all minions that are NOT up according to Salt's presence detection (no commands will be sent)
**subset** [None] Pass in a CIDR range to filter minions by IP address.
**show_ipv4** [False] Also show the IP address each minion is connecting from.
CLI Example:

```
salt-run manage.not_reaped
```

salt.runners.manage.**present**(*subset=None*, *show_ipv4=False*)
Print a list of all minions that are up according to Salt's presence detection (no commands will be sent to

minions)
**subset** [None] Pass in a CIDR range to filter minions by IP address.
**show_ipv4** [False] Also show the IP address each minion is connecting from.
CLI Example:

```
salt-run manage.present
```

salt.runners.manage.**reaped**(*subset=None*, *show_ipv4=False*)
New in version 2015.8.0.

Print a list of all minions that are up according to Salt's presence detection (no commands will be sent to minions)
**subset** [None] Pass in a CIDR range to filter minions by IP address.
**show_ipv4** [False] Also show the IP address each minion is connecting from.
CLI Example:

```
salt-run manage.reaped
```

salt.runners.manage.**road_stats**(*estate=None*)
Print the estate road stack stats
**estate** [None] The name of the target estate. Master stats would be requested by default
CLI Example:

```
salt-run manage.road_stats [estate=alpha_minion]
```

salt.runners.manage.**safe_accept**(*target*, *expr_form='glob'*)
Accept a minion's public key after checking the fingerprint over salt-ssh

CLI Example:

```
salt-run manage.safe_accept my_minion
salt-run manage.safe_accept minion1,minion2 expr_form=list
```

salt.runners.manage.**status**(*output=True*, *timeout=None*, *gather_job_timeout=None*)
Print the status of all known salt minions

CLI Example:

```
salt-run manage.status
```

salt.runners.manage.**up**(*timeout=None*, *gather_job_timeout=None*)
Print a list of all of the minions that are up

CLI Example:

```
salt-run manage.up
salt-run manage.up timeout=5 gather_job_timeout=5
```

salt.runners.manage.**versions**()
Check the version of active minions

CLI Example:

```
salt-run manage.versions
```

### 13.13.16 salt.runners.mine

A runner to access data from the salt mine

salt.runners.mine.**get**(*tgt*, *fun*, *tgt_type='glob'*)

Gathers the data from the specified minions' mine, pass in the target, function to look up and the target type

CLI Example:

```
salt-run mine.get '*' network.interfaces
```

### 13.13.17 salt.runners.nacl

This runner helps create encrypted passwords that can be included in pillars.

**depends** libnacl, https://github.com/saltstack/libnacl

This is often useful if you wish to store your pillars in source control or share your pillar data with others that you trust. I don't advise making your pillars public regardless if they are encrypted or not.

The following configurations can be defined in the master config so your users can create encrypted passwords using the runner nacl:

```
cat /etc/salt/master.d/nacl.conf
nacl.config:
    key: 'cKEzd4kXsbeCE7/nLTIqXwnUiD1ulg4NoeeYcCFpd9k='
    keyfile: /root/.nacl
```

Now with the config in the master you can use the runner nacl like:

```
salt-run nacl.enc 'data'
```

salt.runners.nacl.**dec**(*data*, ***kwargs*)

Takes a key generated from *nacl.keygen* and decrypt some data.

CLI Examples:

```
salt-run nacl.dec pEXHQM6cuaF7A=
salt-run nacl.dec data='pEXHQM6cuaF7A=' keyfile=/root/.nacl
salt-run nacl.dec data='pEXHQM6cuaF7A=' key='cKEzd4kXsbeCE7/
↪nLTIqXwnUiD1ulg4NoeeYcCFpd9k='
```

salt.runners.nacl.**enc**(*data*, ***kwargs*)

Takes a key generated from *nacl.keygen* and encrypt some data.

CLI Examples:

```
salt-run nacl.enc datatoenc
salt-run nacl.enc datatoenc keyfile=/root/.nacl
salt-run nacl.enc datatoenc key='cKEzd4kXsbeCE7/nLTIqXwnUiD1ulg4NoeeYcCFpd9k='
```

salt.runners.nacl.**keygen**(*keyfile=None*)

Use libnacl to generate a private key

CLI Examples:

```
salt-run nacl.keygen
salt-run nacl.keygen keyfile=/root/.nacl
salt-run --out=newline_values_only nacl.keygen > /root/.nacl
```

### 13.13.18 salt.runners.network

Network tools to run from the Master

salt.runners.network.**wol**(*mac*, *bcast=`255.255.255.255'*, *destport=9*)
Send a ``Magic Packet'' to wake up a Minion

CLI Example:

```
salt-run network.wol 08-00-27-13-69-77
salt-run network.wol 080027136977 255.255.255.255 7
salt-run network.wol 08:00:27:13:69:77 255.255.255.255 7
```

salt.runners.network.**wollist**(*maclist*, *bcast=`255.255.255.255'*, *destport=9*)
Send a ``Magic Packet'' to wake up a list of Minions. This list must contain one MAC hardware address per line

CLI Example:

```
salt-run network.wollist '/path/to/maclist'
salt-run network.wollist '/path/to/maclist' 255.255.255.255 7
salt-run network.wollist '/path/to/maclist' 255.255.255.255 7
```

### 13.13.19 salt.runners.pagerduty

Runner Module for Firing Events via PagerDuty

New in version 2014.1.0.

**configuration** This module can be used by specifying the name of a configuration profile in the master config.

For example:

```
my-pagerduty-account:
    pagerduty.api_key: F3Rbyjbve43rfFWf2214
    pagerduty.subdomain: mysubdomain
```

salt.runners.pagerduty.**create_event**(*service_key=None*, *description=None*, *details=None*, *incident_key=None*, *profile=None*)
Create an event in PagerDuty. Designed for use in states.

CLI Example:

```
salt-run pagerduty.create_event <service_key> <description> <details>
↪profile=my-pagerduty-account
```

The following parameters are required:
**service_key** This key can be found by using pagerduty.list_services.
**description** This is a short description of the event.
**details** This can be a more detailed description of the event.
**profile** This refers to the configuration profile to use to connect to the PagerDuty service.

salt.runners.pagerduty.**list_escalation_policies**(*profile=None*, *api_key=None*)
This function is an alias of `list_policies`.
List escalation policies belonging to this account

CLI Example:

salt-run pagerduty.list_policies my-pagerduty-account salt-run pagerduty.list_escalation_policies my-pagerduty-account

salt.runners.pagerduty.**list_incidents**(*profile=None*, *api_key=None*)
List incidents belonging to this account

CLI Example:
salt-run pagerduty.list_incidents my-pagerduty-account

salt.runners.pagerduty.**list_maintenance_windows**(*profile=None*, *api_key=None*)
This function is an alias of `list_windows`.
List maintenance windows belonging to this account

CLI Example:
salt-run pagerduty.list_windows my-pagerduty-account salt-run pagerduty.list_maintenance_windows my-pagerduty-account

salt.runners.pagerduty.**list_policies**(*profile=None*, *api_key=None*)
List escalation policies belonging to this account

CLI Example:
salt-run pagerduty.list_policies my-pagerduty-account salt-run pagerduty.list_escalation_policies my-pagerduty-account

salt.runners.pagerduty.**list_schedules**(*profile=None*, *api_key=None*)
List schedules belonging to this account

CLI Example:
salt-run pagerduty.list_schedules my-pagerduty-account

salt.runners.pagerduty.**list_services**(*profile=None*, *api_key=None*)
List services belonging to this account

CLI Example:
salt-run pagerduty.list_services my-pagerduty-account

salt.runners.pagerduty.**list_users**(*profile=None*, *api_key=None*)
List users belonging to this account

CLI Example:
salt-run pagerduty.list_users my-pagerduty-account

salt.runners.pagerduty.**list_windows**(*profile=None*, *api_key=None*)
List maintenance windows belonging to this account

CLI Example:
salt-run pagerduty.list_windows my-pagerduty-account salt-run pagerduty.list_maintenance_windows my-pagerduty-account

### 13.13.20 salt.runners.pillar

Functions to interact with the pillar compiler on the master

salt.runners.pillar.**show_pillar**(*minion='*'*, ***kwargs*)
Returns the compiled pillar either of a specific minion or just the global available pillars. This function assumes that no minion has the id `*`.

CLI Example:

shows minion specific pillar:

```
salt-run pillar.show_pillar 'www.example.com'
```

shows global pillar:

```
salt-run pillar.show_pillar
```

shows global pillar for `dev' pillar environment:

```
salt-run pillar.show_pillar 'saltenv=dev'
```

API Example:

```
import salt.config
import salt.runner
opts = salt.config.master_config('/etc/salt/master')
runner = salt.runner.RunnerClient(opts)
pillar = runner.cmd('pillar.show_pillar', [])
print(pillar)
```

`salt.runners.pillar.`**`show_top`**(*minion=None*, *saltenv='base'*)

Returns the compiled top data for pillar for a specific minion. If no minion is specified, we use the first minion we find.

CLI Example:

```
salt-run pillar.show_top
```

### 13.13.21 salt.runners.pkg

Package helper functions using `salt.modules.pkg`

New in version 2015.8.0.

`salt.runners.pkg.`**`list_upgrades`**(*jid*, *style='group'*, *outputter='nested'*, *ext_source=None*)

Show list of available pkg upgrades using a specified format style

CLI Example:

```
salt-run pkg.list_upgrades jid=20141120114114417719 style=group
```

### 13.13.22 salt.runners.queue

General management and processing of queues.

This runner facilitates interacting with various queue backends such as the included sqlite3 queue or the planned AWS SQS and Redis queues

The queue functions such as *insert*, *delete*, and *pop* can be used for typical management of the queue.

The *process_queue* function pops the requested number of items from the queue and creates a Salt Event that can then be processed by a Reactor. The *process_queue* function can be called manually, or can be configured to run on a schedule with the Salt Scheduler or regular system cron. It is also possible to use the peer system to allow a minion to call the runner.

This runner, as well as the Queues system, is not api stable at this time.

There are many things that could potentially be done with queues within Salt. For the time being the focus will be on queueing infrastructure actions on specific minions. The queues generally will be populated with minion IDs. When the *process_queue* runner function is called events are created on the Salt Event bus that indicate the queue and a list of one or more minion IDs. The reactor is set up to match on event tags for a specific queue and then take infrastructure actions on those minion IDs. These actions might be to delete the minion's key from the master, use salt-cloud to destroy the vm, or some other custom action.

`salt.runners.queue.`**`delete`**(*queue*, *items*, *backend='sqlite'*)

Delete an item or items from a queue

CLI Example:

```
salt-run queue.delete myqueue myitem
salt-run queue.delete myqueue myitem backend=sqlite
salt-run queue.delete myqueue "['item1', 'item2', 'item3']"
```

`salt.runners.queue.`**`insert`**(*queue*, *items*, *backend='sqlite'*)

Add an item or items to a queue

CLI Example:

```
salt-run queue.insert myqueue myitem
salt-run queue.insert myqueue "['item1', 'item2', 'item3']"
salt-run queue.insert myqueue myitem backend=sqlite
salt-run queue.insert myqueue "['item1', 'item2', 'item3']" backend=sqlite
```

`salt.runners.queue.`**`list_items`**(*queue*, *backend='sqlite'*)

List contents of a queue

CLI Example:

```
salt-run queue.list_items myqueue
salt-run queue.list_items myqueue backend=sqlite
```

`salt.runners.queue.`**`list_length`**(*queue*, *backend='sqlite'*)

Provide the number of items in a queue

CLI Example:

```
salt-run queue.list_length myqueue
salt-run queue.list_length myqueue backend=sqlite
```

`salt.runners.queue.`**`list_queues`**(*backend='sqlite'*)

Return a list of Salt Queues on the backend

CLI Example:

```
salt-run queue.list_queues
salt-run queue.list_queues backend=sqlite
```

`salt.runners.queue.`**`pop`**(*queue*, *quantity=1*, *backend='sqlite'*)

Pop one or more or all items from a queue

CLI Example:

```
salt-run queue.pop myqueue
salt-run queue.pop myqueue 6
salt-run queue.pop myqueue all
salt-run queue.pop myqueue 6 backend=sqlite
salt-run queue.pop myqueue all backend=sqlite
```

salt.runners.queue.**process_queue**(*queue*, *quantity=1*, *backend='sqlite'*)
Pop items off a queue and create an event on the Salt event bus to be processed by a Reactor.

CLI Example:

```
salt-run queue.process_queue myqueue
salt-run queue.process_queue myqueue 6
salt-run queue.process_queue myqueue all backend=sqlite
```

### 13.13.23 salt.runners.reactor

A convenience system to manage reactors

salt.runners.reactor.**add**(*event*, *reactors*, *saltenv='base'*, *test=None*)
Add a new reactor

CLI Example:

```
salt-run reactor.add 'salt/cloud/*/destroyed' reactors='/srv/reactor/destroy/*.sls
↪'
```

salt.runners.reactor.**delete**(*event*, *saltenv='base'*, *test=None*)
Delete a reactor

CLI Example:

```
salt-run reactor.delete 'salt/cloud/*/destroyed'
```

salt.runners.reactor.**list**(*saltenv='base'*, *test=None*)
List currently configured reactors

CLI Example:

```
salt-run reactor.list
```

### 13.13.24 salt.runners.saltutil

Sync custom types to the Master

New in version 2016.3.0.

salt.runners.saltutil.**sync_all**(*saltenv='base'*)
Sync all custom types
**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.
CLI Example:

```
salt '*' saltutil.sync_all
```

salt.runners.saltutil.**sync_engines**(*saltenv='base'*)
Sync engines from `salt://_engines` to the master
**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.
CLI Example:

```
salt-run saltutil.sync_engines
```

salt.runners.saltutil.**sync_grains**(*saltenv='base'*)

Sync grains modules from `salt://_grains` to the master

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

CLI Example:

```
salt-run saltutil.sync_grains
```

salt.runners.saltutil.**sync_modules**(*saltenv='base'*)

Sync execution modules from `salt://_modules` to the master

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

CLI Example:

```
salt-run saltutil.sync_modules
```

salt.runners.saltutil.**sync_output**(*saltenv='base'*)

Sync output modules from `salt://_output` to the master

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

CLI Example:

```
salt-run saltutil.sync_output
```

salt.runners.saltutil.**sync_pillar**(*saltenv='base'*)

Sync pillar modules from `salt://_pillar` to the master

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

CLI Example:

```
salt-run saltutil.sync_pillar
```

salt.runners.saltutil.**sync_proxymodules**(*saltenv='base'*)

Sync proxy modules from `salt://_proxy` to the master

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

CLI Example:

```
salt-run saltutil.sync_proxy
```

salt.runners.saltutil.**sync_queues**(*saltenv='base'*)

Sync queue modules from `salt://_queues` to the master

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

CLI Example:

```
salt-run saltutil.sync_queues
```

salt.runners.saltutil.**sync_renderers**(*saltenv='base'*)

Sync renderer modules from from `salt://_renderers` to the master

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

CLI Example:

```
salt-run saltutil.sync_renderers
```

salt.runners.saltutil.**sync_returners**(*saltenv='base'*)

Sync returner modules from `salt://_returners` to the master

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

CLI Example:

```
salt-run saltutil.sync_returners
```

salt.runners.saltutil.**sync_runners**(*saltenv='base'*)

Sync runners from `salt://_runners` to the master

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

CLI Example:

```
salt-run saltutil.sync_runners
```

salt.runners.saltutil.**sync_states**(*saltenv='base'*)

Sync state modules from `salt://_states` to the master

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

CLI Example:

```
salt-run saltutil.sync_states
```

salt.runners.saltutil.**sync_wheel**(*saltenv='base'*)

Sync wheel modules from `salt://_wheel` to the master

**saltenv** [base] The fileserver environment from which to sync. To sync from more than one environment, pass a comma-separated list.

CLI Example:

```
salt-run saltutil.sync_wheel
```

### 13.13.25 salt.runners.sdb

Runner for setting and querying data via the sdb API on the master

salt.runners.sdb.**get**(*uri*)

Get a value from a db, using a uri in the form of sdb://<profile>/<key>. If the uri provided does not start with sdb://, then it will be returned as-is.

CLI Example:

```
salt '*' sdb.get sdb://mymemcached/foo
```

salt.runners.sdb.**set**(*uri*, *value*)

Set a value in a db, using a uri in the form of `sdb://<profile>/<key>`. If the uri provided does not start with `sdb://` or the value is not successfully set, return `False`.

CLI Example:

```
salt '*' sdb.set sdb://mymemcached/foo bar
```

### 13.13.26 salt.runners.search

Runner frontend to search system

salt.runners.search.**query**(*term*)

Query the search system

CLI Example:

```
salt-run search.query foo
```

### 13.13.27 salt.runners.spacewalk

#### Spacewalk Runner

New in version 2016.3.0.

Runner to interact with Spacewalk using Spacewalk API

**codeauthor** Nitin Madhok <nmadhok@clemson.edu>

To use this runner, set up the Spacewalk URL, username and password in the master configuration at `/etc/salt/master` or `/etc/salt/master.d/spacewalk.conf`:

```
spacewalk:
  spacewalk01.domain.com
    username: "testuser"
    password: "verybadpass"
  spacewalk02.domain.com
    username: "testuser"
    password: "verybadpass"
```

---

**Note**: Optionally, `protocol` can be specified if the spacewalk server is not using the defaults. Default is `protocol: https`.

---

salt.runners.spacewalk.**unregister**(*name*, *server_url*)

To unregister specified server from Spacewalk

CLI Example:

```
salt-run spacewalk.unregister my-test-vm spacewalk01.domain.com
```

### 13.13.28 salt.runners.ssh

A Runner module interface on top of the salt-ssh Python API.

This allows for programmatic use from salt-api, the Reactor, Orchestrate, etc.

salt.runners.ssh.**cmd**(*tgt*, *fun*, *arg=()*, *timeout=None*, *expr_form='glob'*, *kwarg=None*)

Execute a single command via the salt-ssh subsystem and return all routines at once

New in version 2015.5.0.

A wrapper around the *SSHClient.cmd* method.

### 13.13.29 salt.runners.state

Execute orchestration functions

`salt.runners.state.event`(*tagmatch='*', count=-1, quiet=False, sock_dir=None, pretty=False, node='master'*)

Watch Salt's event bus and block until the given tag is matched

New in version 2014.7.0.

This is useful for utilizing Salt's event bus from shell scripts or for taking simple actions directly from the CLI.

Enable debug logging to see ignored events.

**Parameters**

- **`tagmatch`** -- the event is written to stdout for each tag that matches this pattern; uses the same matching semantics as Salt's Reactor.
- **`count`** -- this number is decremented for each event that matches the `tagmatch` parameter; pass `-1` to listen forever.
- **`quiet`** -- do not print to stdout; just block
- **`sock_dir`** -- path to the Salt master's event socket file.
- **`pretty`** -- Output the JSON all on a single line if `False` (useful for shell tools); pretty-print the JSON output if `True`.
- **`node`** -- Watch the minion-side or master-side event bus. .. versionadded:: 2016.3.0

CLI Examples:

```
# Reboot a minion and run highstate when it comes back online
salt 'jerry' system.reboot && \\
    salt-run state.event 'salt/minion/jerry/start' count=1 quiet=True && \\
    salt 'jerry' state.highstate

# Reboot multiple minions and run highstate when all are back online
salt -L 'kevin,stewart,dave' system.reboot && \\
    salt-run state.event 'salt/minion/*/start' count=3 quiet=True && \\
    salt -L 'kevin,stewart,dave' state.highstate

# Watch the event bus forever in a shell while-loop.
salt-run state.event | while read -r tag data; do
    echo $tag
    echo $data | jq -colour-output .
done
```

**See also**:

See https://github.com/saltstack/salt/blob/develop/tests/eventlisten.sh for an example of usage within a shell script.

`salt.runners.state.orchestrate`(*mods, saltenv='base', test=None, exclude=None, pillar=None*)

New in version 0.17.0.

Execute a state run from the master, used as a powerful orchestration system.

**See also**:

More Orchestrate documentation

- *Full Orchestrate Tutorial*
- *Docs for the master-side state module*

CLI Examples:

```
salt-run state.orchestrate webserver
salt-run state.orchestrate webserver saltenv=dev test=True
```

Changed in version 2014.1.1: Runner renamed from `state.sls` to `state.orchestrate`

Changed in version 2014.7.0: Runner uses the pillar variable

`salt.runners.state.`**`orchestrate_high`**(*data*, *test=None*, *queue=False*, *pillar=None*, ***kwargs*)

Execute a single state orchestration routine

New in version 2015.5.0.

CLI Example:

```
salt-run state.orchestrate_high '{
    stage_one:
        {salt.state: [{tgt: "db*"}, {sls: postgres_setup}]},
    stage_two:
        {salt.state: [{tgt: "web*"}, {sls: apache_setup}, {
            require: [{salt: stage_one}],
        }]},
    }'
```

`salt.runners.state.`**`orchestrate_single`**(*fun*, *name*, *test=None*, *queue=False*, *pillar=None*, ***kwargs*)

Execute a single state orchestration routine

New in version 2015.5.0.

CLI Example:

```
salt-run state.orchestrate_single fun=salt.wheel name=key.list_all
```

### 13.13.30 salt.runners.survey

A general map/reduce style salt runner for aggregating results returned by several different minions.

New in version 2014.7.0.

Aggregated results are sorted by the size of the minion pools which returned matching results.

Useful for playing the game: ``*some of these things are not like the others...*'' when identifying discrepancies in a large infrastructure managed by salt.

`salt.runners.survey.`**`diff`**(**args*, ***kwargs*)

Return the DIFFERENCE of the result sets returned by each matching minion pool

New in version 2014.7.0.

These pools are determined from the aggregated and sorted results of a salt command.

This command displays the ``diffs'' as a series of 2-way differences -- namely the difference between the FIRST displayed minion pool (according to sort order) and EACH SUBSEQUENT minion pool result set.

Differences are displayed according to the Python `difflib.unified_diff()` as in the case of the salt execution module `file.get_diff`.

This command is submitted via a salt runner using the general form:

```
salt-run survey.diff [survey_sort=up/down] <target>
            <salt-execution-module> <salt-execution-module parameters>
```

Optionally accept a `survey_sort=` parameter. Default: `survey_sort=down`

CLI Example #1: (Example to display the ``differences of files'')

```
salt-run survey.diff survey_sort=up "*" cp.get_file_str file:///etc/hosts
```

`salt.runners.survey.`**`hash`**(**args*, ***kwargs*)

Return the MATCHING minion pools from the aggregated and sorted results of a salt command

New in version 2014.7.0.

This command is submitted via a salt runner using the general form:

```
salt-run survey.hash [survey_sort=up/down] <target>
          <salt-execution-module> <salt-execution-module parameters>
```

Optionally accept a `survey_sort=` parameter. Default: `survey_sort=down`

CLI Example #1: (functionally equivalent to `salt-run manage.up`)

```
salt-run survey.hash "*" test.ping
```

CLI Example #2: (find an ``outlier'' minion config file)

```
salt-run survey.hash "*" file.get_hash /etc/salt/minion survey_sort=up
```

### 13.13.31 salt.runners.test

This runner is used only for test purposes and servers no production purpose

`salt.runners.test.`**`arg`**(**args*, ***kwargs*)

Output the given args and kwargs

Kwargs will be filtered for `private' keynames.

`salt.runners.test.`**`raw_arg`**(**args*, ***kwargs*)

Output the given args and kwargs

`salt.runners.test.`**`sleep`**(*s_time=10*)

Sleep t seconds, then return True

`salt.runners.test.`**`stdout_print`**()

Print `foo' and return `bar'

`salt.runners.test.`**`stream`**()

Return True

### 13.13.32 salt.runners.thin

The thin runner is used to manage the salt thin systems.

Salt Thin is a transport-less version of Salt that can be used to run routines in a standalone way. This runner has tools which generate the standalone salt system for easy consumption.

`salt.runners.thin.`**`generate`**(*extra_mods=''*, *overwrite=False*, *so_mods=''*, *python2_bin='python2'*, *python3_bin='python3'*)

Generate the salt-thin tarball and print the location of the tarball Optional additional mods to include (e.g. mako) can be supplied as a comma delimited string. Permits forcing an overwrite of the output file as well.

CLI Example:

```
salt-run thin.generate
salt-run thin.generate mako
salt-run thin.generate mako,wempy 1
salt-run thin.generate overwrite=1
```

salt.runners.thin.**generate_min**(*extra_mods=''*, *overwrite=False*, *so_mods=''*, *python2_bin='python2'*, *python3_bin='python3'*)

Generate the salt-thin tarball and print the location of the tarball Optional additional mods to include (e.g. mako) can be supplied as a comma delimited string. Permits forcing an overwrite of the output file as well.

CLI Example:

```
salt-run thin.generate_min
```

### 13.13.33 salt.runners.virt

Control virtual machines via Salt

salt.runners.virt.**force_off**(*name*)

Force power down the named virtual machine

salt.runners.virt.**host_info**(*host=None*)

Return information about the host connected to this master

salt.runners.virt.**hyper_info**(*hyper=None*)

Return information about the host connected to this master

salt.runners.virt.**init**(*name*, *cpu*, *mem*, *image*, *hyper=None*, *hypervisor='kvm'*, *host=None*, *seed=True*, *nic='default'*, *install=True*, *start=True*, *disk='default'*, *saltenv='base'*, *enable_vnc=False*)

This routine is used to create a new virtual machine. This routines takes a number of options to determine what the newly created virtual machine will look like.

**name** The mandatory name of the new virtual machine. The name option is also the minion id, all minions must have an id.

**cpu** The number of cpus to allocate to this new virtual machine.

**mem** The amount of memory to allocate tot his virtual machine. The number is interpreted in megabytes.

**image** The network location of the virtual machine image, commonly a location on the salt fileserver, but http, https and ftp can also be used.

**hypervisor** The hypervisor to use for the new virtual machine. Default is `kvm'.

**host** The host to use for the new virtual machine, if this is omitted Salt will automatically detect what host to use.

**seed** Set to False to prevent Salt from seeding the new virtual machine.

**nic** The nic profile to use, defaults to the ``default'' nic profile which assumes a single network interface per VM associated with the ``br0'' bridge on the master.

**install** Set to False to prevent Salt from installing a minion on the new VM before it spins up.

**disk** The disk profile to use

**saltenv** The Salt environment to use

salt.runners.virt.**list**(*host=None*, *quiet=False*, *hyper=None*)

List the virtual machines on each host, this is a simplified query, showing only the virtual machine names belonging to each host. A single host can be passed in to specify an individual host to list.

salt.runners.virt.**migrate**(*name*, *target=''*)

Migrate a VM from one host to another. This routine will just start the migration and display information on how to look up the progress.

salt.runners.virt.**next_host**()
Return the host to use for the next autodeployed VM. This queries the available host and executes some math the determine the most ``available'' next host.

salt.runners.virt.**next_hyper**()
Return the host to use for the next autodeployed VM. This queries the available host and executes some math the determine the most ``available'' next host.

salt.runners.virt.**pause**(*name*)
Pause the named VM

salt.runners.virt.**purge**(*name*, *delete_key=True*)
Destroy the named VM

salt.runners.virt.**query**(*host=None*, *quiet=False*, *hyper=None*)
Query the virtual machines. When called without options all hosts are detected and a full query is returned. A single host can be passed in to specify an individual host to query.

salt.runners.virt.**reset**(*name*)
Force power down and restart an existing VM

salt.runners.virt.**resume**(*name*)
Resume a paused VM

salt.runners.virt.**start**(*name*)
Start a named virtual machine

salt.runners.virt.**vm_info**(*name*, *quiet=False*)
Return the information on the named VM

### 13.13.34 salt.runners.winrepo

Runner to manage Windows software repo

salt.runners.winrepo.**genrepo**(*opts=None*, *fire_event=True*)
Generate winrepo_cachefile based on sls files in the winrepo_dir
**opts** Specify an alternate opts dict. Should not be used unless this function is imported into an execution module.
**fire_event** [True] Fire an event on failure. Only supported on the master.
CLI Example:

```
salt-run winrepo.genrepo
```

salt.runners.winrepo.**update_git_repos**(*opts=None*, *clean=False*, *masterless=False*)
Checkout git repos containing Windows Software Package Definitions
**opts** Specify an alternate opts dict. Should not be used unless this function is imported into an execution module.
**clean** [False] Clean repo cachedirs which are not configured under `winrepo_remotes`.

> **Warning:** This argument should not be set to `True` if a mix of git and non-git repo definitions are being used, as it will result in the non-git repo definitions being removed.

New in version 2015.8.0.
CLI Examples:

```
salt-run winrepo.update_git_repos
salt-run winrepo.update_git_repos clean=True
```

## 13.14 sdb modules

| | |
|---|---|
| *couchdb* | CouchDB sdb Module |
| *etcd_db* | etcd Database Module |
| *keyring_db* | Keyring Database Module |
| *memcached* | Memcached sdb Module |
| *rest* | Generic REST API SDB Module |
| *sqlite3* | SQLite sdb Module |

### 13.14.1 salt.sdb.couchdb

CouchDB sdb Module

**maintainer** SaltStack

**maturity** New

**depends** python2-couchdb

**platform** all

This allow interaction between Salt and a CouchDB [couchdb.apache.org] database. It uses salt's *sdb* system to allow for inserts and retrevals using the *sdb://* prefix in salt configuration files.

To use the couchbase sdb module, it must first be configured in the salt master or minion config. The following arguments are required:

```
couchdb_sdb:
  driver: couchdb
  host: localhost
  port: 5984
  database: salt_sdb
```

One could then query the CouchDB instance via an *sdb://* URI such as the following:

```
password: sdb://couchdb_sdb/mykey
```

To use this interface, you must track IDs on your own or have another source to do the map-reduce logic necessary to calculate the ID you wish to fetch.

Additional contributions to build true map-reduce functionality into this module would be welcome.

`salt.sdb.couchdb.get`(*key*, *profile=None*)
Get a value from couchdb by id

`salt.sdb.couchdb.set`(*key*, *value*, *profile=None*)
Set a key/value pair in couchdb

### 13.14.2 salt.sdb.etcd_db

etcd Database Module

**maintainer** SaltStack

**maturity** New

**depends** python-etcd

**platform** all

New in version 2015.5.0.

This module allows access to the etcd database using an `sdb://` URI. This package is located at `https://pypi.python.org/pypi/python-etcd`.

Like all sdb modules, the etcd module requires a configuration profile to be configured in either the minion or master configuration file. This profile requires very little. In the example:

```
myetcd:
  driver: etcd
  etcd.host: 127.0.0.1
  etcd.port: 4001
```

The `driver` refers to the etcd module, `etcd.host` refers to the host that is hosting the etcd database and `etcd.port` refers to the port on that host.

```
password: sdb://myetcd/mypassword
```

`salt.sdb.etcd_db.`**`get`**(*key*, *service=None*, *profile=None*)
Get a value from the etcd service

`salt.sdb.etcd_db.`**`set`**(*key*, *value*, *service=None*, *profile=None*)
Set a key/value pair in the etcd service

### 13.14.3 salt.sdb.keyring_db

Keyring Database Module

**maintainer** SaltStack

**maturity** New

**depends** keyring

**platform** all

This module allows access to the keyring package using an `sdb://` URI. This package is located at `https://pypi.python.org/pypi/keyring`.

Care must be taken when using keyring. Not all keyend backends are supported on all operating systems. Also, many backends require an agent to be running in order to work. For instance, the ``Secret Service'' backend requires a compatible agent such as `gnome-keyring-daemon` or `kwallet` to be running. The keyczar backend does not seem to enjoy the benefits of an agent, and so using it will require either that the password is typed in manually (which is unreasonable for the salt-minion and salt-master daemons, especially in production) or an agent is written for it.

Like all sdb modules, the keyring module requires a configuration profile to be configured in either the minion or master configuration file. This profile requires very little. In the example:

```
mykeyring:
  driver: keyring
  service: system
```

The `driver` refers to the keyring module, `service` refers to the service that will be used inside of keyring (which may be likened unto a database table) and `mykeyring` refers to the name that will appear in the URI:

```
password: sdb://mykeyring/mypassword
```

The underlying backend configuration must be configured via keyring itself. For examples and documentation, see keyring:

https://pypi.python.org/pypi/keyring

New in version 2014.1.4.

`salt.sdb.keyring_db.`**`get`**(*key*, *service=None*, *profile=None*)
Get a value from a keyring service

`salt.sdb.keyring_db.`**`set`**(*key*, *value*, *service=None*, *profile=None*)
Set a key/value pair in a keyring service

### 13.14.4 salt.sdb.memcached

Memcached sdb Module

**maintainer** SaltStack

**maturity** New

**depends** python-memcached

**platform** all

This module allows access to memcached using an `sdb://` URI. This package is located at `https://pypi.python.org/pypi/python-memcached`.

Like all sdb modules, the memcached module requires a configuration profile to be configured in either the minion or master configuration file. This profile requires very little. In the example:

```
mymemcache:
  driver: memcached
  host: localhost
  port: 11211
```

The `driver` refers to the memcached module, `host` and `port` the memcached server to connect to (defaults to `localhost` and `11211`, and `mymemcached` refers to the name that will appear in the URI:

```
password: sdb://mymemcached/mykey
```

`salt.sdb.memcached.`**`get`**(*key*, *profile=None*)
Get a value from memcached

`salt.sdb.memcached.`**`set`**(*key*, *value*, *profile=None*)
Set a key/value pair in memcached

### 13.14.5 salt.sdb.rest module

Generic REST API SDB Module

**maintainer** SaltStack

**maturity** New

**platform** all

New in version 2015.8.0.

This module allows access to a REST interface using an `sdb://` URI.

Like all REST modules, the REST module requires a configuration profile to be configured in either the minion or master configuration file. This profile requires very little. In the example:

```
my-rest-api:
  driver: rest
  urls:
    url: https://api.github.com/
  keys:
    url: https://api.github.com/users/{{user}}/keys
    requests_lib: True
```

The `driver` refers to the REST module, and must be set to `rest` in order to use this driver. Each of the other items inside this block refers to a separate set of HTTP items, including a URL and any options associated with it. The options used here should match the options available in `salt.utils.http.query()`.

In order to call the `urls` item in the example, the following reference can be made inside a configuration file:

```
github_urls: sdb://my-rest-api/urls
```

Key/Value pairs may also be used with this driver, and merged into the URL using the configured renderer (`jinja`, by default). For instance, in order to use the `keys` item in the example, the following reference can be made:

```
github_urls: sdb://my-rest-api/keys?user=myuser
```

This will cause the following URL to actually be called:

```
https://api.github.com/users/myuser/keys
```

Key/Value pairs will NOT be passed through as GET data. If GET data needs to be sent to the URL, then it should be configured in the SDB configuration block. For instance:

```
another-rest-api:
  driver: rest
  user_data:
    url: https://api.example.com/users/
    params:
      user: myuser
```

`salt.sdb.rest.`**`get`**(*key*, *service=None*, *profile=None*)
Get a value from the REST interface

`salt.sdb.rest.`**`query`**(*key*, *value=None*, *service=None*, *profile=None*)
Get a value from the REST interface

`salt.sdb.rest.`**`set`**(*key*, *value*, *service=None*, *profile=None*)
Set a key/value pair in the REST interface

### 13.14.6 salt.sdb.sqlite3

SQLite sdb Module

**maintainer** SaltStack

**maturity** New

**platform** all

This module allows access to sqlite3 using an `sdb://` URI

Like all sdb modules, the sqlite3 module requires a configuration profile to be configured in either the minion or master configuration file. This profile requires very little. For example:

```
mysqlite:
  driver: sqlite3
  database: /tmp/sdb.sqlite
  table: sdb
  create_table: True
```

The `driver` refers to the sqlite3 module, `database` refers to the sqlite3 database file. `table` is the table within the db that will hold keys and values (defaults to `sdb`). The database and table will be created if they do not exist.

#### Advanced Usage:

Instead of a table name, it is possible to provide custom SQL statements to create the table(s) and get and set values.

`salt.sdb.sqlite3.`**`get`**(*key*, *profile=None*)
Get a value from sqlite3

`salt.sdb.sqlite3.`**`set`**(*key*, *value*, *profile=None*)
Set a key/value pair in sqlite3

## 13.15 serializer modules

| | |
|---|---|
| *configparser* | salt.serializers.configparser |
| *json* | salt.serializers.json |
| *msgpack* | salt.serializers.msgpack |
| *python* | salt.serializers.python |
| *yaml* | salt.serializers.yaml |
| *yamlex* | salt.serializers.yamlex |

### 13.15.1 salt.serializers.configparser module

#### salt.serializers.configparser

New in version 2016.3.0.

Implements a configparser serializer.

`salt.serializers.configparser.`**`deserialize`**(*stream_or_string*, ***options*)
Deserialize any string or stream like object into a Python data structure.
**Parameters**

- **`stream_or_string`** -- stream or string to deserialize.
- **`options`** -- options given to lower configparser module.

`salt.serializers.configparser.`**`serialize`**(*obj*, ***options*)
Serialize Python data to a configparser formatted string or file.
**Parameters**

- **obj** -- the data structure to serialize
- **options** -- options given to lower configparser module.

### 13.15.2 salt.serializers.json

#### salt.serializers.json

Implements JSON serializer.

It's just a wrapper around json (or simplejson if available).

`salt.serializers.json.`**`deserialize`**(*stream_or_string*, ***options*)
Deserialize any string or stream like object into a Python data structure.

**Parameters**

- **stream_or_string** -- stream or string to deserialize.
- **options** -- options given to lower json/simplejson module.

`salt.serializers.json.`**`serialize`**(*obj*, ***options*)
Serialize Python data to JSON.

**Parameters**

- **obj** -- the data structure to serialize
- **options** -- options given to lower json/simplejson module.

### 13.15.3 salt.serializers.msgpack

#### salt.serializers.msgpack

Implements MsgPack serializer.

`salt.serializers.msgpack.`**`deserialize`**(*stream_or_string*, ***options*)
Deserialize any string of stream like object into a Python data structure.

**Parameters**

- **stream_or_string** -- stream or string to deserialize.
- **options** -- options given to lower msgpack module.

`salt.serializers.msgpack.`**`serialize`**(*obj*, ***options*)
Serialize Python data to MsgPack.

**Parameters**

- **obj** -- the data structure to serialize
- **options** -- options given to lower msgpack module.

### 13.15.4 salt.serializers.python module

#### salt.serializers.python

New in version 2016.3.0.

Implements a Python serializer (via pprint.format)

salt.serializers.python.**serialize**(*obj*, ***options*)
Serialize Python data to a Python string representation (via pprint.format)

**Parameters**

- **obj** -- the data structure to serialize
- **options** -- options given to pprint.format

### 13.15.5 salt.serializers.yaml

#### salt.serializers.yaml

Implements YAML serializer.

Underneath, it is based on pyyaml and use the safe dumper and loader. It also use C bindings if they are available.

salt.serializers.yaml.**deserialize**(*stream_or_string*, ***options*)
Deserialize any string of stream like object into a Python data structure.

**Parameters**

- **stream_or_string** -- stream or string to deserialize.
- **options** -- options given to lower yaml module.

salt.serializers.yaml.**serialize**(*obj*, ***options*)
Serialize Python data to YAML.

**Parameters**

- **obj** -- the data structure to serialize
- **options** -- options given to lower yaml module.

### 13.15.6 salt.serializers.yamlex

#### salt.serializers.yamlex

YAMLEX is a format that allows for things like sls files to be more intuitive.

It's an extension of YAML that implements all the salt magic: - it implies omap for any dict like. - it implies that string like data are str, not unicode - ...

For example, the file *states.sls* has this contents:

```
foo:
  bar: 42
  baz: [1, 2, 3]
```

The file can be parsed into Python like this

```
from salt.serializers import yamlex

with open('state.sls', 'r') as stream:
    obj = yamlex.deserialize(stream)
```

Check that `obj` is an OrderedDict

```
from salt.utils.odict import OrderedDict

assert isinstance(obj, dict)
assert isinstance(obj, OrderedDict)
```

yamlex *__repr__* and *__str__* objects' methods render YAML understandable string. It means that they are template friendly.

```
print '{0}'.format(obj)
```

returns:

```
{foo: {bar: 42, baz: [1, 2, 3]}}
```

and they are still valid YAML:

```
from salt.serializers import yaml
yml_obj = yaml.deserialize(str(obj))
assert yml_obj == obj
```

yamlex implements also custom tags:

!aggregate

this tag allows structures aggregation.

For example:

```
placeholder: !aggregate foo
placeholder: !aggregate bar
placeholder: !aggregate baz
```

is rendered as

```
placeholder: [foo, bar, baz]
```

!reset

this tag flushes the computing value.

```
placeholder: {!aggregate foo: {foo: 42}}
placeholder: {!aggregate foo: {bar: null}}
!reset placeholder: {!aggregate foo: {baz: inga}}
```

is roughly equivalent to

```
placeholder: {!aggregate foo: {baz: inga}}
```

Document is defacto an aggregate mapping.

`salt.serializers.yamlex.`**`deserialize`**(*stream_or_string*, ***options*)

Deserialize any string of stream like object into a Python data structure.

**Parameters**

- **`stream_or_string`** -- stream or string to deserialize.
- **`options`** -- options given to lower yaml module.

`salt.serializers.yamlex.`**`serialize`**(*obj*, ***options*)

Serialize Python data to YAML.

**Parameters**

- **obj** -- the data structure to serialize
- **options** -- options given to lower yaml module.

## 13.16 state modules

| | |
|---|---|
| *alias* | Configuration of email aliases |
| *alternatives* | Configuration of the alternatives system |
| *apache* | Apache state |
| *apache_conf* | Manage Apache Confs |
| *apache_module* | Manage Apache Modules |
| *apache_site* | Manage Apache Sites |
| *aptpkg* | Package management operations specific to APT- and DEB-based systems |
| *archive* | Extract an archive |
| *artifactory* | This state downloads artifacts from artifactory. |
| *at* | Configuration disposable regularly scheduled tasks for at. |
| *augeas* | Configuration management using Augeas |
| *aws_sqs* | Manage SQS Queues |
| *beacon* | Management of the Salt beacons |
| *bigip* | A state module designed to enforce load-balancing configurations for F5 Big-IP entities. |
| *blockdev* | Management of Block Devices |
| *boto_asg* | Manage Autoscale Groups |
| *boto_cfn* | Connection module for Amazon Cloud Formation |
| *boto_cloudtrail* | Manage CloudTrail Objects |
| *boto_cloudwatch_alarm* | Manage Cloudwatch alarms |
| *boto_datapipeline* | Manage Data Pipelines |
| *boto_dynamodb* | Manage DynamoDB Tables |
| *boto_ec2* | Manage EC2 |
| *boto_elasticache* | Manage Elasticache |
| *boto_elb* | Manage ELBs |
| *boto_iam* | Manage IAM objects |
| *boto_iam_role* | Manage IAM roles |
| *boto_iot* | Manage IoT Objects |
| *boto_kms* | Manage KMS keys, key policies and grants. |
| *boto_lambda* | Manage Lambda Functions |
| *boto_lc* | Manage Launch Configurations |
| *boto_rds* | Manage RDSs |
| *boto_route53* | Manage Route53 records |
| *boto_s3_bucket* | Manage S3 Buckets |
| *boto_secgroup* | Manage Security Groups |
| *boto_sns* | Manage SNS Topics |
| *boto_sqs* | Manage SQS Queues |
| *boto_vpc* | Manage VPCs |
| *bower* | Installation of Bower Packages |
| *cabal* | Installation of Cabal Packages |
| *chef* | Execute Chef client runs |

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Table 13.16 -- continued from previous page

| | |
|---|---|
| chocolatey | Manage Chocolatey package installs .. |
| chronos_job | Configure Chronos jobs via a salt proxy. |
| cloud | Using states instead of maps to deploy clouds |
| cmd | Execution of arbitrary commands |
| composer | Installation of Composer Packages |
| cron | Management of cron, the Unix command scheduler |
| cyg | Installation of Cygwin packages. |
| ddns | Dynamic DNS updates |
| debconfmod | Management of debconf selections |
| dellchassis | Manage chassis via Salt Proxies. |
| disk | Disk monitoring state |
| dockerio | Manage Docker containers |
| dockerng | Management of Docker containers |
| drac | Management of Dell DRAC |
| elasticsearch_index | State module to manage Elasticsearch indices |
| elasticsearch_index_template | State module to manage Elasticsearch index templates |
| environ | Support for getting and setting the environment variables of the current salt process. |
| eselect | Management of Gentoo configuration using eselect |
| etcd_mod | Manage etcd Keys |
| esxi | Manage VMware ESXi Hosts. |
| event | Send events through Salt's event system during state runs |
| file | Operations on regular files, special files, directories, and symlinks |
| firewall | State to check firewall configurations .. |
| firewalld | Management of firewalld |
| gem | Installation of Ruby modules packaged as gems |
| git | States to manage git repositories and git configuration |
| github | Github User State Module |
| glance | Managing Images in OpenStack Glance |
| glusterfs | Manage glusterfs pool. |
| gnomedesktop | Configuration of the GNOME desktop |
| gpg | Management of the GPG keychains |
| grafana | Manage Grafana Dashboards |
| grafana_dashboard | Manage Grafana v2.0 Dashboards |
| grafana_datasource | Manage Grafana v2.0 data sources |
| grains | Manage grains on the minion |
| group | Management of user groups |
| hg | Interaction with Mercurial repositories |
| hipchat | Send a message to Hipchat |
| host | Management of addresses and names in hosts file |
| htpasswd | Support for htpasswd module. |
| http | HTTP monitoring states |
| ifttt | Trigger an event in IFTTT |
| incron | Management of incron, the inotify cron |
| influxdb_database | Management of InfluxDB databases |
| influxdb_user | Management of InfluxDB users |
| infoblox | states for infoblox stuff |
| ini_manage | Manage ini files |
| ipmi | Manage IPMI devices over LAN |

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Table 13.16 -- continued from previous page

| | |
|---|---|
| *ipset* | Management of ipsets |
| *iptables* | Management of iptables |
| *jboss7* | Manage JBoss 7 Application Server via CLI interface |
| *jenkins* | Management of Jenkins |
| *k8s* | Manage Kubernetes |
| *keyboard* | Management of keyboard layouts |
| *keystone* | Management of Keystone users |
| *kmod* | Loading and unloading of kernel modules |
| *layman* | Management of Gentoo Overlays using layman |
| *ldap* | Manage entries in an LDAP database |
| *linux_acl* | Linux File Access Control Lists |
| *locale* | Management of languages/locales |
| *lvm* | Management of Linux logical volumes |
| *lvs_server* | Management of LVS (Linux Virtual Server) Real Server |
| *lvs_service* | Management of LVS (Linux Virtual Server) Service |
| *lxc* | Manage Linux Containers |
| *mac_assistive* | Allows you to manage assistive access on OS X minions with 10.9+ |
| *mac_defaults* | Writing/reading defaults from an OS X minion |
| *mac_keychain* | Installing of certificates to the keychain |
| *mac_xattr* | Allows you to manage extended attributes on files or directories |
| *makeconf* | Management of Gentoo make.conf |
| *marathon_app* | Configure Marathon apps via a salt proxy. |
| *mdadm* | Managing software RAID with mdadm |
| *memcached* | States for Management of Memcached Keys |
| *modjk* | State to control Apache modjk |
| *modjk_worker* | Manage modjk workers |
| *module* | Execution of Salt modules from within states |
| *mongodb_database* | Management of Mongodb databases |
| *mongodb_user* | Management of Mongodb users |
| *monit* | Monit state |
| *mount* | Mounting of filesystems |
| *mysql_database* | Management of MySQL databases (schemas) |
| *mysql_grants* | Management of MySQL grants (user permissions) |
| *mysql_query* | Execution of MySQL queries |
| *mysql_user* | Management of MySQL users |
| *network* | Configuration of network interfaces |
| *nftables* | Management of nftables |
| *npm* | Installation of NPM Packages |
| *ntp* | Management of NTP servers |
| *openstack_config* | Manage OpenStack configuration file settings. |
| *openvswitch_bridge* | Management of Open vSwitch bridges. |
| *openvswitch_port* | Management of Open vSwitch ports. |
| *pagerduty* | Create an Event in PagerDuty |
| *pagerduty_escalation_policy* | Manage PagerDuty escalation policies. |
| *pagerduty_schedule* | Manage PagerDuty schedules. |
| *pagerduty_service* | Manage PagerDuty services |
| *pagerduty_user* | Manage PagerDuty users. |
| *pecl* | Installation of PHP Extensions Using pecl |

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Table 13.16 -- continued from previous page

| | |
|---|---|
| *pip_state* | Installation of Python Packages Using pip |
| *pkg* | Installation of packages using OS package managers such as yum or apt-get |
| *pkgbuild* | The pkgbuild state is the front of Salt package building backend. |
| *pkgng* | Manage package remote repo using FreeBSD pkgng |
| *pkgrepo* | Management of APT/YUM package repos |
| *portage_config* | Management of Portage package configuration on Gentoo |
| *ports* | Manage software from FreeBSD ports |
| *postgres_cluster* | Management of PostgreSQL clusters |
| *postgres_database* | Management of PostgreSQL databases |
| *postgres_extension* | Management of PostgreSQL extensions |
| *postgres_group* | Management of PostgreSQL groups (roles) |
| *postgres_initdb* | Initialization of PostgreSQL data directory |
| *postgres_language* | Management of PostgreSQL languages |
| *postgres_privileges* | Management of PostgreSQL Privileges |
| *postgres_schema* | Management of PostgreSQL schemas |
| *postgres_tablespace* | Management of PostgreSQL tablespace |
| *postgres_user* | Management of PostgreSQL users (roles) |
| *powerpath* | Powerpath configuration support |
| *process* | Process Management |
| *pushover* | Send a message to PushOver |
| *pyenv* | Managing python installations with pyenv |
| *pyrax_queues* | Manage Rackspace Queues |
| *quota* | Management of POSIX Quotas |
| *rabbitmq_cluster* | Manage RabbitMQ Clusters |
| *rabbitmq_plugin* | Manage RabbitMQ Plugins |
| *rabbitmq_policy* | Manage RabbitMQ Policies |
| *rabbitmq_user* | Manage RabbitMQ Users |
| *rabbitmq_vhost* | Manage RabbitMQ Virtual Hosts |
| *rbenv* | Managing Ruby installations with rbenv |
| *rdp* | Manage RDP Service on Windows servers |
| *redismod* | Management of Redis server |
| *reg* | |
| *rsync* | State to synchronize files and directories with rsync. |
| *rvm* | Managing Ruby installations and gemsets with Ruby Version Manager (RVM) |
| *salt_proxy* | Salt proxy state |
| *saltmod* | Control the Salt command interface |
| *schedule* | Management of the Salt scheduler |
| *selinux* | Management of SELinux rules |
| *serverdensity_device* | Monitor Server with Server Density |
| *service* | Starting or restarting of services and daemons |
| *slack* | Send a message to Slack |
| *smartos* | Management of SmartOS Standalone Compute Nodes |
| *smtp* | Sending Messages via SMTP |
| *splunk* | Splunk User State Module |
| *splunk_search* | Splunk Search State Module |
| *sqlite3* | Management of SQLite3 databases |
| *ssh_auth* | Control of entries in SSH authorized_key files |

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Table 13.16 -- continued from previous page

| | |
|---|---|
| ssh_known_hosts | Control of SSH known_hosts entries |
| stateconf | Stateconf System |
| status | Minion status monitoring |
| stormpath_account | Support for Stormpath. |
| supervisord | Interaction with the Supervisor daemon |
| svn | Manage SVN repositories |
| sysctl | Configuration of the Linux kernel using sysctl |
| syslog_ng | State module for syslog_ng |
| sysrc | |
| telemetry_alert | New in version 2016.3.0.. |
| test | Test States |
| timezone | Management of timezones |
| tls | Enforce state for SSL/TLS |
| tomcat | This state uses the manager webapp to manage Apache tomcat webapps |
| trafficserver | Control Apache Traffic Server |
| tuned | Interface to Red Hat tuned-adm module |
| uptime | Monitor Web Server with Uptime |
| user | Management of user accounts |
| vbox_guest | VirtualBox Guest Additions installer state |
| victorops | Create an Event in VictorOps |
| virt | Manage virt |
| virtualenv_mod | Setup of Python virtualenv sandboxes. |
| win_certutil | Installing of certificates to the Windows Certificate Manager |
| win_dacl | Windows Object Access Control Lists |
| win_dism | Installing of Windows features using DISM |
| win_dns_client | Module for configuring DNS Client on Windows systems |
| win_firewall | State for configuring Windows Firewall |
| win_iis | Microsoft IIS site management |
| win_license | Installation and activation of windows licenses |
| win_network | Configuration of network interfaces on Windows hosts |
| win_path | Manage the Windows System PATH |
| win_powercfg | This module allows you to control the power settings of a windows minion via powercfg. |
| win_servermanager | Manage Windows features via the ServerManager powershell module |
| win_system | Management of Windows system information |
| win_update | Management of the windows update agent |
| winrepo | Manage Windows Package Repository |
| x509 | Manage X509 Certificates |
| xmpp | Sending Messages over XMPP |
| zabbix_host | Management of Zabbix hosts. |
| zabbix_hostgroup | Management of Zabbix host groups. |
| zabbix_user | Management of Zabbix users. |
| zabbix_usergroup | Management of Zabbix user groups. |
| zcbuildout | Management of zc.buildout |
| zenoss | State to manage monitoring in Zenoss. |

Continued on next page

Table 13.16 -- continued from previous page

| | |
|---|---|
| *zk_concurrency* | Control concurrency of steps within state execution using zookeeper |
| *zfs* | Management zfs datasets |
| *zpool* | Management zpool |

### 13.16.1 salt.states.alias

Configuration of email aliases

The mail aliases file can be managed to contain definitions for specific email aliases:

```
username:
  alias.present:
    - target: user@example.com
```

```
thomas:
  alias.present:
    - target: thomas@example.com
```

The default alias file is set to `/etc/aliases`, as defined in Salt's *config execution module*. To change the alias file from the default location, set the following in your minion config:

```
aliases.file: /my/alias/file
```

`salt.states.alias.`**`absent`**(*name*)

Ensure that the named alias is absent

**name** The alias to remove

`salt.states.alias.`**`present`**(*name*, *target*)

Ensures that the named alias is present with the given target or list of targets. If the alias exists but the target differs from the previous entry, the target(s) will be overwritten. If the alias does not exist, the alias will be created.

**name** The local user/address to assign an alias to

**target** The forwarding address

### 13.16.2 salt.states.alternatives

Configuration of the alternatives system

Control the alternatives system

```
{% set my_hadoop_conf = '/opt/hadoop/conf' %}

{{ my_hadoop_conf }}:
  file.directory

hadoop-0.20-conf:
  alternatives.install:
    - name: hadoop-0.20-conf
    - link: /etc/hadoop-0.20/conf
    - path: {{ my_hadoop_conf }}
    - priority: 30
    - require:
      - file: {{ my_hadoop_conf }}
```

```
hadoop-0.20-conf:
  alternatives.remove:
    - name: hadoop-0.20-conf
    - path: {{ my_hadoop_conf }}
```

salt.states.alternatives.**auto**(*name*)

New in version 0.17.0.

Instruct alternatives to use the highest priority path for <name>

**name** is the master name for this link group (e.g. pager)

salt.states.alternatives.**install**(*name*, *link*, *path*, *priority*)

Install new alternative for defined <name>

**name** is the master name for this link group (e.g. pager)

**link** is the symlink pointing to /etc/alternatives/<name>. (e.g. /usr/bin/pager)

**path** is the location of the new alternative target. NB: This file / directory must already exist. (e.g. /usr/bin/less)

**priority** is an integer; options with higher numbers have higher priority in automatic mode.

salt.states.alternatives.**remove**(*name*, *path*)

Removes installed alternative for defined <name> and <path> or fallback to default alternative, if some defined before.

**name** is the master name for this link group (e.g. pager)

**path** is the location of one of the alternative target files. (e.g. /usr/bin/less)

salt.states.alternatives.**set**(*name*, *path*)

New in version 0.17.0.

Sets alternative for <name> to <path>, if <path> is defined as an alternative for <name>.

**name** is the master name for this link group (e.g. pager)

**path** is the location of one of the alternative target files. (e.g. /usr/bin/less)

### 13.16.3 salt.states.apache

Apache state

New in version 2014.7.0.

Allows for inputting a yaml dictionary into a file for apache configuration files.

The variable `this` is special and signifies what should be included with the above word between angle brackets (<>).

```
/etc/httpd/conf.d/website.com.conf:
  apache.configfile:
    - config:
      - VirtualHost:
          this: '*:80'
          ServerName:
            - website.com
          ServerAlias:
            - www.website.com
            - dev.website.com
          ErrorLog: logs/website.com-error_log
          CustomLog: logs/website.com-access_log combined
          DocumentRoot: /var/www/vhosts/website.com
          Directory:
            this: /var/www/vhosts/website.com
```

```
            Order: Deny,Allow
            Deny from: all
            Allow from:
              - 127.0.0.1
              - 192.168.100.0/24
            Options:
              - Indexes
              - FollowSymlinks
            AllowOverride: All
```

salt.states.apache.**configfile**(*name*, *config*)

### 13.16.4 salt.states.apache_conf module

Manage Apache Confs

New in version 2016.3.0.

Enable and disable apache confs.

```
Enable security conf:
  apache_conf.enabled:
    - name: security

Disable security conf:
  apache_conf.disabled:
    - name: security
```

salt.states.apache_conf.**disable**(*name*)

Ensure an Apache conf is disabled.

> **Warning**: This function is deprecated and will be removed in Salt Nitrogen.

**name** Name of the Apache conf

salt.states.apache_conf.**disabled**(*name*)

Ensure an Apache conf is disabled.

**name** Name of the Apache conf

salt.states.apache_conf.**enable**(*name*)

Ensure an Apache conf is enabled.

> **Warning**: This function is deprecated and will be removed in Salt Nitrogen.

**name** Name of the Apache conf

salt.states.apache_conf.**enabled**(*name*)

Ensure an Apache conf is enabled.

**name** Name of the Apache conf

### 13.16.5 salt.states.apache_module

Manage Apache Modules

New in version 2014.7.0.

Enable and disable apache modules.

```
Enable cgi module:
  apache_module.enabled:
    - name: cgi

Disable cgi module:
  apache_module.disabled:
    - name: cgi
```

salt.states.apache_module.**disable**(*name*)
Ensure an Apache module is disabled.

Deprecated since version 2016.3.0.
**name** Name of the Apache module

salt.states.apache_module.**disabled**(*name*)
Ensure an Apache module is disabled.

New in version 2016.3.0.
**name** Name of the Apache module

salt.states.apache_module.**enable**(*name*)
Ensure an Apache module is enabled. This function is deprecated and will be removed in Salt Nitrogen. Please use the `enabled` state function instead.

Deprecated since version 2016.3.0.
**name** Name of the Apache module

salt.states.apache_module.**enabled**(*name*)
Ensure an Apache module is enabled.

New in version 2016.3.0.
**name** Name of the Apache module

### 13.16.6 salt.states.apache_site module

Manage Apache Sites

New in version 2016.3.0.

Enable and disable apache sites.

```
Enable default site:
  apache_site.enabled:
    - name: default

Disable default site:
  apache_site.disabled:
    - name: default
```

salt.states.apache_site.**disable**(*name*)
Ensure an Apache site is disabled.

> **Warning:** This function is deprecated and will be removed in Salt Nitrogen.

**name** Name of the Apache site

salt.states.apache_site.**disabled**(*name*)
Ensure an Apache site is disabled.
**name** Name of the Apache site

salt.states.apache_site.**enable**(*name*)
Ensure an Apache site is enabled.

> **Warning**: This function is deprecated and will be removed in Salt Nitrogen.

**name** Name of the Apache site

salt.states.apache_site.**enabled**(*name*)
Ensure an Apache site is enabled.
**name** Name of the Apache site

### 13.16.7 salt.states.aptpkg

#### Package management operations specific to APT- and DEB-based systems

salt.states.aptpkg.**held**(*name*)
Set package in `hold' state, meaning it will not be upgraded.
**name** The name of the package, e.g., `tmux'

### 13.16.8 salt.states.archive

Extract an archive

New in version 2014.1.0.

salt.states.archive.**extracted**(*name*, *source*, *archive_format*, *archive_user=None*, *password=None*, *user=None*, *group=None*, *tar_options=None*, *source_hash=None*, *if_missing=None*, *keep=False*, *trim_output=False*, *skip_verify=False*, *source_hash_update=None*)
New in version 2014.1.0.

State that make sure an archive is extracted in a directory. The downloaded archive is erased if successfully extracted. The archive is downloaded only if necessary.

> **Note**: If `if_missing` is not defined, this state will check for `name` instead. If `name` exists, it will assume the archive was previously extracted successfully and will not extract it again.

Example, tar with flag for lmza compression:

```
graylog2-server:
  archive.extracted:
    - name: /opt/
    - source: https://github.com/downloads/Graylog2/graylog2-server/graylog2-
↪server-0.9.6p1.tar.lzma
    - source_hash: md5=499ae16dcae71eeb7c3a30c75ea7a1a6
    - tar_options: J
    - archive_format: tar
    - if_missing: /opt/graylog2-server-0.9.6p1/
```

Example, tar with flag for verbose output:

```
graylog2-server:
  archive.extracted:
    - name: /opt/
    - source: https://github.com/downloads/Graylog2/graylog2-server/graylog2-
↪server-0.9.6p1.tar.gz
    - source_hash: md5=499ae16dcae71eeb7c3a30c75ea7a1a6
    - archive_format: tar
    - tar_options: v
    - user: root
    - group: root
    - if_missing: /opt/graylog2-server-0.9.6p1/
```

Example, tar with flag for lmza compression and update based if source_hash differs from what was previously extracted:

```
graylog2-server:
  archive.extracted:
    - name: /opt/
    - source: https://github.com/downloads/Graylog2/graylog2-server/graylog2-
↪server-0.9.6p1.tar.lzma
    - source_hash: md5=499ae16dcae71eeb7c3a30c75ea7a1a6
    - source_hash_update: true
    - tar_options: J
    - archive_format: tar
    - if_missing: /opt/graylog2-server-0.9.6p1/
```

**name** Location where archive should be extracted

**password** Password to use with password protected zip files. Currently only zip files with passwords are supported.

New in version 2016.3.0.

**source** Archive source, same syntax as file.managed source argument.

**source_hash** Hash of source file, or file with list of hash-to-file mappings. It uses the same syntax as the file.managed source_hash argument.

**source_hash_update** Set this to `True` if archive should be extracted if source_hash has changed. This would extract regardless of the `if_missing` parameter.

New in version 2016.3.0.

**skip_verify**:**False** If `True`, hash verification of remote file sources (`http://`, `https://`, `ftp://`) will be skipped, and the `source_hash` argument will be ignored.

New in version 2016.3.4.

**archive_format** `tar`, `zip` or `rar`

**archive_user** The user to own each extracted file.

Deprecated since version 2014.7.2: Replaced by `user` parameter

**user** The user to own each extracted file.

New in version 2015.8.0.

Changed in version 2016.3.0: When used in combination with `if_missing`, ownership will only be enforced if `if_missing` is a directory.

**group** The group to own each extracted file.

New in version 2015.8.0.

Changed in version 2016.3.0: When used in combination with `if_missing`, ownership will only be enforced if `if_missing` is a directory.

**if_missing** If specified, this path will be checked, and if it exists then the archive will not be extracted. This can be helpful if the archive extracts all files into a subfolder. This path can be either a directory or a file, so this option can also be used to check for a semaphore file and conditionally skip extraction.

Changed in version 2016.3.0: When used in combination with either `user` or `group`, ownership will only be enforced when `if_missing` is a directory.

**tar_options** If `archive_format` is set to `tar`, this option can be used to specify a string of additional arguments to pass to the tar command. If `archive_format` is set to `tar` and this option is *not* used, then the minion will attempt to use Python's native tarfile support to extract it. Python's native tarfile support can only handle gzip and bzip2 compression, however.

Changed in version 2015.8.11,2016.3.2: XZ-compressed archives no longer require `J` to manually be set in the `tar_options`, they are now detected automatically and Salt will extract them using `xz-utils`. This is a more platform-independent solution, as not all tar implementations support the `J` argument for extracting archives.

---

**Note:** Main operators like -x, --extract, --get, -c and -f/--file **should not be used** here.

Using this option means that the `tar` command will be used, which is less platform-independent, so keep this in mind when using this option; the options must be valid options for the `tar` implementation on the minion's OS.

---

**keep** Keep the archive in the minion's cache

**trim_output** The number of files we should output on success before the rest are trimmed, if this is set to True then it will default to 100

New in version 2016.3.0.

### 13.16.9 salt.states.artifactory

This state downloads artifacts from artifactory.

`salt.states.artifactory.`**`downloaded`**(*name*, *artifact*, *target_dir='/tmp'*, *target_file=None*)

Ensures that the artifact from artifactory exists at given location. If it doesn't exist, then it will be downloaded. It it already exists then the checksum of existing file is checked against checksum in artifactory. If it is different then the step will fail.

**artifact** Details of the artifact to be downloaded from artifactory. Various options are:

- artifactory_url: URL of the artifactory instance
- repository: Repository in artifactory
- artifact_id: Artifact ID
- group_id: Group ID
- packaging: Packaging
- classifier: Classifier .. versionadded:: 2015.8.0
- **version: Version** One of the following: - Version to download - `latest` - Download the latest release of this artifact - `latest_snapshot` - Download the latest snapshot for this artifact
- username: Artifactory username .. versionadded:: 2015.8.0
- password: Artifactory password .. versionadded:: 2015.8.0

**target_dir** Directory where the artifact should be downloaded. By default it is downloaded to /tmp directory.

**target_file** Target file to download artifact to. By default file name is resolved by artifactory.

An example to download an artifact to a specific file:

```
jboss_module_downloaded:
  artifactory.downloaded:
   - artifact:
       artifactory_url: http://artifactory.intranet.example.com/artifactory
```

```
      repository: 'libs-release-local'
      artifact_id: 'module'
      group_id: 'com.company.module'
      packaging: 'jar'
      classifier: 'sources'
      version: '1.0'
  - target_file: /opt/jboss7/modules/com/company/lib/module.jar
```

Download artifact to the folder (automatically resolves file name):

```
jboss_module_downloaded:
  artifactory.downloaded:
   - artifact:
       artifactory_url: http://artifactory.intranet.example.com/artifactory
       repository: 'libs-release-local'
       artifact_id: 'module'
       group_id: 'com.company.module'
       packaging: 'jar'
       classifier: 'sources'
       version: '1.0'
   - target_dir: /opt/jboss7/modules/com/company/lib
```

### 13.16.10 salt.states.at

#### Configuration disposable regularly scheduled tasks for at.

The at state can be add disposable regularly scheduled tasks for your system.

`salt.states.at.`**`absent`**`(`*name*, *jobid=None*, ***kwargs*`)`

Remove a job from queue The `kwargs' can include hour. minute. day. month. year

**limit** Target range

**tag** Job's tag

**runas** Runs user-specified jobs

```
example1:
  at.absent:
    - limit: all
```

```
example2:
  at.absent:
    - limit: all
    - year: 13
```

```
example3:
  at.absent:
    - limit: all
    - tag: rose
    - runas: jim
```

```
example4:
  at.absent:
    - limit: all
    - tag: rose
    - day: 13
    - hour: 16
```

salt.states.at.**present**(*name*, *timespec*, *tag=None*, *user=None*, *job=None*)

Add a job to queue.

**job** Command to run.

**timespec** The `timespec' follows the format documented in the at(1) manpage.

**tag** Make a tag for the job.

**user** The user to run the at job

New in version 2014.1.4.

```
rose:
  at.present:
    - job: 'echo "I love saltstack" > love'
    - timespec: '9:09 11/09/13'
    - tag: love
    - user: jam
```

### 13.16.11 salt.states.augeas

Configuration management using Augeas

New in version 0.17.0.

This state requires the `augeas` Python module.

Augeas can be used to manage configuration files.

**Warning**: Minimal installations of Debian and Ubuntu have been seen to have packaging bugs with python-augeas, causing the augeas module to fail to import. If the minion has the augeas module installed, and the state fails with a comment saying that the state is unavailable, first restart the salt-minion service. If the problem persists past that, the following command can be run from the master to determine what is causing the import to fail:

```
salt minion-id cmd.run 'python -c "from augeas import Augeas"'
```

For affected Debian/Ubuntu hosts, installing `libpython2.7` has been known to resolve the issue.

salt.states.augeas.**change**(*name*, *context=None*, *changes=None*, *lens=None*, *load_path=None*, ***kwargs*)

New in version 2014.7.0.

This state replaces `setvalue()`.

Issue changes to Augeas, optionally for a specific context, with a specific lens.

**name** State name

**context** A file path, prefixed by `/files`. Should resolve to an actual file (not an arbitrary augeas path). This is used to avoid duplicating the file name for each item in the changes list (for example, `set bind 0.0.0.0` in the example below operates on the file specified by `context`). If `context` is not specified, a file path prefixed by `/files` should be included with the `set` command.

The file path is examined to determine if the specified changes are already present.

```
redis-conf:
  augeas.change:
    - context: /files/etc/redis/redis.conf
    - changes:
      - set bind 0.0.0.0
      - set maxmemory 1G
```

**changes** List of changes that are issued to Augeas. Available commands are `set`, `setm`, `mv`/`move`, `ins`/`insert`, and `rm`/`remove`.

**lens** The lens to use, needs to be suffixed with *.lns*, e.g.: *Nginx.lns*. See the list of stock lenses shipped with Augeas.

New in version 2016.3.0.

**load_path** A list of directories that modules should be searched in. This is in addition to the standard load path and the directories in AUGEAS_LENS_LIB.

Usage examples:

Set the `bind` parameter in `/etc/redis/redis.conf`:

```
redis-conf:
  augeas.change:
    - changes:
      - set /files/etc/redis/redis.conf/bind 0.0.0.0
```

---

**Note**: Use the `context` parameter to specify the file you want to manipulate. This way you don't have to include this in the changes every time:

```
redis-conf:
  augeas.change:
    - context: /files/etc/redis/redis.conf
    - changes:
      - set bind 0.0.0.0
      - set databases 4
      - set maxmemory 1G
```

---

Augeas is aware of a lot of common configuration files and their syntax. It knows the difference between for example ini and yaml files, but also files with very specific syntax, like the hosts file. This is done with *lenses*, which provide mappings between the Augeas tree and the file.

There are many preconfigured lenses that come with Augeas by default, and they specify the common locations for configuration files. So most of the time Augeas will know how to manipulate a file. In the event that you need to manipulate a file that Augeas doesn't know about, you can specify the lens to use like this:

```
redis-conf:
  augeas.change:
    - lens: redis
    - context: /files/etc/redis/redis.conf
    - changes:
      - set bind 0.0.0.0
```

---

**Note**: Even though Augeas knows that `/etc/redis/redis.conf` is a Redis configuration file and knows how to parse it, it is recommended to specify the lens anyway. This is because by default, Augeas loads all known lenses and their associated file paths. All these files are parsed when Augeas is loaded, which can take some time. When specifying a lens, Augeas is loaded with only that lens, which speeds things up quite a bit.

---

A more complex example, this adds an entry to the services file for Zabbix, and removes an obsolete service:

```
zabbix-service:
  augeas.change:
    - lens: services
    - context: /files/etc/services
    - changes:
```

```
      - ins service-name after service-name[last()]
      - set service-name[last()] zabbix-agent
      - set service-name[. = 'zabbix-agent']/#comment "Zabbix Agent service"
      - set service-name[. = 'zabbix-agent']/port 10050
      - set service-name[. = 'zabbix-agent']/protocol tcp
      - rm service-name[. = 'im-obsolete']
    - unless: grep "zabbix-agent" /etc/services
```

**Warning**: Don't forget the `unless` here, otherwise a new entry will be added every time this state is run.

### 13.16.12 salt.states.aws_sqs

Manage SQS Queues

Create and destroy SQS queues. Be aware that this interacts with Amazon's services, and so may incur charges.

This module uses the awscli tool provided by Amazon. This can be downloaded from pip. Also check the documentation for awscli for configuration information.

```
myqueue:
    aws_sqs.exists:
        - region: eu-west-1
```

`salt.states.aws_sqs.`**`absent`**(*name*, *region*, *user=None*, *opts=False*)

Remove the named SQS queue if it exists.

**name** Name of the SQS queue.

**region** Region to remove the queue from

**user** Name of the user performing the SQS operations

**opts** Include additional arguments and options to the aws command line

`salt.states.aws_sqs.`**`exists`**(*name*, *region*, *user=None*, *opts=False*)

Ensure the SQS queue exists.

**name** Name of the SQS queue.

**region** Region to create the queue

**user** Name of the user performing the SQS operations

**opts** Include additional arguments and options to the aws command line

### 13.16.13 salt.states.beacon

#### Management of the Salt beacons

New in version 2015.8.0.

```
ps:
  beacon.present:
    - enable: False
    - salt-master: running
    - apache2: stopped

sh:
  beacon.present:

load:
```

```
beacon.present:
  - 1m:
      - 0.0
      - 2.0
  - 5m:
      - 0.0
      - 1.5
  - 15m:
      - 0.1
      - 1.0
```

salt.states.beacon.**absent**(*name*, ***kwargs*)
Ensure beacon is absent.
**name** The name of the beacon ensured absent.

salt.states.beacon.**disabled**(*name*, ***kwargs*)
Disable a beacon.
**name** The name of the beacon to enable.

salt.states.beacon.**enabled**(*name*, ***kwargs*)
Enable a beacon.
**name** The name of the beacon to enable.

salt.states.beacon.**present**(*name*, ***kwargs*)
Ensure beacon is configured with the included beacon data.
**name** The name of the beacon ensure is configured.

### 13.16.14 salt.states.bigip

**A state module designed to enforce load-balancing configurations for F5 Big-IP entities.**

**maturity** develop

**platform** f5_bigip_11.6

salt.states.bigip.**add_pool_member**(*hostname*, *username*, *password*, *name*, *member*)
A function to connect to a bigip device and add a new member to an existing pool.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the pool to modify
**member** The member to add to the pool

salt.states.bigip.**create_monitor**(*hostname*, *username*, *password*, *monitor_type*, *name*, ***kwargs*)
A function to connect to a bigip device and create a monitor.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**monitor_type** The type of monitor to create
**name** The name of the monitor to create
**kwargs** [ arg=val ] ...

Consult F5 BIGIP user guide for specific options for each monitor type. Typically, tmsh arg names are used.

salt.states.bigip.**create_node**(*hostname*, *username*, *password*, *name*, *address*)
Create a new node if it does not already exist.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the node to create
**address** The address of the node

salt.states.bigip.**create_pool**(*hostname*, *username*, *password*, *name*, *members=None*, *allow_nat=None*, *allow_snat=None*, *description=None*, *gateway_failsafe_device=None*, *ignore_persisted_weight=None*, *ip_tos_to_client=None*, *ip_tos_to_server=None*, *link_qos_to_client=None*, *link_qos_to_server=None*, *load_balancing_mode=None*, *min_active_members=None*, *min_up_members=None*, *min_up_members_action=None*, *min_up_members_checking=None*, *monitor=None*, *profiles=None*, *queue_depth_limit=None*, *queue_on_connection_limit=None*, *queue_time_limit=None*, *reselect_tries=None*, *service_down_action=None*, *slow_ramp_time=None*)

Create a new node if it does not already exist.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the pool to create
**members** List of members to be added to the pool
**allow_nat** [yes | no]
**allow_snat** [yes | no]
**description** [string]
**gateway_failsafe_device** [string]
**ignore_persisted_weight** [enabled | disabled]
**ip_tos_to_client** [pass-through | [integer]]
**ip_tos_to_server** [pass-through | [integer]]
**link_qos_to_client** [pass-through | [integer]]
**link_qos_to_server** [pass-through | [integer]]
**load_balancing_mode** [dynamic-ratio-member | dynamic-ratio-node | fastest-app-response | fastest-node | least-connections-members | least-connections-node | least-sessions | observed-member | observed-node | predictive-member | predictive-node | ratio-least-connections-member | ratio-least-connections-node | ratio-member | ratio-node | ratio-session | round-robin | weighted-least-connections-member | weighted-least-connections-node]
**min_active_members** [integer]
**min_up_members** [integer]
**min_up_members_action** [failover | reboot | restart-all]
**min_up_members_checking** [enabled | disabled]
**monitor** [name]
**profiles** [none | profile_name]
**queue_depth_limit** [integer]
**queue_on_connection_limit** [enabled | disabled]
**queue_time_limit** [integer]
**reselect_tries** [integer]
**service_down_action** [drop | none | reselect | reset]
**slow_ramp_time** [integer]

salt.states.bigip.**create_profile**(*hostname*, *username*, *password*, *profile_type*, *name*, ***kwargs*)

A function to connect to a bigip device and create a profile.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password

**profile_type** The type of profile to create
**name** The name of the profile to create
**kwargs** [ arg=val ] ...

Consult F5 BIGIP user guide for specific options for each profile type. Typically, tmsh arg names are used.

Special Characters `|`, `,` and `:` must be escaped using `\` when used within strings.

`salt.states.bigip.`**`create_virtual`**(*hostname*, *username*, *password*, *name*, *destination*, *pool=None*, *address_status=None*, *auto_lasthop=None*, *bwc_policy=None*, *cmp_enabled=None*, *connection_limit=None*, *dhcp_relay=None*, *description=None*, *fallback_persistence=None*, *flow_eviction_policy=None*, *gtm_score=None*, *ip_forward=None*, *ip_protocol=None*, *internal=None*, *twelve_forward=None*, *last_hop_pool=None*, *mask=None*, *mirror=None*, *nat64=None*, *persist=None*, *profiles=None*, *policies=None*, *rate_class=None*, *rate_limit=None*, *rate_limit_mode=None*, *rate_limit_dst=None*, *rate_limit_src=None*, *rules=None*, *related_rules=None*, *reject=None*, *source=None*, *source_address_translation=None*, *source_port=None*, *virtual_state=None*, *traffic_classes=None*, *translate_address=None*, *translate_port=None*, *vlans=None*)

A function to connect to a bigip device and create a virtual server if it does not already exists.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the virtual to create
**destination** [ [virtual_address_name:port] | [ipv4:port] | [ipv6.port] ]
**pool** [ [pool_name] | none]
**address_status** [yes | no]
**auto_lasthop** [default | enabled | disabled ]
**bwc_policy** [none] | string]
**cmp_enabled** [yes | no]
**dhcp_relay** [yes | no}
**connection_limit** [integer]
**description** [string]
**state** [disabled | enabled]
**fallback_persistence** [none | [profile name] ]
**flow_eviction_policy** [none | [eviction policy name] ]
**gtm_score** [integer]
**ip_forward** [yes | no]
**ip_protocol** [any | protocol]
**internal** [yes | no]
**twelve_forward(12-forward)** [yes | no]
**last_hop-pool** [ [pool_name] | none]
**mask** { [ipv4] | [ipv6] }
**mirror** { [disabled | enabled | none] }
**nat64** [enabled | disabled]
**persist** [list]
**profiles** [none | default | list ]
**policies** [none | default | list ]
**rate_class** [name]
**rate_limit** [integer]
**rate_limit-mode** [destination | object | object-destination | object-source | object-source-destination | source | source-destination]

**rate_limit-dst** [integer]
**rate_limit-src** [integer]
**rules** [none | list ]
**related_rules** [none | list ]
**reject** [yes | no]
**source** { [ipv4[/prefixlen]] | [ipv6[/prefixlen]] }
**source_address_translation** [none | snat:pool_name | lsn | automap | dictionary ]
**source_port** [change | preserve | preserve-strict]
**state** [enabled | disabled]
**traffic_classes** [none | default | list ]
**translate_address** [enabled | disabled]
**translate_port** [enabled | disabled]
**vlans** [none | default | dictionary]
**vlan_ids** [ list]
**enabled** [ true | false ]

salt.states.bigip.**delete_monitor**(*hostname*, *username*, *password*, *monitor_type*, *name*)
Modify an existing monitor. If it does exists, only the parameters specified will be enforced.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**monitor_type** The type of monitor to create
**name** The name of the monitor to create
**kwargs** [ arg=val ] ...

Consult F5 BIGIP user guide for specific options for each monitor type. Typically, tmsh arg names are used.

salt.states.bigip.**delete_node**(*hostname*, *username*, *password*, *name*)
Delete an existing node.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the node which will be deleted.

salt.states.bigip.**delete_pool**(*hostname*, *username*, *password*, *name*)
Delete an existing pool.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the pool which will be deleted

salt.states.bigip.**delete_pool_member**(*hostname*, *username*, *password*, *name*, *member*)
Delete an existing pool member.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the pool to be modified
**member** The name of the member to delete from the pool

salt.states.bigip.**delete_profile**(*hostname*, *username*, *password*, *profile_type*, *name*)
Modify an existing profile. If it does exists, only the parameters specified will be enforced.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**profile_type** The type of profile to create
**name** The name of the profile to create

**kwargs** [ arg=val ] ...

Consult F5 BIGIP user guide for specific options for each profile type. Typically, tmsh arg names are used.

salt.states.bigip.**delete_virtual**(*hostname*, *username*, *password*, *name*)

Delete an existing virtual.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the virtual which will be deleted

salt.states.bigip.**list_monitor**(*hostname*, *username*, *password*, *monitor_type*, *name*)

A function to list an exsiting monitor.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**monitor_type** The type of monitor to list
**name** The name of the monitor to list

salt.states.bigip.**list_node**(*hostname*, *username*, *password*, *name*)

A function to connect to a bigip device and list a specific node.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the node to list.

salt.states.bigip.**list_pool**(*hostname*, *username*, *password*, *name*)

A function to connect to a bigip device and list a specific pool.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the pool to list.

salt.states.bigip.**list_profile**(*hostname*, *username*, *password*, *profile_type*, *name*)

A function to list an existing profile.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**profile_type** The type of profile to list
**name** The name of the profile to list

salt.states.bigip.**list_virtual**(*hostname*, *username*, *password*, *name*)

A function to list a specific virtual.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the virtual to list

salt.states.bigip.**manage_monitor**(*hostname*, *username*, *password*, *monitor_type*, *name*, ***kwargs*)

Create a new monitor if a monitor of this type and name does not already exists. If it does exists, only the parameters specified will be enforced.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**monitor_type** The type of monitor to create
**name** The name of the monitor to create

**kwargs** [ arg=val ] ...

Consult F5 BIGIP user guide for specific options for each monitor type. Typically, tmsh arg names are used.

salt.states.bigip.**manage_node**(*hostname*, *username*, *password*, *name*, *address*, *connection_limit=None*, *description=None*, *dynamic_ratio=None*, *logging=None*, *monitor=None*, *rate_limit=None*, *ratio=None*, *session=None*, *node_state=None*)

Manages a node of a given bigip device. If the node does not exist it will be created, otherwise, only the properties which are different than the existing will be updated.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the node to manage.
**address** The address of the node
**connection_limit** [integer]
**description** [string]
**dynam** c_ratio: [integer]
**logging** [enabled | disabled]
**monitor** [[name] | none | default]
**rate_limit** [integer]
**ratio** [integer]
**session** [user-enabled | user-disabled]
**node_state (state)** [user-down | user-up ]

salt.states.bigip.**manage_pool**(*hostname*, *username*, *password*, *name*, *allow_nat=None*, *allow_snat=None*, *description=None*, *gateway_failsafe_device=None*, *ignore_persisted_weight=None*, *ip_tos_to_client=None*, *ip_tos_to_server=None*, *link_qos_to_client=None*, *link_qos_to_server=None*, *load_balancing_mode=None*, *min_active_members=None*, *min_up_members=None*, *min_up_members_action=None*, *min_up_members_checking=None*, *monitor=None*, *profiles=None*, *queue_depth_limit=None*, *queue_on_connection_limit=None*, *queue_time_limit=None*, *reselect_tries=None*, *service_down_action=None*, *slow_ramp_time=None*)

Create a new pool if it does not already exist. Pool members are managed separately. Only the parameters specified are enforced.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the pool to create
**allow_nat** [yes | no]
**allow_snat** [yes | no]
**description** [string]
**gateway_failsafe_device** [string]
**ignore_persisted_weight** [enabled | disabled]
**ip_tos_to_client** [pass-through | [integer]]
**ip_tos_to_server** [pass-through | [integer]]
**link_qos_to_client** [pass-through | [integer]]
**link_qos_to_server** [pass-through | [integer]]
**load_balancing_mode** [dynamic-ratio-member | dynamic-ratio-node | fastest-app-response | fastest-node | least-connections-members | least-connections-node | least-sessions | observed-member | observed-node | predictive-member | predictive-node | ratio-least-connections-member | ratio-least-connections-node | ratio-member | ratio-node | ratio-session | round-robin | weighted-least-connections-member | weighted-

least-connections-node]
**min_active_members** [integer]
**min_up_members** [integer]
**min_up_members_action** [failover | reboot | restart-all]
**min_up_members_checking** [enabled | disabled]
**monitor** [name]
**profiles** [none | profile_name]
**queue_depth_limit** [integer]
**queue_on_connection_limit** [enabled | disabled]
**queue_time_limit** [integer]
**reselect_tries** [integer]
**service_down_action** [drop | none | reselect | reset]
**slow_ramp_time** [integer]

salt.states.bigip.**manage_pool_members**(*hostname*, *username*, *password*, *name*, *members*)
Manage the members of an existing pool. This function replaces all current pool members. Only the parameters specified are enforced.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the pool to modify
**members** list of pool members to manage.

salt.states.bigip.**manage_profile**(*hostname*, *username*, *password*, *profile_type*, *name*, ***kwargs*)
Create a new profile if a monitor of this type and name does not already exists. If it does exists, only the parameters specified will be enforced.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**profile_type** The type of profile to create
**name** The name of the profile to create
**kwargs** [ arg=val ] ...

Consult F5 BIGIP user guide for specific options for each profile type. Typically, tmsh arg names are used.

salt.states.bigip.**manage_virtual**(*hostname*, *username*, *password*, *name*, *destination*, *pool=None*, *address_status=None*, *auto_lasthop=None*, *bwc_policy=None*, *cmp_enabled=None*, *connection_limit=None*, *dhcp_relay=None*, *description=None*, *fallback_persistence=None*, *flow_eviction_policy=None*, *gtm_score=None*, *ip_forward=None*, *ip_protocol=None*, *internal=None*, *twelve_forward=None*, *last_hop_pool=None*, *mask=None*, *mirror=None*, *nat64=None*, *persist=None*, *profiles=None*, *policies=None*, *rate_class=None*, *rate_limit=None*, *rate_limit_mode=None*, *rate_limit_dst=None*, *rate_limit_src=None*, *rules=None*, *related_rules=None*, *reject=None*, *source=None*, *source_address_translation=None*, *source_port=None*, *virtual_state=None*, *traffic_classes=None*, *translate_address=None*, *translate_port=None*, *vlans=None*)
Manage a virtual server. If a virtual does not exists it will be created, otherwise only the parameters specified will be enforced.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the virtual to create

**destination** [ [virtual_address_name:port] | [ipv4:port] | [ipv6.port] ]
**pool** [ [pool_name] | none]
**address_status** [yes | no]
**auto_lasthop** [default | enabled | disabled ]
**bwc_policy** [none] | string]
**cmp_enabled** [yes | no]
**dhcp_relay** [yes | no}
**connection_limit** [integer]
**description** [string]
**state** [disabled | enabled]
**fallback_persistence** [none | [profile name] ]
**flow_eviction_policy** [none | [eviction policy name] ]
**gtm_score** [integer]
**ip_forward** [yes | no]
**ip_protocol** [any | protocol]
**internal** [yes | no]
**twelve_forward(12-forward)** [yes | no]
**last_hop-pool** [ [pool_name] | none]
**mask** { [ipv4] | [ipv6] }
**mirror** { [disabled | enabled | none] }
**nat64** [enabled | disabled]
**persist** [list]
**profiles** [none | default | list ]
**policies** [none | default | list ]
**rate_class** [name]
**rate_limit** [integer]
**rate_limit-mode** [destination | object | object-destination | object-source | object-source-destination | source | source-destination]
**rate_limit-dst** [integer]
**rate_limit-src** [integer]
**rules** [none | list ]
**related_rules** [none | list ]
**reject** [yes | no]
**source** { [ipv4[/prefixlen]] | [ipv6[/prefixlen]] }
**source_address_translation** [none | snat:pool_name | lsn | automap | dictionary ]
**source_port** [change | preserve | preserve-strict]
**state** [enabled | disabled]
**traffic_classes** [none | default | list ]
**translate_address** [enabled | disabled]
**translate_port** [enabled | disabled]
**vlans** [none | default | dictionary]
**vlan_ids** [ list]
**enabled** [ true | false ]

salt.states.bigip.**modify_monitor**(*hostname*, *username*, *password*, *monitor_type*, *name*, ***kwargs*)

Modify an existing monitor. If it does exists, only the parameters specified will be enforced.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**monitor_type** The type of monitor to create
**name** The name of the monitor to create
**kwargs** [ arg=val ] ...

Consult F5 BIGIP user guide for specific options for each monitor type. Typically, tmsh arg names are

used.

salt.states.bigip.**modify_node**(*hostname*, *username*, *password*, *name*, *connection_limit=None*, *description=None*, *dynamic_ratio=None*, *logging=None*, *monitor=None*, *rate_limit=None*, *ratio=None*, *session=None*, *node_state=None*)

Modify an existing node. Only a node which already exists will be modified and only the parameters specified will be enforced.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the node to modify
**connection_limit** [integer]
**description** [string]
**dynamic_ratio** [integer]
**logging** [enabled | disabled]
**monitor** [[name] | none | default]
**rate_limit** [integer]
**ratio** [integer]
**session** [user-enabled | user-disabled]
**node_state (state)** [user-down | user-up ]

salt.states.bigip.**modify_pool**(*hostname*, *username*, *password*, *name*, *allow_nat=None*, *allow_snat=None*, *description=None*, *gateway_failsafe_device=None*, *ignore_persisted_weight=None*, *ip_tos_to_client=None*, *ip_tos_to_server=None*, *link_qos_to_client=None*, *link_qos_to_server=None*, *load_balancing_mode=None*, *min_active_members=None*, *min_up_members=None*, *min_up_members_action=None*, *min_up_members_checking=None*, *monitor=None*, *profiles=None*, *queue_depth_limit=None*, *queue_on_connection_limit=None*, *queue_time_limit=None*, *reselect_tries=None*, *service_down_action=None*, *slow_ramp_time=None*)

Modify an existing pool. Pool members are managed separately. Only the parameters specified are enforced.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the pool to create
**allow_nat** [yes | no]
**allow_snat** [yes | no]
**description** [string]
**gateway_failsafe_device** [string]
**ignore_persisted_weight** [enabled | disabled]
**ip_tos_to_client** [pass-through | [integer]]
**ip_tos_to_server** [pass-through | [integer]]
**link_qos_to_client** [pass-through | [integer]]
**link_qos_to_server** [pass-through | [integer]]
**load_balancing_mode** [dynamic-ratio-member | dynamic-ratio-node | fastest-app-response | fastest-node | least-connections-members | least-connections-node | least-sessions | observed-member | observed-node | predictive-member | predictive-node | ratio-least-connections-member | ratio-least-connections-node | ratio-member | ratio-node | ratio-session | round-robin | weighted-least-connections-member | weighted-least-connections-node]
**min_active_members** [integer]
**min_up_members** [integer]
**min_up_members_action** [failover | reboot | restart-all]

**min_up_members_checking** [enabled | disabled]
**monitor** [name]
**profiles** [none | profile_name]
**queue_depth_limit** [integer]
**queue_on_connection_limit** [enabled | disabled]
**queue_time_limit** [integer]
**reselect_tries** [integer]
**service_down_action** [drop | none | reselect | reset]
**slow_ramp_time** [integer]

salt.states.bigip.**modify_pool_member**(*hostname*, *username*, *password*, *name*, *member*, *connection_limit=None*, *description=None*, *dynamic_ratio=None*, *inherit_profile=None*, *logging=None*, *monitor=None*, *priority_group=None*, *profiles=None*, *rate_limit=None*, *ratio=None*, *session=None*, *member_state=None*)

A function to connect to a bigip device and modify a member of an existing pool.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the pool to modify
**member** The member modify
**connection_limit** [integer]
**description** [string]
**dynamic_ratio** [integer]
**inherit_profile** [enabled | disabled]
**logging** [enabled | disabled]
**monitor** [name]
**priority_group** [integer]
**profiles** [none | profile_name]
**rate_limit** [integer]
**ratio** [integer]
**session** [user-enabled | user-disabled]
**member_state (state)** [ user-up | user-down ]

salt.states.bigip.**modify_profile**(*hostname*, *username*, *password*, *profile_type*, *name*, ***kwargs*)

Modify an existing profile. If it does exists, only the parameters specified will be enforced.
**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**profile_type** The type of profile to create
**name** The name of the profile to create
**kwargs** [ arg=val ] ...

Consult F5 BIGIP user guide for specific options for each monitor type. Typically, tmsh arg names are used.

salt.states.bigip.**modify_virtual**(*hostname*, *username*, *password*, *name*, *destination*, *pool=None*, *address_status=None*, *auto_lasthop=None*, *bwc_policy=None*, *cmp_enabled=None*, *connection_limit=None*, *dhcp_relay=None*, *description=None*, *fallback_persistence=None*, *flow_eviction_policy=None*, *gtm_score=None*, *ip_forward=None*, *ip_protocol=None*, *internal=None*, *twelve_forward=None*, *last_hop_pool=None*, *mask=None*, *mirror=None*, *nat64=None*, *persist=None*, *profiles=None*, *policies=None*, *rate_class=None*, *rate_limit=None*, *rate_limit_mode=None*, *rate_limit_dst=None*, *rate_limit_src=None*, *rules=None*, *related_rules=None*, *reject=None*, *source=None*, *source_address_translation=None*, *source_port=None*, *virtual_state=None*, *traffic_classes=None*, *translate_address=None*, *translate_port=None*, *vlans=None*)

Modify an virtual server. modify an existing virtual. Only parameters specified will be enforced.

**hostname** The host/address of the bigip device
**username** The iControl REST username
**password** The iControl REST password
**name** The name of the virtual to create
**destination** [ [virtual_address_name:port] | [ipv4:port] | [ipv6.port] ]
**pool** [ [pool_name] | none]
**address_status** [yes | no]
**auto_lasthop** [default | enabled | disabled ]
**bwc_policy** [none] | string]
**cmp_enabled** [yes | no]
**dhcp_relay** [yes | no}
**connection_limit** [integer]
**description** [string]
**state** [disabled | enabled]
**fallback_persistence** [none | [profile name] ]
**flow_eviction_policy** [none | [eviction policy name] ]
**gtm_score** [integer]
**ip_forward** [yes | no]
**ip_protocol** [any | protocol]
**internal** [yes | no]
**twelve_forward(12-forward)** [yes | no]
**last_hop-pool** [ [pool_name] | none]
**mask** { [ipv4] | [ipv6] }
**mirror** { [disabled | enabled | none] }
**nat64** [enabled | disabled]
**persist** [list]
**profiles** [none | default | list ]
**policies** [none | default | list ]
**rate_class** [name]
**rate_limit** [integer]
**rate_limit-mode** [destination | object | object-destination | object-source | object-source-destination | source | source-destination]
**rate_limit_dst** [integer]
**rate_limit_src** [integer]
**rules** [none | list ]
**related_rules** [none | list ]
**reject** [yes | no]
**source** { [ipv4[/prefixlen]] | [ipv6[/prefixlen]] }
**source_address_translation** [none | snat:pool_name | lsn | automap | dictionary ]

**source_port** [change | preserve | preserve-strict]
**state** [enabled | disabled]
**traffic_classes** [none | default | list ]
**translate_address** [enabled | disabled]
**translate_port** [enabled | disabled]
**vlans** [none | default | dictionary ]
    **vlan_ids** [ list]
    **enabled** [ true | false ]

### 13.16.15 salt.states.blockdev

Management of Block Devices

A state module to manage blockdevices

```
/dev/sda:
  blockdev.tuned:
    - read-only: True

master-data:
  blockdev.tuned:
    - name: /dev/vg/master-data
    - read-only: True
    - read-ahead: 1024
```

New in version 2014.7.0.

`salt.states.blockdev.`**`formatted`**(*name*, *fs_type='ext4'*, ***kwargs*)
Manage filesystems of partitions.
**name** The name of the block device
**fs_type** The filesystem it should be formatted as

`salt.states.blockdev.`**`tuned`**(*name*, ***kwargs*)
Manage options of block device
**name** The name of the block device
**opts**:

- **read-ahead** Read-ahead buffer size
- **filesystem-read-ahead** Filesystem Read-ahead buffer size
- **read-only** Set Read-Only
- **read-write** Set Read-Write

### 13.16.16 salt.states.boto_asg

#### Manage Autoscale Groups

New in version 2014.7.0.

Create and destroy autoscale groups. Be aware that this interacts with Amazon's services, and so may incur charges.

This module uses boto, which can be installed via package, or pip.

This module accepts explicit autoscale credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

```
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-ec2.html
```

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
asg.keyid: GKTADJGHEIQSXMKKRBJ08H
asg.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

It's also possible to specify key, keyid and region via a profile, either as a passed in dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

```
Ensure myasg exists:
  boto_asg.present:
    - name: myasg
    - launch_config_name: mylc
    - availability_zones:
      - us-east-1a
      - us-east-1b
    - min_size: 1
    - max_size: 1
    - desired_capacity: 1
    - load_balancers:
      - myelb
    - suspended_processes:
        - AddToLoadBalancer
        - AlarmNotification
    - scaling_policies
        - adjustment_type: ChangeInCapacity
        - as_name: api-production-iad
        - cooldown: 1800
        - min_adjustment_step: None
        - name: ScaleDown
        - scaling_adjustment: -1
    - region: us-east-1
    - keyid: GKTADJGHEIQSXMKKRBJ08H
    - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs

# Using a profile from pillars.
Ensure myasg exists:
  boto_asg.present:
    - name: myasg
    - launch_config_name: mylc
    - availability_zones:
      - us-east-1a
      - us-east-1b
    - min_size: 1
    - max_size: 1
    - desired_capacity: 1
    - load_balancers:
      - myelb
    - profile: myprofile

# Passing in a profile.
```

```
Ensure myasg exists:
  boto_asg.present:
    - name: myasg
    - launch_config_name: mylc
    - availability_zones:
      - us-east-1a
      - us-east-1b
    - min_size: 1
    - max_size: 1
    - desired_capacity: 1
    - load_balancers:
      - myelb
    - profile:
        keyid: GKTADJGHEIQSXMKKRBJ08H
        key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
        region: us-east-1

# Deleting an autoscale group with running instances.
Ensure myasg is deleted:
  boto_asg.absent:
    - name: myasg
    # If instances exist, we must force the deletion of the asg.
    - force: True
```

It's possible to specify cloudwatch alarms that will be setup along with the ASG. Note the alarm name will be the name attribute defined, plus the ASG resource name.

```
Ensure myasg exists:
  boto_asg.present:
    - name: myasg
    - launch_config_name: mylc
    - availability_zones:
      - us-east-1a
      - us-east-1b
    - min_size: 1
    - max_size: 1
    - desired_capacity: 1
    - load_balancers:
      - myelb
    - profile: myprofile
    - alarms:
        CPU:
          name: 'ASG CPU **MANAGED BY SALT**'
          attributes:
            metric: CPUUtilization
            namespace: AWS/EC2
            statistic: Average
            comparison: '>='
            threshold: 65.0
            period: 60
            evaluation_periods: 30
            unit: null
            description: 'ASG CPU'
            alarm_actions: [ 'arn:aws:sns:us-east-1:12345:myalarm' ]
            insufficient_data_actions: []
            ok_actions: [ 'arn:aws:sns:us-east-1:12345:myalarm' ]
```

You can also use alarms from pillars, and override values from the pillar alarms by setting overrides on the resource.

Note that `boto_asg_alarms' will be used as a default value for all resources, if defined and can be used to ensure alarms are always set for an ASG resource.

Setting the alarms in a pillar:

```
my_asg_alarm:
  CPU:
    name: 'ASG CPU **MANAGED BY SALT**'
    attributes:
      metric: CPUUtilization
      namespace: AWS/EC2
      statistic: Average
      comparison: '>='
      threshold: 65.0
      period: 60
      evaluation_periods: 30
      unit: null
      description: 'ASG CPU'
      alarm_actions: [ 'arn:aws:sns:us-east-1:12345:myalarm' ]
      insufficient_data_actions: []
      ok_actions: [ 'arn:aws:sns:us-east-1:12345:myalarm' ]
```

Overriding the alarm values on the resource:

```
Ensure myasg exists:
  boto_asg.present:
    - name: myasg
    - launch_config_name: mylc
    - availability_zones:
      - us-east-1a
      - us-east-1b
    - min_size: 1
    - max_size: 1
    - desired_capacity: 1
    - load_balancers:
      - myelb
    - profile: myprofile
    - alarms_from_pillar: my_asg_alarm
    # override CPU:attributes:threshold
    - alarms:
        CPU:
          attributes:
            threshold: 50.0
```

`salt.states.boto_asg.`**`absent`**(*name*, *force=False*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *remove_lc=False*)

Ensure the named autoscale group is deleted.

**name** Name of the autoscale group.

**force** Force deletion of autoscale group.

**remove_lc** Delete the launch config as well.

**region** The region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_asg.**present**(*name*, *launch_config_name*, *availability_zones*, *min_size*, *max_size*, *launch_config=None*, *desired_capacity=None*, *load_balancers=None*, *default_cooldown=None*, *health_check_type=None*, *health_check_period=None*, *placement_group=None*, *vpc_zone_identifier=None*, *tags=None*, *termination_policies=None*, *suspended_processes=None*, *scaling_policies=None*, *scaling_policies_from_pillar='boto_asg_scaling_policies'*, *scheduled_actions=None*, *scheduled_actions_from_pillar='boto_asg_scheduled_actions'*, *alarms=None*, *alarms_from_pillar='boto_asg_alarms'*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *notification_arn=None*, *notification_arn_from_pillar='boto_asg_notification_arn'*, *notification_types=None*, *notification_types_from_pillar='boto_asg_notification_types'*)

Ensure the autoscale group exists.

**name** Name of the autoscale group.

**launch_config_name** Name of the launch config to use for the group. Or, if `launch_config` is specified, this will be the launch config name's prefix. (see below)

**launch_config** A dictionary of launch config attributes. If specified, a launch config will be used or created, matching this set of attributes, and the autoscale group will be set to use that launch config. The launch config name will be the `launch_config_name` followed by a hyphen followed by a hash of the `launch_config` dict contents.

**availability_zones** List of availability zones for the group.

**min_size** Minimum size of the group.

**max_size** Maximum size of the group.

**desired_capacity** The desired capacity of the group.

**load_balancers** List of load balancers for the group. Once set this can not be updated (Amazon restriction).

**default_cooldown** Number of seconds after a Scaling Activity completes before any further scaling activities can start.

**health_check_type** The service you want the health status from, Amazon EC2 or Elastic Load Balancer (EC2 or ELB).

**health_check_period** Length of time in seconds after a new EC2 instance comes into service that Auto Scaling starts checking its health.

**placement_group** Physical location of your cluster placement group created in Amazon EC2. Once set this can not be updated (Amazon restriction).

**vpc_zone_identifier** A list of the subnet identifiers of the Virtual Private Cloud.

**tags** A list of tags. Example:

```
- key: 'key'
  value: 'value'
  propagate_at_launch: true
```

**termination_policies** A list of termination policies. Valid values are:

- `OldestInstance`
- `NewestInstance`
- `OldestLaunchConfiguration`
- `ClosestToNextInstanceHour`
- `Default`

If no value is specified, the `Default` value is used.

**suspended_processes** List of processes to be suspended. see http://docs.aws.amazon.com/AutoScaling/latest/DeveloperGuide/US_SuspendResume.html

**scaling_policies** List of scaling policies. Each policy is a dict of key-values described by http://boto.readthedocs.org/en/latest/ref/autoscale.html#boto.ec2.autoscale.policy.ScalingPolicy

**scaling_policies_from_pillar**: name of pillar dict that contains scaling policy settings. Scaling policies defined for this specific state will override those from pillar.

**scheduled_actions**: a dictionary of scheduled actions. Each key is the name of scheduled action and each

value is dictionary of options. For example:

```
- scheduled_actions:
    scale_up_at_10:
        desired_capacity: 4
        min_size: 3
        max_size: 5
        recurrence: "0 9 * * 1-5"
    scale_down_at_7:
        desired_capacity: 1
        min_size: 1
        max_size: 1
        recurrence: "0 19 * * 1-5"
```

**scheduled_actions_from_pillar**: name of pillar dict that contains scheduled_actions settings. Scheduled actions for this specific state will override those from pillar.

**alarms**: a dictionary of name->boto_cloudwatch_alarm sections to be associated with this ASG. All attributes should be specified except for dimension which will be automatically set to this ASG.

See the *salt.states.boto_cloudwatch_alarm* state for information about these attributes.

If any alarm actions include ":self:" this will be replaced with the asg name. For example, alarm_actions reading ``['scaling_policy:self:ScaleUp']" will map to the arn for this asg's scaling policy named ``ScaleUp". In addition, any alarms that have only scaling_policy as actions will be ignored if min_size is equal to max_size for this ASG.

**alarms_from_pillar**: name of pillar dict that contains alarm settings. Alarms defined for this specific state will override those from pillar.

**region** The region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

**notification_arn** The AWS arn that notifications will be sent to

**notification_arn_from_pillar** name of the pillar dict that contains `notifcation_arn` settings. A `notification_arn` defined for this specific state will override the one from pillar.

**notification_types** A list of event names that will trigger a notification. The list of valid notification types is:

- `autoscaling:EC2_INSTANCE_LAUNCH`
- `autoscaling:EC2_INSTANCE_LAUNCH_ERROR`
- `autoscaling:EC2_INSTANCE_TERMINATE`
- `autoscaling:EC2_INSTANCE_TERMINATE_ERROR`
- `autoscaling:TEST_NOTIFICATION`

**notification_types_from_pillar** name of the pillar dict that contains `notifcation_types` settings. `notification_types` defined for this specific state will override those from the pillar.

### 13.16.17 salt.states.boto_cfn

Connection module for Amazon Cloud Formation

New in version 2015.8.0.

**depends** boto

**configuration** This module accepts explicit AWS credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-ec2.html

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
keyid: GKTADJGHEIQSXMKKRBJ08H
key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

```
stack-present:
  boto_cfn.present:
    - name: mystack
    - template_body: salt://base/mytemplate.json
    - disable_rollback: true
    - region: eu-west-1
    - keyid: 'AKIAJHTMIQ2ASDFLASDF'
    - key: 'fdkjsafkljsASSADFalkfjasdf'
```

```
stack-absent:
  boto_cfn.absent:
    - name: mystack
```

salt.states.boto_cfn.**absent**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure cloud formation stack is absent.

name (string) – The name of the stack to delete.

region (string) - Region to connect to.

key (string) - Secret key to be used.

keyid (string) - Access key to be used.

profile (dict) - A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_cfn.**present**(*name*, *template_body=None*, *template_url=None*, *parameters=None*, *notification_arns=None*, *disable_rollback=None*, *timeout_in_minutes=None*, *capabilities=None*, *tags=None*, *on_failure=None*, *stack_policy_body=None*, *stack_policy_url=None*, *use_previous_template=None*, *stack_policy_during_update_body=None*, *stack_policy_during_update_url=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure cloud formation stack is present.

name (string) - Name of the stack.

template_body (string) – Structure containing the template body. Can also be loaded from a file by using salt://.

template_url (string) – Location of file containing the template body. The URL must point to a template located in an S3 bucket in the same region as the stack.

parameters (list) – A list of key/value tuples that specify input parameters for the stack. A 3-tuple (key, value, bool) may be used to specify the UsePreviousValue option.

notification_arns (list) – The Simple Notification Service (SNS) topic ARNs to publish stack related events. You can find your SNS topic ARNs using the SNS_console or your Command Line Interface (CLI).

disable_rollback (bool) – Indicates whether or not to rollback on failure.

timeout_in_minutes (integer) – The amount of time that can pass before the stack status becomes CREATE_FAILED; if DisableRollback is not set or is set to False, the stack will be rolled back.

capabilities (list) – The list of capabilities you want to allow in the stack. Currently, the only valid capability is 'CAPABILITY_IAM'.

tags (dict) – A set of user-defined Tags to associate with this stack, represented by key/value pairs. Tags defined for the stack are propagated to EC2 resources that are created as part of the stack. A maximum number of 10 tags can be specified.

on_failure (string) – Determines what action will be taken if stack creation fails. This must be one of: DO_NOTHING, ROLLBACK, or DELETE. You can specify either OnFailure or DisableRollback, but not both.

stack_policy_body (string) – Structure containing the stack policy body. Can also be loaded from a file by using salt://.

stack_policy_url (string) – Location of a file containing the stack policy. The URL must point to a policy (max size: 16KB) located in an S3 bucket in the same region as the stack.If you pass StackPolicyBody and StackPolicyURL, only StackPolicyBody is used.

use_previous_template (boolean) – Used only when templates are not the same. Set to True to use the previous template instead of uploading a new one via TemplateBody or TemplateURL.

stack_policy_during_update_body (string) – Used only when templates are not the same. Structure containing the temporary overriding stack policy body. If you pass StackPolicyDuringUpdateBody and StackPolicyDuringUpdateURL, only StackPolicyDuringUpdateBody is used. Can also be loaded from a file by using salt://.

stack_policy_during_update_url (string) – Used only when templates are not the same. Location of a file containing the temporary overriding stack policy. The URL must point to a policy (max size: 16KB) located in an S3 bucket in the same region as the stack. If you pass StackPolicyDuringUpdateBody and StackPolicyDuringUpdateURL, only StackPolicyDuringUpdateBody is used.

region (string) - Region to connect to.

key (string) - Secret key to be used.

keyid (string) - Access key to be used.

profile (dict) - A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

### 13.16.18 salt.states.boto_cloudtrail module

#### Manage CloudTrail Objects

New in version 2016.3.0.

Create and destroy CloudTrail objects. Be aware that this interacts with Amazon's services, and so may incur charges.

**depends**

- boto
- boto3

The dependencies listed above can be installed via package or pip.

This module accepts explicit vpc credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More information available here.

If IAM roles are not used you need to specify them either in a pillar file or in the minion's config file:

```
vpc.keyid: GKTADJGHEIQSXMKKRBJ08H
vpc.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

It's also possible to specify `key`, `keyid` and `region` via a profile, either passed in as a dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
        region: us-east-1
```

```
Ensure trail exists:
    boto_cloudtrail.present:
        - Name: mytrail
        - S3BucketName: mybucket
        - S3KeyPrefix: prefix
        - region: us-east-1
        - keyid: GKTADJGHEIQSXMKKRBJ08H
        - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

salt.states.boto_cloudtrail.**absent**(*name*, *Name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure trail with passed properties is absent.

**name** The name of the state definition.

**Name** Name of the trail.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_cloudtrail.**present**(*name*, *Name*, *S3BucketName*, *S3KeyPrefix=None*, *SnsTopicName=None*, *IncludeGlobalServiceEvents=True*, *EnableLogFileValidation=False*, *CloudWatchLogsLogGroupArn=None*, *CloudWatchLogsRoleArn=None*, *KmsKeyId=None*, *LoggingEnabled=True*, *Tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure trail exists.

**name** The name of the state definition

**Name** Name of the trail.

**S3BucketName** Specifies the name of the Amazon S3 bucket designated for publishing log files.

**S3KeyPrefix** Specifies the Amazon S3 key prefix that comes after the name of the bucket you have designated for log file delivery.

**SnsTopicName** Specifies the name of the Amazon SNS topic defined for notification of log file delivery. The maximum length is 256 characters.

**IncludeGlobalServiceEvents** Specifies whether the trail is publishing events from global services such as IAM to the log files.

**EnableLogFileValidation** Specifies whether log file integrity validation is enabled. The default is false.

**CloudWatchLogsLogGroupArn** Specifies a log group name using an Amazon Resource Name (ARN), a unique identifier that represents the log group to which CloudTrail logs will be delivered. Not required unless you specify CloudWatchLogsRoleArn.

**CloudWatchLogsRoleArn** Specifies the role for the CloudWatch Logs endpoint to assume to write to a user's log group.

**KmsKeyId** Specifies the KMS key ID to use to encrypt the logs delivered by CloudTrail. The value can be a an alias name prefixed by ``alias/'', a fully specified ARN to an alias, a fully specified ARN to a key, or a globally unique identifier.

**LoggingEnabled** Whether logging should be enabled for the trail

**Tags** A dictionary of tags that should be set on the trail

**region** Region to connect to.

**key** Secret key to be used.
**keyid** Access key to be used.
**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

### 13.16.19 salt.states.boto_cloudwatch_alarm

Manage Cloudwatch alarms

New in version 2014.7.0.

Create and destroy cloudwatch alarms. Be aware that this interacts with Amazon's services, and so may incur charges.

This module uses boto, which can be installed via package, or pip.

This module accepts explicit credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More Information available at:

http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-ec2.html

If IAM roles are not used you need to specify them either in a pillar or in the minion's config file:

```
cloudwatch.keyid: GKTADJGHEIQSXMKKRBJ08H
cloudwatch.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

It's also possible to specify key, keyid and region via a profile, either as a passed in dict, or as a string to pull from pillars or minion config:

```
myprofile:
  keyid: GKTADJGHEIQSXMKKRBJ08H
  key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
  region: us-east-1
```

```
my test alarm:
  boto_cloudwatch_alarm.present:
    - name: my test alarm
    - attributes:
        metric: ApproximateNumberOfMessagesVisible
        namespace: AWS/SQS
        statistic: Average
        comparison: ">="
        threshold: 20000.0
        period: 60
        evaluation_periods: 1
        description: test alarm via salt
        dimensions:
          QueueName:
            - the-sqs-queue-name
        alarm_actions:
          - arn:aws:sns:us-east-1:1111111:myalerting-action
```

`salt.states.boto_cloudwatch_alarm.`**`absent`**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure the named cloudwatch alarm is deleted.
**name** Name of the alarm.
**region** Region to connect to.

**key** Secret key to be used.
**keyid** Access key to be used.
**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_cloudwatch_alarm.**present**(*name*, *attributes*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure the cloudwatch alarm exists.
**name** Name of the alarm
**attributes** A dict of key/value cloudwatch alarm attributes.
**region** Region to connect to.
**key** Secret key to be used.
**keyid** Access key to be used.
**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

### 13.16.20 salt.states.boto_datapipeline module

Manage Data Pipelines

New in version 2016.3.0.

Be aware that this interacts with Amazon's services, and so may incur charges.

This module uses `boto3`, which can be installed via package, or pip.

This module accepts explicit AWS credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More information available here.

If IAM roles are not used you need to specify them either in a pillar file or in the minion's config file:

```
datapipeline.keyid: GKTADJGHEIQSXMKKRBJ08H
datapipeline.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

It's also possible to specify `key`, `keyid` and `region` via a profile, either passed in as a dict, or as a string to pull from pillars or minion config:

```
myprofile:
  keyid: GKTADJGHEIQSXMKKRBJ08H
  key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
  region: us-east-1
```

```
Ensure daily data pipeline exists:
  boto_datapipeline.present:
    - name: my-datapipeline
    - pipeline_objects:
        DefaultSchedule:
          name: Every 1 day
          fields:
            period: 1 Day
            type: Schedule
            startAt: FIRST_ACTIVATION_DATE_TIME
    - parameter_values:
        myDDBTableName: my-dynamo-table
```

salt.states.boto_datapipeline.**absent**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure a pipeline with the service_name does not exist

**name** Name of the service to ensure a data pipeline does not exist for.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_datapipeline.**present**(*name*, *pipeline_objects=None*, *pipeline_objects_from_pillars='boto_datapipeline_pipeline_objects'*, *parameter_objects=None*, *parameter_objects_from_pillars='boto_datapipeline_parameter_objects'*, *parameter_values=None*, *parameter_values_from_pillars='boto_datapipeline_parameter_values'*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure the data pipeline exists with matching definition.

**name** Name of the service to ensure a data pipeline exists for.

**pipeline_objects** Pipeline objects to use. Will override objects read from pillars.

**pipeline_objects_from_pillars** The pillar key to use for lookup.

**parameter_objects** Parameter objects to use. Will override objects read from pillars.

**parameter_objects_from_pillars** The pillar key to use for lookup.

**parameter_values** Parameter values to use. Will override values read from pillars.

**parameter_values_from_pillars** The pillar key to use for lookup.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

## 13.16.21 salt.states.boto_dynamodb

### Manage DynamoDB Tables

New in version 2015.5.0.

Create and destroy DynamoDB tables. Be aware that this interacts with Amazon's services, and so may incur charges.

This module uses `boto`, which can be installed via package, or pip.

This module accepts explicit DynamoDB credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More information available here.

If IAM roles are not used you need to specify them either in a pillar file or in the minion's config file:

```
keyid: GKTADJGHEIQSXMKKRBJ08H
key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
region: us-east-1
```

It's also possible to specify `key`, `keyid` and `region` via a profile, either passed in as a dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
```

```
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
        region: us-east-1
```

```
Ensure DynamoDB table does not exist:
  boto_dynamodb.absent:
    - table_name: new_table
    - keyid: GKTADJGHEIQSXMKKRBJ08H
    - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    - region: us-east-1

Ensure DynamoDB table exists:
  boto_dynamodb.present:
    - table_name: new_table
    - read_capacity_units: 1
    - write_capacity_units: 2
    - hash_key: primary_id
    - hash_key_data_type: N
    - range_key: start_timestamp
    - range_key_data_type: N
    - keyid: GKTADJGHEIQSXMKKRBJ08H
    - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    - region: us-east-1
    - local_indexes:
        - index:
            - name: "primary_id_end_timestamp_index"
            - hash_key: primary_id
            - hash_key_data_type: N
            - range_key: end_timestamp
            - range_key_data_type: N
    - global_indexes:
        - index:
            - name: "name_end_timestamp_index"
            - hash_key: name
            - hash_key_data_type: S
            - range_key: end_timestamp
            - range_key_data_type: N
            - read_capacity_units: 3
            - write_capacity_units: 4
```

It's possible to specify cloudwatch alarms that will be setup along with the DynamoDB table. Note the alarm name will be defined by the name attribute provided, plus the DynamoDB resource name.

```
Ensure DynamoDB table exists:
  boto_dynamodb.present:
    - name: new_table
    - read_capacity_units: 1
    - write_capacity_units: 2
    - hash_key: primary_id
    - hash_key_data_type: N
    - range_key: start_timestamp
    - range_key_data_type: N
    - alarms:
        ConsumedWriteCapacityUnits:
           name: 'DynamoDB ConsumedWriteCapacityUnits **MANAGED BY SALT**'
           attributes:
             metric: ConsumedWriteCapacityUnits
             namespace: AWS/DynamoDB
```

```
              statistic: Sum
              comparison: '>='
              # threshold_percent is used to calculate the actual threshold
              # based on the provisioned capacity for the table.
              threshold_percent: 0.75
              period: 300
              evaluation_periods: 2
              unit: Count
              description: 'DynamoDB ConsumedWriteCapacityUnits'
              alarm_actions: [ 'arn:aws:sns:us-east-1:1234:my-alarm' ]
              insufficient_data_actions: []
              ok_actions: [ 'arn:aws:sns:us-east-1:1234:my-alarm' ]
    - keyid: GKTADJGHEIQSXMKKRBJ08H
    - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    - region: us-east-1
```

You can also use alarms from pillars, and override values from the pillar alarms by setting overrides on the resource. Note that `boto_dynamodb_alarms' will be used as a default value for all resources, if defined and can be used to ensure alarms are always set for a resource.

Setting the alarms in a pillar:

```
boto_dynamodb_alarms:
  ConsumedWriteCapacityUnits:
    name: 'DynamoDB ConsumedWriteCapacityUnits **MANAGED BY SALT**'
    attributes:
      metric: ConsumedWriteCapacityUnits
      namespace: AWS/DynamoDB
      statistic: Sum
      comparison: '>='
      # threshold_percent is used to calculate the actual threshold
      # based on the provisioned capacity for the table.
      threshold_percent: 0.75
      period: 300
      evaluation_periods: 2
      unit: Count
      description: 'DynamoDB ConsumedWriteCapacityUnits'
      alarm_actions: [ 'arn:aws:sns:us-east-1:1234:my-alarm' ]
      insufficient_data_actions: []
      ok_actions: [ 'arn:aws:sns:us-east-1:1234:my-alarm' ]

Ensure DynamoDB table exists:
  boto_dynamodb.present:
    - name: new_table
    - read_capacity_units: 1
    - write_capacity_units: 2
    - hash_key: primary_id
    - hash_key_data_type: N
    - range_key: start_timestamp
    - range_key_data_type: N
    - alarms:
        ConsumedWriteCapacityUnits:
          attributes:
            threshold_percent: 0.90
            period: 900
```

salt.states.boto_dynamodb.**absent**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure the DynamoDB table does not exist.

**name** Name of the DynamoDB table.
**region** Region to connect to.
**key** Secret key to be used.
**keyid** Access key to be used.
**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_dynamodb.**present**(*name=None*, *table_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *read_capacity_units=None*, *write_capacity_units=None*, *alarms=None*, *alarms_from_pillar='boto_dynamodb_alarms'*, *hash_key=None*, *hash_key_data_type=None*, *range_key=None*, *range_key_data_type=None*, *local_indexes=None*, *global_indexes=None*)

Ensure the DynamoDB table exists. Note: all properties of the table can only be set during table creation. Adding or changing indexes or key schema cannot be done after table creation
**name** Name of the DynamoDB table
**table_name** Name of the DynamoDB table (deprecated)
**region** Region to connect to.
**key** Secret key to be used.
**keyid** Access key to be used.
**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.
**read_capacity_units** The read throughput for this table
**write_capacity_units** The write throughput for this table
**hash_key** The name of the attribute that will be used as the hash key for this table
**hash_key_data_type** The DynamoDB datatype of the hash key
**range_key** The name of the attribute that will be used as the range key for this table
**range_key_data_type** The DynamoDB datatype of the range key
**local_indexes** The local indexes you would like to create
**global_indexes** The local indexes you would like to create

### 13.16.22 salt.states.boto_ec2

Manage EC2

New in version 2015.8.0.

This module provides an interface to the Elastic Compute Cloud (EC2) service from AWS.

The below code creates a key pair:

```
create-key-pair:
  boto_ec2.key_present:
    - name: mykeypair
    - save_private: /root/
    - region: eu-west-1
    - keyid: GKTADJGHEIQSXMKKRBJ08H
    - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

```
import-key-pair:
   boto_ec2.key_present:
    - name: mykeypair
    - upload_public: 'ssh-rsa AAAA'
    - keyid: GKTADJGHEIQSXMKKRBJ08H
    - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

You can also use salt:// in order to define the public key.

```
import-key-pair:
   boto_ec2.key_present:
    - name: mykeypair
    - upload_public: salt://mybase/public_key.pub
    - keyid: GKTADJGHEIQSXMKKRBJ08H
    - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

The below code deletes a key pair:

```
delete-key-pair:
  boto_ec2.key_absent:
    - name: mykeypair
    - region: eu-west-1
    - keyid: GKTADJGHEIQSXMKKRBJ08H
    - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

salt.states.boto_ec2.**eni_absent**(*name*, *release_eip=False*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure the EC2 ENI is absent.

New in version 2016.3.0.

**name** Name tag associated with the ENI.

**release_eip** True/False - release any EIP associated with the ENI

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_ec2.**eni_present**(*name*, *subnet_id=None*, *subnet_name=None*, *private_ip_address=None*, *description=None*, *groups=None*, *source_dest_check=True*, *allocate_eip=False*, *arecords=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure the EC2 ENI exists.

New in version 2016.3.0.

**name** Name tag associated with the ENI.

**subnet_id** The VPC subnet ID the ENI will exist within.

**subnet_name** The VPC subnet name the ENI will exist within.

**private_ip_address** The private ip address to use for this ENI. If this is not specified AWS will automatically assign a private IP address to the ENI. Must be specified at creation time; will be ignored afterward.

**description** Description of the key.

**groups** A list of security groups to apply to the ENI.

**source_dest_check** Boolean specifying whether source/destination checking is enabled on the ENI.

**allocate_eip** True/False - allocate and associate an EIP to the ENI

New in version 2016.3.0.

**arecords** A list of arecord dicts with attributes needed for the DNS add_record state. By default the boto_route53.add_record state will be used, which requires: name, zone, ttl, and identifier. See the boto_route53 state for information about these attributes. Other DNS modules can be called by specifying the provider keyword. By default, the private ENI IP address will be used, set `public: True' in the arecord dict to use the ENI's public IP address

New in version 2016.3.0.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_ec2.**instance_absent**(*name*, *instance_name=None*, *instance_id=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure an EC2 instance does not exist (is stopped and removed).

**name** (string) - The name of the state definition.

**instance_name** (string) - The name of the instance.

**instance_id** (string) - The ID of the instance.

**region** (string) - Region to connect to.

**key** (string) - Secret key to be used.

**keyid** (string) - Access key to be used.

**profile** (variable) - A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

New in version 2016.3.0.

salt.states.boto_ec2.**instance_present**(*name*, *instance_name=None*, *instance_id=None*, *image_id=None*, *image_name=None*, *tags=None*, *key_name=None*, *security_groups=None*, *user_data=None*, *instance_type=None*, *placement=None*, *kernel_id=None*, *ramdisk_id=None*, *vpc_id=None*, *vpc_name=None*, *monitoring_enabled=None*, *subnet_id=None*, *subnet_name=None*, *private_ip_address=None*, *block_device_map=None*, *disable_api_termination=None*, *instance_initiated_shutdown_behavior=None*, *placement_group=None*, *client_token=None*, *security_group_ids=None*, *security_group_names=None*, *additional_info=None*, *tenancy=None*, *instance_profile_arn=None*, *instance_profile_name=None*, *ebs_optimized=None*, *network_interfaces=None*, *attributes=None*, *target_state=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure an EC2 instance is running with the given attributes and state.

**name** (string) - The name of the state definition. Recommended that this match the instance_name attribute (generally the FQDN of the instance).

**instance_name** (string) - The name of the instance, generally its FQDN. Exclusive with `instance_id'.

**instance_id** (string) - The ID of the instance (if known). Exclusive with `instance_name'.

**image_id** (string) – The ID of the AMI image to run.

**image_name** (string) – The name of the AMI image to run. NOT IMPLEMENTED.

**tags** (dict) - Tags to apply to the instance.

**key_name** (string) – The name of the key pair with which to launch instances.

**security_groups** (list of strings) – The names of the EC2 classic security groups with which to associate instances

**user_data** (string) – The Base64-encoded MIME user data to be made available to the instance(s) in this reservation.

**instance_type** (string) – The EC2 instance size/type. Note that only certain types are compatible with HVM based AMIs.

**placement** (string) – The Availability Zone to launch the instance into.

**kernel_id** (string) – The ID of the kernel with which to launch the instances.

**ramdisk_id** (string) – The ID of the RAM disk with which to launch the instances.

**vpc_id** (string) - The ID of a VPC to attach the instance to.

**vpc_name** (string) - The name of a VPC to attach the instance to.
**monitoring_enabled** (bool) – Enable detailed CloudWatch monitoring on the instance.
**subnet_id** (string) – The ID of the subnet within which to launch the instances for VPC.
**subnet_name** (string) – The name of the subnet within which to launch the instances for VPC.
**private_ip_address** (string) – If you're using VPC, you can optionally use this parameter to assign the instance a specific available IP address from the subnet (e.g., 10.0.0.25).
**block_device_map** (boto.ec2.blockdevicemapping.BlockDeviceMapping) – A BlockDeviceMapping data structure describing the EBS volumes associated with the Image.
**disable_api_termination** (bool) – If True, the instances will be locked and will not be able to be terminated via the API.
**instance_initiated_shutdown_behavior** (string) – Specifies whether the instance stops or terminates on instance-initiated shutdown. Valid values are:
- `stop'
- `terminate'

**placement_group** (string) – If specified, this is the name of the placement group in which the instance(s) will be launched.
**client_token** (string) – Unique, case-sensitive identifier you provide to ensure idempotency of the request. Maximum 64 ASCII characters.
**security_group_ids** (list of strings) – The IDs of the VPC security groups with which to associate instances.
**security_group_names** (list of strings) – The names of the VPC security groups with which to associate instances.
**additional_info** (string) – Specifies additional information to make available to the instance(s).
**tenancy** (string) – The tenancy of the instance you want to launch. An instance with a tenancy of 'dedicated' runs on single-tenant hardware and can only be launched into a VPC. Valid values are:"default" or "dedicated". NOTE: To use dedicated tenancy you MUST specify a VPC subnet-ID as well.
**instance_profile_arn** (string) – The Amazon resource name (ARN) of the IAM Instance Profile (IIP) to associate with the instances.
**instance_profile_name** (string) – The name of the IAM Instance Profile (IIP) to associate with the instances.
**ebs_optimized** (bool) – Whether the instance is optimized for EBS I/O. This optimization provides dedicated throughput to Amazon EBS and a tuned configuration stack to provide optimal EBS I/O performance. This optimization isn't available with all instance types.
**network_interfaces** (boto.ec2.networkinterface.NetworkInterfaceCollection) – A NetworkInterfaceCollection data structure containing the ENI specifications for the instance.
**attributes** (dict) - Instance attributes and value to be applied to the instance. Available options are:
- instanceType - A valid instance type (m1.small)
- kernel - Kernel ID (None)
- ramdisk - Ramdisk ID (None)
- userData - Base64 encoded String (None)
- disableApiTermination - Boolean (true)
- instanceInitiatedShutdownBehavior - stop|terminate
- blockDeviceMapping - List of strings - ie: ['/dev/sda=false']
- sourceDestCheck - Boolean (true)
- groupSet - Set of Security Groups or IDs
- ebsOptimized - Boolean (false)
- sriovNetSupport - String - ie: 'simple'

**target_state** (string) - The desired target state of the instance. Available options are:
- running
- stopped

**region** (string) - Region to connect to.
**key** (string) - Secret key to be used.
**keyid** (string) - Access key to be used.
**profile** (variable) - A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.
New in version 2016.3.0.

salt.states.boto_ec2.**key_absent**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)
Deletes a key pair

salt.states.boto_ec2.**key_present**(*name*, *save_private=None*, *upload_public=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)
Ensure key pair is present.

salt.states.boto_ec2.**snapshot_created**(*name*, *ami_name*, *instance_name*, *wait_until_available=True*, *wait_timeout_seconds=300*, ***kwargs*)
Create a snapshot from the given instance

New in version 2016.3.0.

### 13.16.23 salt.states.boto_elasticache

#### Manage Elasticache

New in version 2014.7.0.

Create, destroy and update Elasticache clusters. Be aware that this interacts with Amazon's services, and so may incur charges.

Note: This module currently only supports creation and deletion of elasticache resources and will not modify clusters when their configuration changes in your state files.

This module uses `boto`, which can be installed via package, or pip.

This module accepts explicit elasticache credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More information available here.

If IAM roles are not used you need to specify them either in a pillar file or in the minion's config file:

```
elasticache.keyid: GKTADJGHEIQSXMKKRBJ08H
elasticache.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

It's also possible to specify `key`, `keyid` and `region` via a profile, either passed in as a dict, or as a string to pull from pillars or minion config:

```
myprofile:
  keyid: GKTADJGHEIQSXMKKRBJ08H
  key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

```
Ensure myelasticache exists:
  boto_elasticache.present:
    - name: myelasticache
    - engine: redis
    - cache_node_type: cache.t1.micro
    - num_cache_nodes: 1
    - notification_topic_arn: arn:aws:sns:us-east-1:879879:my-sns-topic
    - region: us-east-1
    - keyid: GKTADJGHEIQSXMKKRBJ08H
    - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs

# Using a profile from pillars
Ensure myelasticache exists:
  boto_elasticache.present:
```

```
    - name: myelasticache
    - engine: redis
    - cache_node_type: cache.t1.micro
    - num_cache_nodes: 1
    - notification_topic_arn: arn:aws:sns:us-east-1:879879:my-sns-topic
    - region: us-east-1
    - profile: myprofile

# Passing in a profile
Ensure myelasticache exists:
  boto_elasticache.present:
    - name: myelasticache
    - engine: redis
    - cache_node_type: cache.t1.micro
    - num_cache_nodes: 1
    - notification_topic_arn: arn:aws:sns:us-east-1:879879:my-sns-topic
    - region: us-east-1
    - profile:
        keyid: GKTADJGHEIQSXMKKRBJ08H
        key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

salt.states.boto_elasticache.**absent**(*name*, *wait=True*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure the named elasticache cluster is deleted.

**name** Name of the cache cluster.

**wait** Boolean. Wait for confirmation from boto that the cluster is in the deleting state.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_elasticache.**creategroup**(*name*, *primary_cluster_id*, *replication_group_description*, *wait=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure the a replication group is create.

**name** Name of replication group

**wait** Waits for the group to be available

**primary_cluster_id** Name of the master cache node

**replication_group_description** Description for the group

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_elasticache.**present**(*name*, *engine=None*, *cache_node_type=None*, *num_cache_nodes=None*, *preferred_availability_zone=None*, *port=None*, *cache_parameter_group_name=None*, *cache_security_group_names=None*, *replication_group_id=None*, *auto_minor_version_upgrade=True*, *security_group_ids=None*, *cache_subnet_group_name=None*, *engine_version=None*, *notification_topic_arn=None*, *preferred_maintenance_window=None*, *wait=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure the cache cluster exists.

**name** Name of the cache cluster (cache cluster id).

**engine** The name of the cache engine to be used for this cache cluster. Valid values are memcached or redis.

**cache_node_type** The compute and memory capacity of the nodes in the cache cluster. cache.t1.micro, cache.m1.small, etc. See: http://boto.readthedocs.org/en/latest/ref/elasticache.html#boto.elasticache.layer1.ElastiCacheConnection.create_cache_cluster

**num_cache_nodes** The number of cache nodes that the cache cluster will have.

**preferred_availability_zone** The EC2 Availability Zone in which the cache cluster will be created. All cache nodes belonging to a cache cluster are placed in the preferred availability zone.

**port** The port number on which each of the cache nodes will accept connections.

**cache_parameter_group_name** The name of the cache parameter group to associate with this cache cluster. If this argument is omitted, the default cache parameter group for the specified engine will be used.

**cache_security_group_names** A list of cache security group names to associate with this cache cluster. Use this parameter only when you are creating a cluster outside of a VPC.

**replication_group_id** The replication group to which this cache cluster should belong. If this parameter is specified, the cache cluster will be added to the specified replication group as a read replica; otherwise, the cache cluster will be a standalone primary that is not part of any replication group.

**auto_minor_version_upgrade** Determines whether minor engine upgrades will be applied automatically to the cache cluster during the maintenance window. A value of True allows these upgrades to occur; False disables automatic upgrades.

**security_group_ids** One or more VPC security groups associated with the cache cluster. Use this parameter only when you are creating a cluster in a VPC.

**cache_subnet_group_name** The name of the cache subnet group to be used for the cache cluster. Use this parameter only when you are creating a cluster in a VPC.

**engine_version** The version number of the cache engine to be used for this cluster.

**notification_topic_arn** The Amazon Resource Name (ARN) of the Amazon Simple Notification Service (SNS) topic to which notifications will be sent. The Amazon SNS topic owner must be the same as the cache cluster owner.

**preferred_maintenance_window** The weekly time range (in UTC) during which system maintenance can occur. Example: sun:05:00-sun:09:00

**wait** Boolean. Wait for confirmation from boto that the cluster is in the available state.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_elasticache.**subnet_group_absent**(*name*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

salt.states.boto_elasticache.**subnet_group_present**(*name*, *subnet_ids*, *description*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure ElastiCache subnet group exists.

New in version 2015.8.0.
**name** The name for the ElastiCache subnet group. This value is stored as a lowercase string.
**subnet_ids** A list of VPC subnet IDs for the cache subnet group.
**description** Subnet group description.
**tags** A list of tags.
**region** Region to connect to.
**key** Secret key to be used.
**keyid** Access key to be used.
**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

### 13.16.24 salt.states.boto_elb

Manage ELBs

New in version 2014.7.0.

Create and destroy ELBs. Be aware that this interacts with Amazon's services, and so may incur charges.

This module uses `boto`, which can be installed via package, or pip.

This module accepts explicit elb credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More information available here.

If IAM roles are not used you need to specify them either in a pillar file or in the minion's config file:

```
elb.keyid: GKTADJGHEIQSXMKKRBJ08H
elb.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

It's also possible to specify `key`, `keyid` and `region` via a profile, either passed in as a dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

```
Ensure myelb ELB exists:
    boto_elb.present:
        - name: myelb
        - region: us-east-1
        - availability_zones:
            - us-east-1a
            - us-east-1c
            - us-east-1d
        - keyid: GKTADJGHEIQSXMKKRBJ08H
        - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
        - listeners:
            - elb_port: 443
              instance_port: 80
              elb_protocol: HTTPS
              instance_protocol: HTTP
              certificate: 'arn:aws:iam::1111111:server-certificate/mycert'
              policies:
                  - my-ssl-policy
```

```
                - cookie-policy
            - elb_port: 8210
              instance_port: 8210
              elb_protocol: TCP
        - backends:
            - instance_port: 80
              policies:
                - enable-proxy-protocol
        - health_check:
            target: 'HTTP:80/'
        - attributes:
            cross_zone_load_balancing:
              enabled: true
            access_log:
              enabled: true
              s3_bucket_name: 'mybucket'
              s3_bucket_prefix: 'my-logs'
              emit_interval: 5
            connecting_settings:
              idle_timeout: 60
        - cnames:
            - name: mycname.example.com.
              zone: example.com.
              ttl: 60
            - name: myothercname.example.com.
              zone: example.com.
        - security_groups:
            - my-security-group
        - policies:
            - policy_name: my-ssl-policy
              policy_type: SSLNegotiationPolicyType
              policy:
                Protocol-TLSv1.2: true
                Protocol-SSLv3: false
                Server-Defined-Cipher-Order: true
                ECDHE-ECDSA-AES128-GCM-SHA256: true
            - policy_name: cookie-policy
              policy_type: LBCookieStickinessPolicyType
              policy: {}  # no policy means this is a session cookie
            - policy_name: enable-proxy-protocol
              policy_type: ProxyProtocolPolicyType
              policy:
                ProxyProtocol: true

# Using a profile from pillars
Ensure myelb ELB exists:
    boto_elb.present:
        - name: myelb
        - region: us-east-1
        - profile: myelbprofile

# Passing in a profile
Ensure myelb ELB exists:
    boto_elb.present:
        - name: myelb
        - region: us-east-1
        - profile:
            keyid: GKTADJGHEIQSXMKKRBJ08H
```

```
            key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

It's possible to specify attributes from pillars by specifying a pillar. You can override the values defined in the pillard by setting the attributes on the resource. The module will use the default pillar key `boto_elb_attributes', which allows you to set default attributes for all ELB resources.

Setting the attributes pillar:

```
my_elb_attributes:
  cross_zone_load_balancing:
    enabled: true
  connection_draining:
    enabled: true
    timeout: 20
  access_log:
    enabled: true
    s3_bucket_name: 'mybucket'
    s3_bucket_prefix: 'my-logs'
    emit_interval: 5
```

Overriding the attribute values on the resource:

```
Ensure myelb ELB exists:
    boto_elb.present:
        - name: myelb
        - region: us-east-1
        - attributes_from_pillar: my_elb_attributes
        # override cross_zone_load_balancing:enabled
        - attributes:
            cross_zone_load_balancing:
              enabled: false
        - profile: myelbprofile
```

It's possible to specify cloudwatch alarms that will be setup along with the ELB. Note the alarm name will be defined by the name attribute provided, plus the ELB resource name.

```
Ensure myelb ELB exists:
    boto_elb.present:
        - name: myelb
        - region: us-east-1
        - profile: myelbprofile
        - alarms:
            UnHealthyHostCount:
              name: 'ELB UnHealthyHostCount **MANAGED BY SALT**'
              attributes:
                metric: UnHealthyHostCount
                namespace: AWS/ELB
                statistic: Average
                comparison: '>='
                threshold: 1.0
                period: 600
                evaluation_periods: 6
                unit: null
                description: ELB UnHealthyHostCount
                alarm_actions: ['arn:aws:sns:us-east-1:12345:myalarm']
                insufficient_data_actions: []
                ok_actions: ['arn:aws:sns:us-east-1:12345:myalarm']
```

You can also use alarms from pillars, and override values from the pillar alarms by setting overrides on the resource. Note that `boto_elb_alarms' will be used as a default value for all resources, if defined and can be used to ensure alarms are always set for a resource.

Setting the alarms in a pillar:

```
my_elb_alarm:
  UnHealthyHostCount:
    name: 'ELB UnHealthyHostCount **MANAGED BY SALT**'
    attributes:
      metric: UnHealthyHostCount
      namespace: AWS/ELB
      statistic: Average
      comparison: '>='
      threshold: 1.0
      period: 600
      evaluation_periods: 6
      unit: null
      description: ELB UnHealthyHostCount
      alarm_actions: ['arn:aws:sns:us-east-1:12345:myalarm']
      insufficient_data_actions: []
      ok_actions: ['arn:aws:sns:us-east-1:12345:myalarm']
```

Overriding the alarm values on the resource:

```
Ensure myelb ELB exists:
    boto_elb.present:
        - name: myelb
        - region: us-east-1
        - profile: myelbprofile
        - alarms_from_pillar: my_elb_alarm
        # override UnHealthyHostCount:attributes:threshold
        - alarms:
            UnHealthyHostCount:
              attributes:
                threshold: 2.0
```

Tags can also be set:

New in version 2016.3.0.

```
Ensure myelb ELB exists:
    boto_elb.present:
        - name: myelb
        - region: us-east-1
        - profile: myelbprofile
        - tags:
            MyTag: 'My Tag Value'
            OtherTag: 'My Other Value'
```

`salt.states.boto_elb.`**`absent`**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure an ELB does not exist

**name** name of the ELB

salt.states.boto_elb.**present**(*name*, *listeners*, *availability_zones=None*, *subnets=None*, *security_groups=None*, *scheme='internet-facing'*, *health_check=None*, *attributes=None*, *attributes_from_pillar='boto_elb_attributes'*, *cnames=None*, *alarms=None*, *alarms_from_pillar='boto_elb_alarms'*, *policies=None*, *policies_from_pillar='boto_elb_policies'*, *backends=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *wait_for_sync=True*, *tags=None*)

Ensure the ELB exists.

**name** Name of the ELB.

**availability_zones** A list of availability zones for this ELB.

**listeners** A list of listener lists; example:

```
[
    ['443', 'HTTPS', 'arn:aws:iam::1111111:server-certificate/mycert'],
    ['8443', '80', 'HTTPS', 'HTTP', 'arn:aws:iam::1111111:server-certificate/
↪mycert']
]
```

**subnets** A list of subnet IDs in your VPC to attach to your LoadBalancer.

**security_groups** The security groups assigned to your LoadBalancer within your VPC. Must be passed either as a list or a comma-separated string.

For example, a list:

```
- security_groups:
  - secgroup-one
  - secgroup-two
```

Or as a comma-separated string:

```
- security_groups: secgroup-one,secgroup-two
```

**scheme** The type of a LoadBalancer, `internet-facing` or `internal`. Once set, can not be modified.

**health_check** A dict defining the health check for this ELB.

**attributes** A dict defining the attributes to set on this ELB. Unknown keys will be silently ignored.

See the *salt.modules.boto_elb.set_attributes* function for recognized attributes.

**attributes_from_pillar** name of pillar dict that contains attributes. Attributes defined for this specific state will override those from pillar.

**cnames** A list of cname dicts with attributes needed for the DNS add_record state. By default the boto_route53.add_record state will be used, which requires: name, zone, ttl, and identifier. See the boto_route53 state for information about these attributes. Other DNS modules can be called by specifying the provider keyword. the cnames dict will be passed to the state as kwargs.

See the *salt.states.boto_route53* state for information about these attributes.

**alarms**: a dictionary of name->boto_cloudwatch_alarm sections to be associated with this ELB. All attributes should be specified except for dimension which will be automatically set to this ELB.

See the *salt.states.boto_cloudwatch_alarm* state for information about these attributes.

**alarms_from_pillar**: name of pillar dict that contains alarm settings. Alarms defined for this specific state will override those from pillar.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

**wait_for_sync** Wait for an INSYNC change status from Route53.

**tags** dict of tags

salt.states.boto_elb.**register_instances**(*name*, *instances*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Add EC2 instance(s) to an Elastic Load Balancer. Removing an instance from the `instances` list does not remove it from the ELB.

**name** The name of the Elastic Load Balancer to add EC2 instances to.

**instances** A list of EC2 instance IDs that this Elastic Load Balancer should distribute traffic to. This state will only ever append new instances to the ELB. EC2 instances already associated with this ELB will not be removed if they are not in the `instances` list.

New in version 2015.8.0.

```
add-instances:
  boto_elb.register_instances:
    - name: myloadbalancer
    - instances:
      - instance-id1
      - instance-id2
```

### 13.16.25 salt.states.boto_iam

#### Manage IAM objects

New in version 2015.8.0.

This module uses `boto`, which can be installed via package, or pip.

This module accepts explicit IAM credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More information available here.

It's also possible to specify `key`, `keyid` and `region` via a profile, either passed in as a dict, or as a string to pull from pillars or minion config:

```
delete-user:
  boto_iam.user_absent:
    - name: myuser
    - delete_keys: true
```

```
delete-keys:
  boto_iam.keys_absent:
    - access_keys:
      - 'AKIAJHTMIQ2ASDFLASDF'
      - 'PQIAJHTMIQ2ASRTLASFR'
    - user_name: myuser
```

```
create-user:
  boto_iam.user_present:
    - name: myuser
    - policies:
        mypolicy: |
            {
                "Version": "2012-10-17",
                "Statement": [{
                "Effect": "Allow",
                "Action": "*",
                "Resource": "*"}]
            }
```

```
    - password: NewPassword$$1
    - region: eu-west-1
    - keyid: 'AKIAJHTMIQ2ASDFLASDF'
    - key: 'fdkjsafkljsASSADFalkfjasdf'
```

```
create-group:
  boto_iam.group_present:
    - name: mygroup
    - users:
      - myuser
      - myuser1
    - policies:
        mypolicy: |
            {
                "Version": "2012-10-17",
                "Statement": [{
                "Effect": "Allow",
                "Action": "*",
                "Resource": "*"}]
            }
    - region: eu-west-1
    - keyid: 'AKIAJHTMIQ2ASDFLASDF'
    - key: 'safsdfsal;fdkjsafkljsASSADFalkfj'
```

```
change-policy:
  boto_iam.account_policy:
    - change_password: True
    - region: eu-west-1
    - keyid: 'AKIAJHTMIQ2ASDFLASDF'
    - key: 'safsdfsal;fdkjsafkljsASSADFalkfj'
```

```
create server certificate:
  boto_iam.server_cert_present:
    - name: mycert
    - public_key: salt://base/mycert.crt
    - private_key: salt://base/mycert.key
    - cert_chain: salt://base/mycert_chain.crt
    - region: eu-west-1
    - keyid: 'AKIAJHTMIQ2ASDFLASDF'
    - key: 'fdkjsafkljsASSADFalkfjasdf'
```

```
delete server certificate:
  boto_iam.server_cert_absent:
    - name: mycert
```

```
create keys for user:
  boto_iam.keys_present:
    - name: myusername
    - number: 2
    - save_dir: /root
    - region: eu-west-1
    - keyid: 'AKIAJHTMIQ2ASDFLASDF'
    - key: 'fdkjsafkljsASSADFalkfjasdf'
```

salt.states.boto_iam.**account_policy**(*allow_users_to_change_password=None*, *hard_expiry=None*, *max_password_age=None*, *minimum_password_length=None*, *password_reuse_prevention=None*, *require_lowercase_characters=None*, *require_numbers=None*, *require_symbols=None*, *require_uppercase_characters=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Change account policy.

New in version 2015.8.0.

**allow_users_to_change_password (bool)** Allows all IAM users in your account to use the AWS Management Console to change their own passwords.

**hard_expiry (bool)** Prevents IAM users from setting a new password after their password has expired.

**max_password_age (int)** The number of days that an IAM user password is valid.

**minimum_password_length (int)** The minimum number of characters allowed in an IAM user password.

**password_reuse_prevention (int)** Specifies the number of previous passwords that IAM users are prevented from reusing.

**require_lowercase_characters (bool)** Specifies whether IAM user passwords must contain at least one lowercase character from the ISO basic Latin alphabet (a to z).

**require_numbers (bool)** Specifies whether IAM user passwords must contain at least one numeric character (0 to 9).

**require_symbols (bool)** Specifies whether IAM user passwords must contain at least one of the following non-alphanumeric characters: ! @ # $ % ^ & * ( ) _ + - = [ ] { } | `

**require_uppercase_characters (bool)** Specifies whether IAM user passwords must contain at least one uppercase character from the ISO basic Latin alphabet (A to Z).

**region (string)** Region to connect to.

**key (string)** Secret key to be used.

**keyid (string)** Access key to be used.

**profile (dict)** A dict with region, key and keyid, or a pillar key (string)

salt.states.boto_iam.**group_present**(*name*, *policies=None*, *policies_from_pillars=None*, *users=None*, *path='/'*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

New in version 2015.8.0.

Ensure the IAM group is present

**name (string)** The name of the new group.

**path (string)** The path for the group, defaults to `/'

**policies (dict)** A dict of IAM group policy documents.

**policies_from_pillars (list)** A list of pillars that contain role policy dicts. Policies in the pillars will be merged in the order defined in the list and key conflicts will be handled by later defined keys overriding earlier defined keys. The policies defined here will be merged with the policies defined in the policies argument. If keys conflict, the keys in the policies argument will override the keys defined in policies_from_pillars.

**users (list)** A list of users to be added to the group.

**region (string)** Region to connect to.

**key (string)** Secret key to be used.

**keyid (string)** Access key to be used.

**profile (dict)** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_iam.**keys_absent**(*access_keys*, *user_name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

New in version 2015.8.0.

Ensure the IAM user access_key_id is absent.

**access_key_id (list)** A list of access key ids

**user_name (string)** The username of the user
**region (string)** Region to connect to.
**key (string)** Secret key to be used.
**keyid (string)** Access key to be used.
**profile (dict)** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_iam.**keys_present**(*name*, *number*, *save_dir*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

New in version 2015.8.0.

Ensure the IAM access keys are present.
**name (string)** The name of the new user.
**number (int)** Number of keys that user should have.
**save_dir (string)** The directory that the key/keys will be saved. Keys are saved to a file named according to the username privided.
**region (string)** Region to connect to.
**key (string)** Secret key to be used.
**keyid (string)** Access key to be used.
**profile (dict)** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_iam.**server_cert_absent**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Deletes a server certificate.

New in version 2015.8.0.
**name (string)** The name for the server certificate. Do not include the path in this value.
**region (string)** The name of the region to connect to.
**key (string)** The key to be used in order to connect
**keyid (string)** The keyid to be used in order to connect
**profile (string)** The profile that contains a dict of region, key, keyid

salt.states.boto_iam.**server_cert_present**(*name*, *public_key*, *private_key*, *cert_chain=None*, *path=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Crete server certificate.

New in version 2015.8.0.
**name (string)** The name for the server certificate. Do not include the path in this value.
**public_key (string)** The contents of the public key certificate in PEM-encoded format.
**private_key (string)** The contents of the private key in PEM-encoded format.
**cert_chain (string)** The contents of the certificate chain. This is typically a concatenation of the PEM-encoded public key certificates of the chain.
**path (string)** The path for the server certificate.
**region (string)** The name of the region to connect to.
**key (string)** The key to be used in order to connect
**keyid (string)** The keyid to be used in order to connect
**profile (string)** The profile that contains a dict of region, key, keyid

salt.states.boto_iam.**user_absent**(*name*, *delete_keys=True*, *delete_mfa_devices=True*, *delete_profile=True*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

New in version 2015.8.0.

Ensure the IAM user is absent. User cannot be deleted if it has keys.
**name (string)** The name of the new user.
**delete_keys (bool)** Delete all keys from user.

**delete_mfa_devices (bool)** Delete all mfa devices from user.

New in version 2016.3.0.

**delete_profile (bool)** Delete profile from user.

New in version 2016.3.0.

**region (string)** Region to connect to.

**key (string)** Secret key to be used.

**keyid (string)** Access key to be used.

**profile (dict)** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_iam.**user_present**(*name*, *policies=None*, *policies_from_pillars=None*, *password=None*, *path=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

New in version 2015.8.0.

Ensure the IAM user is present

**name (string)** The name of the new user.

**policies (dict)** A dict of IAM group policy documents.

**policies_from_pillars (list)** A list of pillars that contain role policy dicts. Policies in the pillars will be merged in the order defined in the list and key conflicts will be handled by later defined keys overriding earlier defined keys. The policies defined here will be merged with the policies defined in the policies argument. If keys conflict, the keys in the policies argument will override the keys defined in policies_from_pillars.

**password (string)** The password for the new user. Must comply with account policy.

**path (string)** The path of the user. Default is `/'.

New in version 2015.8.2.

**region (string)** Region to connect to.

**key (string)** Secret key to be used.

**keyid (string)** Access key to be used.

**profile (dict)** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

## 13.16.26 salt.states.boto_iam_role

### Manage IAM roles

New in version 2014.7.0.

This module uses `boto`, which can be installed via package, or pip.

This module accepts explicit IAM credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More information available here.

If IAM roles are not used you need to specify them either in a pillar file or in the minion's config file:

```
iam.keyid: GKTADJGHEIQSXMKKRBJ08H
iam.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

It's also possible to specify `key`, `keyid` and `region` via a profile, either passed in as a dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

Creating a role will automatically create an instance profile and associate it with the role. This is the default behavior of the AWS console.

```
myrole:
    boto_iam_role.present:
        - region: us-east-1
        - key: GKTADJGHEIQSXMKKRBJ08H
        - keyid: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
        - policies_from_pillars:
            - shared_iam_bootstrap_policy
        - policies:
            MySQSPolicy:
                Statement:
                  - Action:
                        - sqs:*
                    Effect: Allow
                    Resource:
                        - arn:aws:sqs:*:*:*
                    Sid: MyPolicySQS1
            MyS3Policy:
                Statement:
                  - Action:
                        - s3:GetObject
                    Effect: Allow
                    Resource:
                        - arn:aws:s3:*:*:mybucket/*

# Using a credentials profile from pillars
myrole:
    boto_iam_role.present:
        - profile: myiamprofile

# Passing in a credentials profile
myrole:
    boto_iam_role.present:
        - profile:
            key: GKTADJGHEIQSXMKKRBJ08H
            keyid: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
            region: us-east-1
```

If `delete_policies: False` is specified, existing policies that are not in the given list of policies will not be deleted. This allows manual modifications on the IAM role to be persistent. This functionality was added in 2015.8.0.

---

**Note**: When using the `profile` parameter and `region` is set outside of the profile group, region is ignored and a default region will be used.

If `region` is missing from the `profile` data set, `us-east-1` will be used as the default region.

---

`salt.states.boto_iam_role.`**`absent`**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure the IAM role is deleted.

**name** Name of the IAM role.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_iam_role.**present**(*name*, *policy_document=None*, *path=None*, *policies=None*, *policies_from_pillars=None*, *create_instance_profile=True*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *delete_policies=True*)

Ensure the IAM role exists.

**name** Name of the IAM role.

**policy_document** The policy that grants an entity permission to assume the role. (See http://boto.readthedocs.org/en/latest/ref/iam.html#boto.iam.connection.IAMConnection.create_role)

**path** The path to the role/instance profile. (See http://boto.readthedocs.org/en/latest/ref/iam.html#boto.iam.connection.IAMConnection.create_role)

**policies** A dict of IAM role policies.

**policies_from_pillars** A list of pillars that contain role policy dicts. Policies in the pillars will be merged in the order defined in the list and key conflicts will be handled by later defined keys overriding earlier defined keys. The policies defined here will be merged with the policies defined in the policies argument. If keys conflict, the keys in the policies argument will override the keys defined in policies_from_pillars.

**create_instance_profile** A boolean of whether or not to create an instance profile and associate it with this role.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

**delete_policies** Deletes existing policies that are not in the given list of policies. Default value is `True`. If `False` is specified, existing policies will not be deleted allowing manual modifications on the IAM role to be persistent.

New in version 2015.8.0.

## 13.16.27 salt.states.boto_iot module

### Manage IoT Objects

New in version 2016.3.0.

Create and destroy IoT objects. Be aware that this interacts with Amazon's services, and so may incur charges.

**depends**

- boto
- boto3

The dependencies listed above can be installed via package or pip.

This module accepts explicit vpc credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More information available here.

If IAM roles are not used you need to specify them either in a pillar file or in the minion's config file:

```
vpc.keyid: GKTADJGHEIQSXMKKRBJ08H
vpc.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

It's also possible to specify `key`, `keyid` and `region` via a profile, either passed in as a dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
        region: us-east-1
```

```
Ensure policy exists:
    boto_iot.policy_present:
        - policyName: mypolicy
        - policyDocument:
            Version: "2012-10-17"
            Statement:
              Action:
                - iot:Publish
              Resource:
                - "*"
              Effect: "Allow"
        - region: us-east-1
        - keyid: GKTADJGHEIQSXMKKRBJ08H
        - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs

Ensure topic rule exists:
    boto_iot.topic_rule_present:
        - ruleName: myrule
        - sql: "SELECT * FROM 'iot/test'"
        - description: 'test rule'
        - ruleDisabled: false
        - actions:
          - lambda:
              functionArn: "arn:aws:us-east-1:1234:function/functionname"
        - region: us-east-1
        - keyid: GKTADJGHEIQSXMKKRBJ08H
        - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

salt.states.boto_iot.**policy_absent**(*name*, *policyName*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure policy with passed properties is absent.

**name** The name of the state definition.

**policyName** Name of the policy.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_iot.**policy_attached**(*name*, *policyName*, *principal*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure policy is attached to the given principal.

**name** The name of the state definition

**policyName** Name of the policy.

**principal** The principal which can be a certificate ARN or a Cognito ID.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_iot.**policy_detached**(*name*, *policyName*, *principal*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure policy is attached to the given principal.

**name** The name of the state definition.

**policyName** Name of the policy.

**principal** The principal which can be a certificate ARN or a Cognito ID.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_iot.**policy_present**(*name*, *policyName*, *policyDocument*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure policy exists.

**name** The name of the state definition

**policyName** Name of the policy.

**policyDocument** The JSON document that describes the policy. The length of the policyDocument must be a minimum length of 1, with a maximum length of 2048, excluding whitespace.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_iot.**topic_rule_absent**(*name*, *ruleName*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure topic rule with passed properties is absent.

**name** The name of the state definition.

**ruleName** Name of the policy.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_iot.**topic_rule_present**(*name*, *ruleName*, *sql*, *actions*, *description=''*, *ruleDisabled=False*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure topic rule exists.

**name** The name of the state definition

**ruleName** Name of the rule.

**sql** The SQL statement used to query the topic.

**actions** The actions associated with the rule.

**description** The description of the rule.

**ruleDisable** Specifies whether the rule is disabled.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

### 13.16.28 salt.states.boto_kms

Manage KMS keys, key policies and grants.

New in version 2015.8.0.

Be aware that this interacts with Amazon's services, and so may incur charges.

This module uses `boto`, which can be installed via package, or pip.

This module accepts explicit kms credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More information available here.

If IAM roles are not used you need to specify them either in a pillar file or in the minion's config file:

```
elb.keyid: GKTADJGHEIQSXMKKRBJ08H
elb.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

It's also possible to specify `key`, `keyid` and `region` via a profile, either passed in as a dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

```
Ensure mykey key exists:
  boto_kms.key_present:
    - name: mykey
    - region: us-east-1

# Using a profile from pillars
Ensure mykey key exists:
  boto_kms.key_present:
    - name: mykey
    - region: us-east-1
    - profile: myprofile

# Passing in a profile
Ensure mykey key exists:
  boto_key.key_present:
    - name: mykey
    - region: us-east-1
    - profile:
        keyid: GKTADJGHEIQSXMKKRBJ08H
        key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

`salt.states.boto_kms.`**`key_present`**(*name*, *policy*, *description=None*, *key_usage=None*, *grants=None*, *manage_grants=False*, *key_rotation=False*, *enabled=True*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure the KMS key exists. KMS keys can not be deleted, so this function must be used to ensure the key is enabled or disabled.

**name** Name of the key.

**policy** Key usage policy.

**description** Description of the key.

**key_usage** Specifies the intended use of the key. Can only be set on creation, defaults to ENCRYPT_DECRYPT, which is also the only supported option.

**grants** A list of grants to apply to the key. Not currently implemented.

**manage_grants** Whether or not to manage grants. False by default, which will not manage any grants.

**key_rotation** Whether or not key rotation is enabled for the key. False by default.

**enabled** Whether or not the key is enabled. True by default.
**region** Region to connect to.
**key** Secret key to be used.
**keyid** Access key to be used.
**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

### 13.16.29 salt.states.boto_lambda module

#### Manage Lambda Functions

New in version 2016.3.0.

Create and destroy Lambda Functions. Be aware that this interacts with Amazon's services, and so may incur charges.

**depends**

- boto
- boto3

The dependencies listed above can be installed via package or pip.

This module accepts explicit vpc credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More information available here.

If IAM roles are not used you need to specify them either in a pillar file or in the minion's config file:

```
vpc.keyid: GKTADJGHEIQSXMKKRBJ08H
vpc.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

It's also possible to specify `key`, `keyid` and `region` via a profile, either passed in as a dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
        region: us-east-1
```

```
Ensure function exists:
    boto_lambda.function_present:
        - FunctionName: myfunction
        - Runtime: python2.7
        - Role: iam_role_name
        - Handler: entry_function
        - ZipFile: code.zip
        - S3Bucket: bucketname
        - S3Key: keyname
        - S3ObjectVersion: version
        - Description: "My Lambda Function"
        - Timeout: 3
        - MemorySize: 128
        - region: us-east-1
        - keyid: GKTADJGHEIQSXMKKRBJ08H
        - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

salt.states.boto_lambda.**alias_absent**(*name*, *FunctionName*, *Name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure alias with passed properties is absent.

**name** The name of the state definition.

**FunctionName** Name of the function.

**Name** Name of the alias.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_lambda.**alias_present**(*name*, *FunctionName*, *Name*, *FunctionVersion*, *Description=''*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure alias exists.

**name** The name of the state definition.

**FunctionName** Name of the function for which you want to create an alias.

**Name** The name of the alias to be created.

**FunctionVersion** Function version for which you are creating the alias.

**Description** A short, user-defined function description. Lambda does not use this value. Assign a meaningful description as you see fit.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_lambda.**event_source_mapping_absent**(*name*, *EventSourceArn*, *FunctionName*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure event source mapping with passed properties is absent.

**name** The name of the state definition.

**EventSourceArn** ARN of the event source.

**FunctionName** Name of the lambda function.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_lambda.**event_source_mapping_present**(*name*, *EventSourceArn*, *FunctionName*, *StartingPosition*, *Enabled=True*, *BatchSize=100*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure event source mapping exists.

**name** The name of the state definition.

**EventSourceArn** The Amazon Resource Name (ARN) of the Amazon Kinesis or the Amazon DynamoDB stream that is the event source.

**FunctionName** The Lambda function to invoke when AWS Lambda detects an event on the stream.

You can specify an unqualified function name (for example, ``Thumbnail'') or you can specify Amazon Resource Name (ARN) of the function (for example, ``arn:aws:lambda:us-west-2:account-id:function:ThumbNail''). AWS Lambda also allows you to specify only the account ID qualifier (for example, ``account-id:Thumbnail''). Note that the length constraint applies only to the ARN. If you

specify only the function name, it is limited to 64 character in length.

**StartingPosition** The position in the stream where AWS Lambda should start reading. (TRIM_HORIZON | LATEST)

**Enabled** Indicates whether AWS Lambda should begin polling the event source. By default, Enabled is true.

**BatchSize** The largest number of records that AWS Lambda will retrieve from your event source at the time of invoking your function. Your function receives an event with all the retrieved records. The default is 100 records.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_lambda.**function_absent**(*name*, *FunctionName*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure function with passed properties is absent.

**name** The name of the state definition.

**FunctionName** Name of the function.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_lambda.**function_present**(*name*, *FunctionName*, *Runtime*, *Role*, *Handler*, *ZipFile=None*, *S3Bucket=None*, *S3Key=None*, *S3ObjectVersion=None*, *Description=''*, *Timeout=3*, *MemorySize=128*, *Permissions=None*, *RoleRetries=5*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure function exists.

**name** The name of the state definition

**FunctionName** Name of the Function.

**Runtime** The Runtime environment for the function. One of `nodejs', `java8', or `python2.7'

**Role** The name or ARN of the IAM role that the function assumes when it executes your function to access any other AWS resources.

**Handler** The function within your code that Lambda calls to begin execution. For Node.js it is the module-name.*export* value in your function. For Java, it can be package.classname::handler or package.classname.

**ZipFile** A path to a .zip file containing your deployment package. If this is specified, S3Bucket and S3Key must not be specified.

**S3Bucket** Amazon S3 bucket name where the .zip file containing your package is stored. If this is specified, S3Key must be specified and ZipFile must NOT be specified.

**S3Key** The Amazon S3 object (the deployment package) key name you want to upload. If this is specified, S3Key must be specified and ZipFile must NOT be specified.

**S3ObjectVersion** The version of S3 object to use. Optional, should only be specified if S3Bucket and S3Key are specified.

**Description** A short, user-defined function description. Lambda does not use this value. Assign a meaningful description as you see fit.

**Timeout** The function execution time at which Lambda should terminate this function. Because the execution time has cost implications, we recommend you set this value based on your expected execution time. The default is 3 seconds.

**MemorySize** The amount of memory, in MB, your function is given. Lambda uses this memory size to infer the amount of CPU and memory allocated to your function. Your function use-case determines your CPU and memory requirements. For example, a database operation might need less memory compared

to an image processing function. The default value is 128 MB. The value must be a multiple of 64 MB.

**Permissions** A list of permission definitions to be added to the function's policy

**RoleRetries** IAM Roles may take some time to propagate to all regions once created. During that time function creation may fail; this state will atuomatically retry this number of times. The default is 5.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

### 13.16.30 salt.states.boto_lc

Manage Launch Configurations

New in version 2014.7.0.

Create and destroy Launch Configurations. Be aware that this interacts with Amazon's services, and so may incur charges.

A limitation of this module is that you can not modify launch configurations once they have been created. If a launch configuration with the specified name exists, this module will always report success, even if the specified configuration doesn't match. This is due to a limitation in Amazon's launch configuration API, as it only allows launch configurations to be created and deleted.

Also note that a launch configuration that's in use by an autoscale group can not be deleted until the autoscale group is no longer using it. This may affect the way in which you want to order your states.

This module uses `boto`, which can be installed via package, or pip.

This module accepts explicit autoscale credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More information available here.

If IAM roles are not used you need to specify them either in a pillar file or in the minion's config file:

```
asg.keyid: GKTADJGHEIQSXMKKRBJ08H
asg.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

It's also possible to specify `key`, `keyid` and `region` via a profile, either passed in as a dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

Credential information is shared with autoscale groups as launch configurations and autoscale groups are completely dependent on each other.

```
Ensure mylc exists:
  boto_lc.present:
    - name: mylc
    - image_id: ami-0b9c9f62
    - key_name: mykey
    - security_groups:
        - mygroup
    - instance_type: m1.small
    - instance_monitoring: true
```

```
    - block_device_mappings:
        - '/dev/sda1':
            size: 20
            volume_type: 'io1'
            iops: 220
            delete_on_termination: true
    - cloud_init:
        boothooks:
          'disable-master.sh': |
            #!/bin/bash
            echo "manual" > /etc/init/salt-master.override
        scripts:
          'run_salt.sh': |
            #!/bin/bash

            add-apt-repository -y ppa:saltstack/salt
            apt-get update
            apt-get install -y salt-minion
            salt-call state.highstate
    - region: us-east-1
    - keyid: GKTADJGHEIQSXMKKRBJ08H
    - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs

# Using a profile from pillars.
Ensure mylc exists:
  boto_lc.present:
    - name: mylc
    - image_id: ami-0b9c9f62
    - profile: myprofile

# Passing in a profile.
Ensure mylc exists:
  boto_lc.present:
    - name: mylc
    - image_id: ami-0b9c9f62
    - profile:
        keyid: GKTADJGHEIQSXMKKRBJ08H
        key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
        region: us-east-1
```

salt.states.boto_lc.**absent**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure the named launch configuration is deleted.

**name** Name of the launch configuration.

**region** The region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_lc.**present**(*name*, *image_id*, *key_name=None*, *security_groups=None*, *user_data=None*, *cloud_init=None*, *instance_type='m1.small'*, *kernel_id=None*, *ramdisk_id=None*, *block_device_mappings=None*, *instance_monitoring=False*, *spot_price=None*, *instance_profile_name=None*, *ebs_optimized=False*, *associate_public_ip_address=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure the launch configuration exists.

**name** Name of the launch configuration.
**image_id** AMI to use for instances. AMI must exist or creation of the launch configuration will fail.
**key_name** Name of the EC2 key pair to use for instances. Key must exist or creation of the launch configuration will fail.
**security_groups** List of Names or security group id's of the security groups with which to associate the EC2 instances or VPC instances, respectively. Security groups must exist, or creation of the launch configuration will fail.
**user_data** The user data available to launched EC2 instances.
**cloud_init** A dict of cloud_init configuration. Currently supported values: scripts, cloud-config. Mutually exclusive with user_data.
**instance_type** The instance type. ex: m1.small.
**kernel_id** The kernel id for the instance.
**ramdisk_id** The RAM disk ID for the instance.
**block_device_mappings** A dict of block device mappings that contains a dict with volume_type, delete_on_termination, iops, size, encrypted, snapshot_id.
**volume_type** Indicates what volume type to use. Valid values are standard, io1, gp2. Default is standard.
**delete_on_termination** Indicates whether to delete the volume on instance termination (true) or not (false).
**iops** For Provisioned IOPS (SSD) volumes only. The number of I/O operations per second (IOPS) to provision for the volume.
**encrypted** Indicates whether the volume should be encrypted. Encrypted EBS volumes must be attached to instances that support Amazon EBS encryption. Volumes that are created from encrypted snapshots are automatically encrypted. There is no way to create an encrypted volume from an unencrypted snapshot or an unencrypted volume from an encrypted snapshot.
**instance_monitoring** Whether instances in group are launched with detailed monitoring.
**spot_price** The spot price you are bidding. Only applies if you are building an autoscaling group with spot instances.
**instance_profile_name** The name or the Amazon Resource Name (ARN) of the instance profile associated with the IAM role for the instance. Instance profile must exist or the creation of the launch configuration will fail.
**ebs_optimized** Specifies whether the instance is optimized for EBS I/O (true) or not (false).
**associate_public_ip_address** Used for Auto Scaling groups that launch instances into an Amazon Virtual Private Cloud. Specifies whether to assign a public IP address to each instance launched in a Amazon VPC.
**region** The region to connect to.
**key** Secret key to be used.
**keyid** Access key to be used.
**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

### 13.16.31 salt.states.boto_rds

#### Manage RDSs

New in version 2015.8.0.

Create and destroy RDS instances. Be aware that this interacts with Amazon's services, and so may incur charges.

This module uses `boto`, which can be installed via package, or pip.

This module accepts explicit rds credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More information available here.

If IAM roles are not used you need to specify them either in a pillar file or in the minion's config file:

```
rds.keyid: GKTADJGHEIQSXMKKRBJ08H
rds.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

It's also possible to specify `key`, `keyid` and `region` via a profile, either passed in as a dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
        region: us-east-1
```

```
Ensure myrds RDS exists:
  boto_rds.present:
    - name: myrds
    - allocated_storage: 5
    - db_instance_class: db.t2.micro
    - engine: MySQL
    - master_username: myuser
    - master_user_password: mypass
    - region: us-east-1
    - keyid: GKTADJGHEIQSXMKKRBJ08H
    - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    - tags:
      -
        - key1
        - value1
      -
        - key2
        - value2
```

---

**Note**: This state module uses `boto.rds2`, which requires a different tagging syntax than some of the other boto states. The `tags` key and value set noted in the example above is the required yaml notation that `rds2` depends upon to function properly. For more information, please see Issue #28715.

---

`salt.states.boto_rds.`**`absent`**(*name*, *skip_final_snapshot=None*, *final_db_snapshot_identifier=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *wait_for_deletion=True*, *timeout=180*)

Ensure RDS instance is absent.

**name** Name of the RDS instance.

**skip_final_snapshot** Whether a final db snapshot is created before the instance is deleted. If True, no snapshot is created. If False, a snapshot is created before deleting the instance.

**final_db_snapshot_identifier** If a final snapshot is requested, this is the identifier used for that snapshot.

**tags** A list of tags.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

**wait_for_deletion (bool)** Wait for the RDS instance to be deleted completely before finishing the state.

**timeout (in seconds)** The amount of time that can pass before raising an Exception.

salt.states.boto_rds.**present**(*name*, *allocated_storage*, *db_instance_class*, *engine*, *master_username*, *master_user_password*, *db_name=None*, *db_security_groups=None*, *vpc_security_group_ids=None*, *availability_zone=None*, *db_subnet_group_name=None*, *preferred_maintenance_window=None*, *db_parameter_group_name=None*, *backup_retention_period=None*, *preferred_backup_window=None*, *port=None*, *multi_az=None*, *engine_version=None*, *auto_minor_version_upgrade=None*, *license_model=None*, *iops=None*, *option_group_name=None*, *character_set_name=None*, *publicly_accessible=None*, *wait_status=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure RDS instance exists.

**name** Name of the RDS instance.

**allocated_storage** The amount of storage (in gigabytes) to be initially allocated for the database instance.

**db_instance_class** The compute and memory capacity of the Amazon RDS DB instance.

**engine** The name of the database engine to be used for this instance. Supported engine types are: MySQL, oracle-se1, oracle-se, oracle-ee, sqlserver-ee, sqlserver-se, sqlserver-ex, sqlserver-web, and postgres. For more information, please see the `engine` argument in the boto_rds create_dbinstance documentation.

**master_username** The name of master user for the client DB instance.

**master_user_password** The password for the master database user. Can be any printable ASCII character except ``/'', `"'', or ``@''.

**db_name** The database name for the restored DB instance.

**db_security_groups** A list of DB security groups to associate with this DB instance.

**vpc_security_group_ids** A list of EC2 VPC security groups to associate with this DB instance.

**availability_zone** The EC2 Availability Zone that the database instance will be created in.

**db_subnet_group_name** A DB subnet group to associate with this DB instance.

**preferred_maintenance_window** The weekly time range (in UTC) during which system maintenance can occur.

**backup_retention_period** The number of days for which automated backups are retained.

**preferred_backup_window** The daily time range during which automated backups are created if automated backups are enabled.

**port** The port number on which the database accepts connections.

**multi_az** Specifies if the DB instance is a Multi-AZ deployment. You cannot set the AvailabilityZone parameter if the MultiAZ parameter is set to true.

**engine_version** The version number of the database engine to use.

**auto_minor_version_upgrade** Indicates that minor engine upgrades will be applied automatically to the DB instance during the maintenance window.

**license_model** License model information for this DB instance.

**iops** The amount of Provisioned IOPS (input/output operations per second) to be initially allocated for the DB instance.

**option_group_name** Indicates that the DB instance should be associated with the specified option group.

**character_set_name** For supported engines, indicates that the DB instance should be associated with the specified CharacterSet.

**publicly_accessible** Specifies the accessibility options for the DB instance. A value of true specifies an Internet-facing instance with a publicly resolvable DNS name, which resolves to a public IP address. A value of false specifies an internal instance with a DNS name that resolves to a private IP address.

**wait_status** Wait for the RDS instance to reach a desired status before finishing the state. Available states: available, modifying, backing-up

**tags** A list of tags.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_rds.**replica_present**(*name*, *source*, *db_instance_class=None*, *availability_zone=None*, *port=None*, *auto_minor_version_upgrade=None*, *iops=None*, *option_group_name=None*, *publicly_accessible=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure RDS replica exists.

```
Ensure myrds replica RDS exists:
  boto_rds.create_replica:
    - name: myreplica
    - source: mydb
```

salt.states.boto_rds.**subnet_group_absent**(*name*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

salt.states.boto_rds.**subnet_group_present**(*name*, *description*, *subnet_ids=None*, *subnet_names=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure DB subnet group exists.

**name** The name for the DB subnet group. This value is stored as a lowercase string.

**subnet_ids** A list of the EC2 Subnet IDs for the DB subnet group. Either subnet_ids or subnet_names must be provided.

**subnet_names** A list of The EC2 Subnet names for the DB subnet group. Either subnet_ids or subnet_names must be provided.

**description** Subnet group description.

**tags** A list of tags.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

### 13.16.32 salt.states.boto_route53

Manage Route53 records

New in version 2014.7.0.

Create and delete Route53 records. Be aware that this interacts with Amazon's services, and so may incur charges.

This module uses `boto`, which can be installed via package, or pip.

This module accepts explicit route53 credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More information available here.

If IAM roles are not used you need to specify them either in a pillar file or in the minion's config file:

```
route53.keyid: GKTADJGHEIQSXMKKRBJ08H
route53.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

It's also possible to specify `key`, `keyid` and `region` via a profile, either passed in as a dict, or as a string to pull from pillars or minion config:

```
myprofile:
  keyid: GKTADJGHEIQSXMKKRBJ08H
```

```
  key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
  region: us-east-1
```

```
mycnamerecord:
  boto_route53.present:
    - name: test.example.com.
    - value: my-elb.us-east-1.elb.amazonaws.com.
    - zone: example.com.
    - ttl: 60
    - record_type: CNAME
    - region: us-east-1
    - keyid: GKTADJGHEIQSXMKKRBJ08H
    - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs

# Using a profile from pillars
myarecord:
  boto_route53.present:
    - name: test.example.com.
    - value: 1.1.1.1
    - zone: example.com.
    - ttl: 60
    - record_type: A
    - region: us-east-1
    - profile: myprofile

# Passing in a profile
myarecord:
  boto_route53.present:
    - name: test.example.com.
    - value: 1.1.1.1
    - zone: example.com.
    - ttl: 60
    - record_type: A
    - region: us-east-1
    - profile:
        keyid: GKTADJGHEIQSXMKKRBJ08H
        key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

salt.states.boto_route53.**absent**(*name*, *zone*, *record_type*, *identifier=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *wait_for_sync=True*, *split_dns=False*, *private_zone=False*)

Ensure the Route53 record is deleted.

**name** Name of the record.

**zone** The zone to delete the record from.

**record_type** The record type (A, NS, MX, TXT, etc.)

**identifier** An identifier to match for deletion.

**region** The region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

**wait_for_sync** Wait for an INSYNC change status from Route53.

**split_dns** Route53 supports a public and private DNS zone with the same names.

**private_zone** If using split_dns, specify if this is the private zone.

salt.states.boto_route53.**present**(*name*, *value*, *zone*, *record_type*, *ttl=None*, *identifier=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *wait_for_sync=True*, *split_dns=False*, *private_zone=False*)

Ensure the Route53 record is present.

**name** Name of the record.

**value** Value of the record.

**zone** The zone to create the record in.

**record_type** The record type (A, NS, MX, TXT, etc.)

**ttl** The time to live for the record.

**identifier** The unique identifier to use for this record.

**region** The region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

**wait_for_sync** Wait for an INSYNC change status from Route53.

**split_dns** Route53 supports a public and private DNS zone with the same names.

**private_zone** If using split_dns, specify if this is the private zone.

## 13.16.33 salt.states.boto_s3_bucket module

### Manage S3 Buckets

New in version 2016.3.0.

Create and destroy S3 buckets. Be aware that this interacts with Amazon's services, and so may incur charges.

**depends**

- boto
- boto3

The dependencies listed above can be installed via package or pip.

This module accepts explicit vpc credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More information available here.

If IAM roles are not used you need to specify them either in a pillar file or in the minion's config file:

```
vpc.keyid: GKTADJGHEIQSXMKKRBJ08H
vpc.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

It's also possible to specify `key`, `keyid` and `region` via a profile, either passed in as a dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
        region: us-east-1
```

```
Ensure bucket exists:
    boto_s3_bucket.present:
        - Bucket: mybucket
        - LocationConstraint: EU
        - ACL:
```

```
        - GrantRead: "uri=http://acs.amazonaws.com/groups/global/AllUsers"
    - CORSRules:
      - AllowedHeaders: []
        AllowedMethods: ["GET"]
        AllowedOrigins: ["*"]
        ExposeHeaders: []
        MaxAgeSeconds: 123
    - LifecycleConfiguration:
      - Expiration:
          Days: 123
        ID: "idstring"
        Prefix: "prefixstring"
        Status: "enabled",
        ID: "lc1"
        Transitions:
          - Days: 123
            StorageClass: "GLACIER"
        NoncurrentVersionTransitions:
          - NoncurrentDays: 123
            StorageClass: "GLACIER"
        NoncurrentVersionExpiration:
          NoncurrentDays: 123
    - Logging:
        TargetBucket: log_bucket
        TargetPrefix: prefix
        TargetGrants:
          - Grantee:
              DisplayName: "string"
              EmailAddress: "string"
              ID: "string"
              Type: "AmazonCustomerByEmail"
              URI: "string"
            Permission: "READ"
    - NotificationConfiguration:
        LambdaFunctionConfiguration:
          - Id: "string"
            LambdaFunctionArn: "string"
            Events:
              - "s3:ObjectCreated:*"
            Filter:
              Key:
                FilterRules:
                  - Name: "prefix"
                    Value: "string"
    - Policy:
        Version: "2012-10-17"
        Statement:
          - Sid: "String"
            Effect: "Allow"
            Principal:
              AWS: "arn:aws:iam::133434421342:root"
            Action: "s3:PutObject"
            Resource: "arn:aws:s3:::my-bucket/*"
    - Replication:
        Role: myrole
        Rules:
          - ID: "string"
            Prefix: "string"
```

```
                Status: "Enabled"
                Destination:
                  Bucket: "arn:aws:s3:::my-bucket"
        - RequestPayment:
            Payer: Requester
        - Tagging:
            tag_name: tag_value
            tag_name_2: tag_value
        - Versioning:
            Status: "Enabled"
        - Website:
            ErrorDocument:
              Key: "error.html"
            IndexDocument:
              Suffix: "index.html"
            RedirectAllRequestsTo:
              Hostname: "string"
              Protocol: "http"
            RoutingRules:
              - Condition:
                  HttpErrorCodeReturnedEquals: "string"
                  KeyPrefixEquals: "string"
                Redirect:
                  HostName: "string"
                  HttpRedirectCode: "string"
                  Protocol: "http"
                  ReplaceKeyPrefixWith: "string"
                  ReplaceKeyWith: "string"
        - region: us-east-1
        - keyid: GKTADJGHEIQSXMKKRBJ08H
        - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

salt.states.boto_s3_bucket.**absent**(*name*, *Bucket*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure bucket with passed properties is absent.

**name** The name of the state definition.

**Bucket** Name of the bucket.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_s3_bucket.**present**(*name*, *Bucket*, *LocationConstraint=None*, *ACL=None*, *CORSRules=None*, *LifecycleConfiguration=None*, *Logging=None*, *NotificationConfiguration=None*, *Policy=None*, *Replication=None*, *RequestPayment=None*, *Tagging=None*, *Versioning=None*, *Website=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure bucket exists.

**name** The name of the state definition

**Bucket** Name of the bucket.

**LocationConstraint** `EU'|'eu-west-1'|'us-west-1'|'us-west-2'|'ap-southeast-1'|'ap-southeast-2'|'ap-northeast-1'|'sa-east-1'|'cn-north-1'|'eu-central-1'

**ACL** The permissions on a bucket using access control lists (ACL).

**CORSRules** The cors configuration for a bucket.

**LifecycleConfiguration** Lifecycle configuration for your bucket

**Logging** The logging parameters for a bucket and to specify permissions for who can view and modify the logging parameters.
**NotificationConfiguration** notifications of specified events for a bucket
**Policy** Policy on the bucket
**Replication** Replication rules. You can add as many as 1,000 rules. Total replication configuration size can be up to 2 MB
**RequestPayment** The request payment configuration for a bucket. By default, the bucket owner pays for downloads from the bucket. This configuration parameter enables the bucket owner (only) to specify that the person requesting the download will be charged for the download
**Tagging** A dictionary of tags that should be set on the bucket
**Versioning** The versioning state of the bucket
**Website** The website configuration of the bucket
**region** Region to connect to.
**key** Secret key to be used.
**keyid** Access key to be used.
**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

### 13.16.34 salt.states.boto_secgroup

#### Manage Security Groups

New in version 2014.7.0.

Create and destroy Security Groups. Be aware that this interacts with Amazon's services, and so may incur charges.

This module uses `boto`, which can be installed via package, or pip.

This module accepts explicit EC2 credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More information available here.

If IAM roles are not used you need to specify them either in a pillar file or in the minion's config file:

```
secgroup.keyid: GKTADJGHEIQSXMKKRBJ08H
secgroup.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

It's also possible to specify `key`, `keyid` and `region` via a profile, either passed in as a dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

```
Ensure mysecgroup exists:
    boto_secgroup.present:
        - name: mysecgroup
        - description: My security group
        - rules:
            - ip_protocol: tcp
              from_port: 80
              to_port: 80
              cidr_ip:
                - 10.0.0.0/0
                - 192.168.0.0/0
```

```
            - ip_protocol: icmp
              from_port: -1
              to_port: -1
              source_group_name: mysecgroup
        - rules_egress:
            - ip_protocol: all
              from_port: -1
              to_port: -1
              cidr_ip:
                - 10.0.0.0/0
                - 192.168.0.0/0
        - tags:
            SomeTag: 'My Tag Value'
            SomeOtherTag: 'Other Tag Value'
        - region: us-east-1
        - keyid: GKTADJGHEIQSXMKKRBJ08H
        - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs

# Using a profile from pillars
Ensure mysecgroup exists:
    boto_secgroup.present:
        - name: mysecgroup
        - description: My security group
        - profile: myprofile

# Passing in a profile
Ensure mysecgroup exists:
    boto_secgroup.present:
        - name: mysecgroup
        - description: My security group
        - profile:
            keyid: GKTADJGHEIQSXMKKRBJ08H
            key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
            region: us-east-1
```

**Note**: When using the `profile` parameter and `region` is set outside of the profile group, region is ignored and a default region will be used.

If `region` is missing from the `profile` data set, `us-east-1` will be used as the default region.

`salt.states.boto_secgroup.`**`absent`**(*name*, *vpc_id=None*, *vpc_name=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure a security group with the specified name does not exist.

**name** Name of the security group.

**vpc_id** The ID of the VPC to remove the security group from, if any. Exclusive with vpc_name.

**vpc_name** The name of the VPC to remove the security group from, if any. Exclusive with vpc_name.

New in version 2016.3.0.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

New in version 2016.3.0.

salt.states.boto_secgroup.**present**(*name*, *description*, *vpc_id=None*, *vpc_name=None*, *rules=None*, *rules_egress=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*, *tags=None*)

Ensure the security group exists with the specified rules.

**name** Name of the security group.

**description** A description of this security group.

**vpc_id** The ID of the VPC to create the security group in, if any. Exclusive with vpc_name.

**vpc_name** The name of the VPC to create the security group in, if any. Exclusive with vpc_id.

New in version 2016.3.0.

New in version 2015.8.2.

**rules** A list of ingress rule dicts. If not specified, `rules=None`, the ingress rules will be unmanaged. If set to an empty list, `[]`, then all ingress rules will be removed.

**rules_egress** A list of egress rule dicts. If not specified, `rules_egress=None`, the egress rules will be unmanaged. If set to an empty list, `[]`, then all egress rules will be removed.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key, and keyid.

**tags** List of key:value pairs of tags to set on the security group

New in version 2016.3.0.

### 13.16.35 salt.states.boto_sns

Manage SNS Topics

Create and destroy SNS topics. Be aware that this interacts with Amazon's services, and so may incur charges.

This module uses `boto`, which can be installed via package, or pip.

This module accepts explicit AWS credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More information available here.

If IAM roles are not used you need to specify them either in a pillar file or in the minion's config file:

```
sns.keyid: GKTADJGHEIQSXMKKRBJ08H
sns.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

It's also possible to specify `key`, `keyid` and `region` via a profile, either passed in as a dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

```
mytopic:
    boto_sns.present:
        - region: us-east-1
        - keyid: GKTADJGHEIQSXMKKRBJ08H
        - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs

# Using a profile from pillars
mytopic:
```

```
    boto_sns.present:
        - region: us-east-1
        - profile: mysnsprofile

# Passing in a profile
mytopic:
    boto_sns.present:
        - region: us-east-1
        - profile:
            keyid: GKTADJGHEIQSXMKKRBJ08H
            key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

salt.states.boto_sns.**absent**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure the named sns topic is deleted.

**name** Name of the SNS topic.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_sns.**present**(*name*, *subscriptions=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure the SNS topic exists.

**name** Name of the SNS topic.

**subscriptions** List of SNS subscriptions.

Each subscription is a dictionary with a protocol and endpoint key:

```
[
{'protocol': 'https', 'endpoint': 'https://www.example.com/sns-endpoint'},
{'protocol': 'sqs', 'endpoint': 'arn:aws:sqs:us-west-2:123456789012:MyQueue'}
]
```

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

### 13.16.36 salt.states.boto_sqs

Manage SQS Queues

New in version 2014.7.0.

Create and destroy SQS queues. Be aware that this interacts with Amazon's services, and so may incur charges.

This module uses `boto`, which can be installed via package, or pip.

This module accepts explicit SQS credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More information available here.

If IAM roles are not used you need to specify them either in a pillar file or in the minion's config file:

```
sqs.keyid: GKTADJGHEIQSXMKKRBJ08H
sqs.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

It's also possible to specify `key`, `keyid` and `region` via a profile, either passed in as a dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

```
myqueue:
    boto_sqs.present:
        - region: us-east-1
        - keyid: GKTADJGHEIQSXMKKRBJ08H
        - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
        - attributes:
            ReceiveMessageWaitTimeSeconds: 20

# Using a profile from pillars
myqueue:
    boto_sqs.present:
        - region: us-east-1
        - profile: mysqsprofile

# Passing in a profile
myqueue:
    boto_sqs.present:
        - region: us-east-1
        - profile:
            keyid: GKTADJGHEIQSXMKKRBJ08H
            key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

salt.states.boto_sqs.**absent**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure the named sqs queue is deleted.

**name** Name of the SQS queue.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_sqs.**present**(*name*, *attributes=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure the SQS queue exists.

**name** Name of the SQS queue.

**attributes** A dict of key/value SQS attributes.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

### 13.16.37 salt.states.boto_vpc

#### Manage VPCs

New in version 2015.8.0.

Create and destroy VPCs. Be aware that this interacts with Amazon's services, and so may incur charges.

This module uses `boto`, which can be installed via package, or pip.

This module accepts explicit vpc credentials but can also utilize IAM roles assigned to the instance through Instance Profiles. Dynamic credentials are then automatically obtained from AWS API and no further configuration is necessary. More information available here.

If IAM roles are not used you need to specify them either in a pillar file or in the minion's config file:

```
vpc.keyid: GKTADJGHEIQSXMKKRBJ08H
vpc.key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

It's also possible to specify `key`, `keyid` and `region` via a profile, either passed in as a dict, or as a string to pull from pillars or minion config:

```
myprofile:
    keyid: GKTADJGHEIQSXMKKRBJ08H
    key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
    region: us-east-1
```

```
aws:
    region:
        us-east-1:
            profile:
                keyid: GKTADJGHEIQSXMKKRBJ08H
                key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
                region: us-east-1
```

```
Ensure VPC exists:
    boto_vpc.present:
        - name: myvpc
        - cidr_block: 10.10.11.0/24
        - dns_hostnames: True
        - region: us-east-1
        - keyid: GKTADJGHEIQSXMKKRBJ08H
        - key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs

Ensure subnet exists:
    boto_vpc.subnet_present:
        - name: mysubnet
        - vpc_id: vpc-123456
        - cidr_block: 10.0.0.0/16
        - region: us-east-1
        - profile: myprofile

{% set profile = salt['pillar.get']('aws:region:us-east-1:profile' ) %}
Ensure internet gateway exists:
    boto_vpc.internet_gateway_present:
        - name: myigw
        - vpc_name: myvpc
        - profile: {{ profile }}

Ensure route table exists:
    boto_vpc.route_table_present:
        - name: my_route_table
        - vpc_id: vpc-123456
        - routes:
          - destination_cidr_block: 0.0.0.0/0
```

```
            instance_id: i-123456
        - subnet_names:
            - subnet1
            - subnet2
        - region: us-east-1
        - profile:
            keyid: GKTADJGHEIQSXMKKRBJ08H
            key: askdjghsdfjkghWupUjasdflkdfklgjsdfjajkghs
```

salt.states.boto_vpc.**absent**(*name*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure VPC with passed properties is absent.

**name** Name of the VPC.

**tags** A list of tags. All tags must match.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_vpc.**dhcp_options_absent**(*name=None*, *dhcp_options_id=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure a set of DHCP options with the given settings exist.

**name** (string) Name of the DHCP options set.

**dhcp_options_id** (string) Id of the DHCP options set.

**region** (string) Region to connect to.

**key** (string) Secret key to be used.

**keyid** (string) Access key to be used.

**profile** (various) A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

New in version 2016.3.0.

salt.states.boto_vpc.**dhcp_options_present**(*name*, *dhcp_options_id=None*, *vpc_name=None*, *vpc_id=None*, *domain_name=None*, *domain_name_servers=None*, *ntp_servers=None*, *netbios_name_servers=None*, *netbios_node_type=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure a set of DHCP options with the given settings exist. Note that the current implementation only SETS values during option set creation. It is unable to update option sets in place, and thus merely verifies the set exists via the given name and/or dhcp_options_id param.

**name** (string) Name of the DHCP options.

**vpc_name** (string) Name of a VPC to which the options should be associated. Either vpc_name or vpc_id must be provided.

**vpc_id** (string) Id of a VPC to which the options should be associated. Either vpc_name or vpc_id must be provided.

**domain_name** (string) Domain name to be assiciated with this option set.

**domain_name_servers** (list of strings) The IP address(es) of up to four domain name servers.

**ntp_servers** (list of strings) The IP address(es) of up to four desired NTP servers.

**netbios_name_servers** (list of strings) The IP address(es) of up to four NetBIOS name servers.

**netbios_node_type** (string) The NetBIOS node type (1, 2, 4, or 8). For more information about the allowed values, see RFC 2132. The recommended is 2 at this time (broadcast and multicast are currently not supported).

**tags** (dict of key:value pairs) A set of tags to be added.

**region** (string) Region to connect to.

**key** (string) Secret key to be used.
**keyid** (string) Access key to be used.
**profile** (various) A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.
New in version 2016.3.0.

salt.states.boto_vpc.**internet_gateway_absent**(*name*, *detach=False*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure the named internet gateway is absent.
**name** Name of the internet gateway.
**detach** First detach the internet gateway from a VPC, if attached.
**region** Region to connect to.
**key** Secret key to be used.
**keyid** Access key to be used.
**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_vpc.**internet_gateway_present**(*name*, *vpc_name=None*, *vpc_id=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure an internet gateway exists.
**name** Name of the internet gateway.
**vpc_name** Name of the VPC to which the internet gateway should be attached.
**vpc_id** Id of the VPC to which the internet_gateway should be attached. Only one of vpc_name or vpc_id may be provided.
**tags** A list of tags.
**region** Region to connect to.
**key** Secret key to be used.
**keyid** Access key to be used.
**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_vpc.**present**(*name*, *cidr_block*, *instance_tenancy=None*, *dns_support=None*, *dns_hostnames=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure VPC exists.
**name** Name of the VPC.
**cidr_block** The range of IPs in CIDR format, for example: 10.0.0.0/24. Block size must be between /16 and /28 netmask.
**instance_tenancy** Instances launched in this VPC will be ingle-tenant or dedicated hardware.
**dns_support** Indicates whether the DNS resolution is supported for the VPC.
**dns_hostnames** Indicates whether the instances launched in the VPC get DNS hostnames.
**tags** A list of tags.
**region** Region to connect to.
**key** Secret key to be used.
**keyid** Access key to be used.
**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_vpc.**route_table_absent**(*name*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure the named route table is absent.
**name** Name of the route table.
**region** Region to connect to.
**key** Secret key to be used.
**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_vpc.**route_table_present**(*name*, *vpc_name=None*, *vpc_id=None*, *routes=None*, *subnet_ids=None*, *subnet_names=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure route table with routes exists and is associated to a VPC.

Example:

```
boto_vpc.route_table_present:
    - name: my_route_table
    - vpc_id: vpc-123456
    - routes:
      - destination_cidr_block: 0.0.0.0/0
        internet_gateway_name: InternetGateway
      - destination_cidr_block: 10.10.11.0/24
        instance_id: i-123456
      - destination_cidr_block: 10.10.12.0/24
        interface_id: eni-123456
      - destination_cidr_block: 10.10.13.0/24
        instance_name: mygatewayserver
    - subnet_names:
      - subnet1
      - subnet2
```

**name** Name of the route table.

**vpc_name** Name of the VPC with which the route table should be associated.

**vpc_id** Id of the VPC with which the route table should be associated. Either vpc_name or vpc_id must be provided.

**routes** A list of routes. Each route has a cidr and a target.

**subnet_ids** A list of subnet ids to associate

**subnet_names** A list of subnet names to associate

**tags** A list of tags.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_vpc.**subnet_absent**(*name=None*, *subnet_id=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure subnet with passed properties is absent.

**name** Name of the subnet.

**region** Region to connect to.

**key** Secret key to be used.

**keyid** Access key to be used.

**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

salt.states.boto_vpc.**subnet_present**(*name*, *cidr_block*, *vpc_name=None*, *vpc_id=None*, *availability_zone=None*, *tags=None*, *region=None*, *key=None*, *keyid=None*, *profile=None*)

Ensure a subnet exists.

**name** Name of the subnet.

**cidr_block** The range if IPs for the subnet, in CIDR format. For example: 10.0.0.0/24. Block size must be between /16 and /28 netmask.

**vpc_name** Name of the VPC in which the subnet should be placed. Either vpc_name or vpc_id must be provided.
**vpc_id** Id of the VPC in which the subnet should be placed. Either vpc_name or vpc_id must be provided.
**availability_zone** AZ in which the subnet should be placed.
**tags** A list of tags.
**region** Region to connect to.
**key** Secret key to be used.
**keyid** Access key to be used.
**profile** A dict with region, key and keyid, or a pillar key (string) that contains a dict with region, key and keyid.

### 13.16.38 salt.states.bower

#### Installation of Bower Packages

These states manage the installed packages using Bower. Note that npm, git and bower must be installed for these states to be available, so bower states should include requisites to pkg.installed states for the packages which provide npm and git (simply `npm` and `git` in most cases), and npm.installed state for the package which provides bower.

Example:

```
npm:
  pkg.installed
git:
  pkg.installed
bower:
  npm.installed
  require:
    - pkg: npm
    - pkg: git

underscore:
  bower.installed:
    - dir: /path/to/project
    - require:
      - npm: bower
```

`salt.states.bower.`**`bootstrap`**(*name*, *user=None*)
Bootstraps a frontend distribution.

Will execute `bower install' on the specified directory.
**user** The user to run Bower with

`salt.states.bower.`**`installed`**(*name*, *dir*, *pkgs=None*, *user=None*, *env=None*)
Verify that the given package is installed and is at the correct version (if specified).

```
underscore:
  bower.installed:
    - dir: /path/to/project
    - user: someuser

jquery#2.0:
  bower.installed:
    - dir: /path/to/project
```

**name** The package to install
**dir** The target directory in which to install the package

**pkgs** A list of packages to install with a single Bower invocation; specifying this argument will ignore the `name` argument
**user** The user to run Bower with
**env** A list of environment variables to be set prior to execution. The format is the same as the *cmd.run*. state function.

`salt.states.bower.`**`removed`**(*name*, *dir*, *user=None*)
Verify that the given package is not installed.
**dir** The target directory in which to install the package
**user** The user to run Bower with

## 13.16.39 salt.states.cabal

### Installation of Cabal Packages

New in version 2015.8.0.

These states manage the installed packages for Haskell using cabal. Note that cabal-install must be installed for these states to be available, so cabal states should include a requisite to a pkg.installed state for the package which provides cabal (`cabal-install` in case of Debian based distributions). Example:

```
.. code-block:: yaml
```

**cabal-install**: pkg.installed

**ShellCheck**:

**cabal.installed**:

- require: - pkg: cabal-install

`salt.states.cabal.`**`installed`**(*name*, *pkgs=None*, *user=None*, *install_global=False*, *env=None*)
Verify that the given package is installed and is at the correct version (if specified).

```
ShellCheck-0.3.5:
  cabal:
    - installed:
```

**name** The package to install
**user** The user to run cabal install with
**install_global** Install package globally instead of locally
**env** A list of environment variables to be set prior to execution. The format is the same as the *cmd.run*. state function.

`salt.states.cabal.`**`removed`**(*name*, *user=None*, *env=None*)
Verify that given package is not installed.

## 13.16.40 salt.states.chef

### Execute Chef client runs

Run chef-client or chef-solo

```
my-chef-run:
  chef.client:
    - override-runlist: 'demo1,demo2'
```

```
    - server: 'https://chef.domain.com'

default-chef-run:
  chef.client: []

my-solo-run:
  chef.solo:
    - environment: dev
```

salt.states.chef.**client**(*name*, ***kwargs*)

**name** Unique identifier for the state. Does not affect the Chef run.
**server** The chef server URL
**client_key** Set the client key file location
**config** The configuration file to use
**config-file-jail** Directory under which config files are allowed to be loaded (no client.rb or knife.rb outside this path will be loaded).
**environment** Set the Chef Environment on the node
**group** Group to set privilege to
**json-attributes** Load attributes from a JSON file or URL
**localmode** Point chef-client at local repository if True
**log_level** Set the log level (debug, info, warn, error, fatal)
**logfile** Set the log file location
**node-name** The node name for this client
**override-runlist** Replace current run list with specified items for a single run
**pid** Set the PID file location, defaults to /tmp/chef-client.pid
**run-lock-timeout** Set maximum duration to wait for another client run to finish, default is indefinitely.
**runlist** Permanently replace current run list with specified items
**user** User to set privilege to
**validation_key** Set the validation key file location, used for registering new clients

salt.states.chef.**solo**(*name*, ***kwargs*)

**name** Unique identifier for the state. Does not affect the Chef run.
**config** The configuration file to use
**environment** Set the Chef Environment on the node
**group** Group to set privilege to
**json-attributes** Load attributes from a JSON file or URL
**log_level** Set the log level (debug, info, warn, error, fatal)
**logfile** Set the log file location
**node-name** The node name for this client
**override-runlist** Replace current run list with specified items for a single run
**recipe-url** Pull down a remote gzipped tarball of recipes and untar it to the cookbook cache
**run-lock-timeout** Set maximum duration to wait for another client run to finish, default is indefinitely.
**user** User to set privilege to

### 13.16.41 salt.states.chocolatey module

Manage Chocolatey package installs .. versionadded:: 2016.3.0

salt.states.chocolatey.**install**(**args*, ***kwargs*)

Deprecated, please use `installed'. This function will be removed in Salt Nitrogen.

salt.states.chocolatey.**installed**(*name*, *version=None*, *source=None*, *force=False*, *pre_versions=False*, *install_args=None*, *override_args=False*, *force_x86=False*, *package_args=None*)

Installs a package if not already installed

**name** The name of the package to be installed.
**version** Install a specific version of the package. Defaults to latest version.
**source** Chocolatey repository (directory, share or remote URL, feed). Defaults to the official Chocolatey feed.
**force** Reinstall the current version of an existing package. Default is false.
**pre_versions** Include pre-release packages. Default is False.
**install_args** A list of install arguments you want to pass to the installation process i.e product key or feature list
**override_args** Set to true if you want to override the original install arguments ( for the native installer)in the package and use your own. When this is set to False install_args will be appended to the end of the default arguments
**force_x86** Force x86 (32bit) installation on 64 bit systems. Defaults to false.
**package_args** A list of arguments you want to pass to the package

```
Installsomepackage:
  chocolatey.installed:
    - name: packagename
    - version: '12.04'
    - source: 'mychocolatey/source'
    - force: True
```

salt.states.chocolatey.**uninstall**(**args*, ***kwargs*)
Deprecated, please use `uninstalled'. This function will be removed in Salt Nitrogen.

salt.states.chocolatey.**uninstalled**(*name*, *version=None*, *uninstall_args=None*, *override_args=False*)
Uninstalls a package
**name** The name of the package to be uninstalled
**version** Uninstalls a specific version of the package. Defaults to latest version installed.
**uninstall_args** A list of uninstall arguments you want to pass to the uninstallation process i.e product key or feature list
**override_args** Set to true if you want to override the original uninstall arguments ( for the native uninstaller)in the package and use your own. When this is set to False uninstall_args will be appended to the end of the default arguments

### 13.16.42 salt.states.chronos_job module

Configure Chronos jobs via a salt proxy.

```
my_job:
  chronos_job.config:
    - config:
        schedule: "R//PT2S"
        command: "echo 'hi'"
        owner: "me@example.com"
```

New in version 2015.8.2.

salt.states.chronos_job.**absent**(*name*)
Ensure that the chronos job with the given name is not present.
**Parameters** **name** -- The app name
**Returns** A standard Salt changes dictionary

salt.states.chronos_job.**config**(*name*, *config*)
Ensure that the chronos job with the given name is present and is configured to match the given config values.
**Parameters**

- **name** -- The job name

- **config** -- The configuration to apply (dict)

**Returns** A standard Salt changes dictionary

## 13.16.43 salt.states.cloud

### Using states instead of maps to deploy clouds

New in version 2014.1.0.

Use this minion to spin up a cloud instance:

```
my-ec2-instance:
  cloud.profile:
    my-ec2-config
```

salt.states.cloud.**absent**(*name*, *onlyif=None*, *unless=None*)

Ensure that no instances with the specified names exist.

CAUTION: This is a destructive state, which will search all configured cloud providers for the named instance, and destroy it.

**name** The name of the instance to destroy
**onlyif** Do run the state only if is unless succeed
**unless** Do not run the state at least unless succeed

salt.states.cloud.**present**(*name*, *cloud_provider*, *onlyif=None*, *unless=None*, ***kwargs*)

Spin up a single instance on a cloud provider, using salt-cloud. This state does not take a profile argument; rather, it takes the arguments that would normally be configured as part of the state.

Note that while this function does take any configuration argument that would normally be used to create an instance, it will not verify the state of any of those arguments on an existing instance. Stateful properties of an instance should be configured using their own individual state (i.e., cloud.tagged, cloud.untagged, etc).

**name** The name of the instance to create
**cloud_provider** The name of the cloud provider to use
**onlyif** Do run the state only if is unless succeed
**unless** Do not run the state at least unless succeed

salt.states.cloud.**profile**(*name*, *profile*, *onlyif=None*, *unless=None*, ***kwargs*)

Create a single instance on a cloud provider, using a salt-cloud profile.

Note that while profiles used this function do take any configuration argument that would normally be used to create an instance using a profile, this state will not verify the state of any of those arguments on an existing instance. Stateful properties of an instance should be configured using their own individual state (i.e., cloud.tagged, cloud.untagged, etc).

**name** The name of the instance to create
**profile** The name of the cloud profile to use
**onlyif** Do run the state only if is unless succeed
**unless** Do not run the state at least unless succeed
**kwargs** Any profile override or addition

salt.states.cloud.**volume_absent**(*name*, *provider=None*, ***kwargs*)

Check that a block volume exists.

salt.states.cloud.**volume_attached**(*name*, *server_name*, *provider=None*, ***kwargs*)

Check if a block volume is attached.

salt.states.cloud.**volume_detached**(*name*, *server_name=None*, *provider=None*, ***kwargs*)

Check if a block volume is attached.

Returns True if server or Volume do not exist.

salt.states.cloud.**volume_present**(*name*, *provider=None*, ***kwargs*)
Check that a block volume exists.

## 13.16.44 salt.states.cmd

### Execution of arbitrary commands

The cmd state module manages the enforcement of executed commands, this state can tell a command to run under certain circumstances.

A simple example to execute a command:

```
# Store the current date in a file
date > /tmp/salt-run:
  cmd.run
```

Only run if another execution failed, in this case truncate syslog if there is no disk space:

```
> /var/log/messages:
  cmd.run:
    - unless: echo 'foo' > /tmp/.test && rm -f /tmp/.test
```

Only run if the file specified by `creates` does not exist, in this case touch /tmp/foo if it does not exist.

```
touch /tmp/foo:
  cmd.run:
    - creates: /tmp/foo
```

**Note:** The `creates` option was added to version 2014.7.0

Salt determines whether the `cmd` state is successfully enforced based on the exit code returned by the command. If the command returns a zero exit code, then salt determines that the state was successfully enforced. If the script returns a non-zero exit code, then salt determines that it failed to successfully enforce the state. If a command returns a non-zero exit code but you wish to treat this as a success, then you must place the command in a script and explicitly set the exit code of the script to zero.

Please note that the success or failure of the state is not affected by whether a state change occurred nor the stateful argument.

When executing a command or script, the state (i.e., changed or not) of the command is unknown to Salt's state system. Therefore, by default, the `cmd` state assumes that any command execution results in a changed state.

This means that if a `cmd` state is watched by another state then the state that's watching will always be executed due to the *changed* state in the `cmd` state.

### Using the ``Stateful'' Argument

Many state functions in this module now also accept a `stateful` argument. If `stateful` is specified to be true then it is assumed that the command or script will determine its own state and communicate it back by following a simple protocol described below:

1. **If there's nothing in the stdout of the command, then assume no changes**. Otherwise, the stdout must be either in JSON or its *last* non-empty line must be a string of key=value pairs delimited by spaces (no spaces on either side of =).

2. **If it's JSON then it must be a JSON object (e.g., {}).** If it's key=value pairs then quoting may be used to include spaces. (Python's shlex module is used to parse the key=value string)

   Two special keys or attributes are recognized in the output:

   ```
   changed: bool (i.e., 'yes', 'no', 'true', 'false', case-insensitive)
   comment: str  (i.e., any string)
   ```

   So, only if `changed` is `True` then assume the command execution has changed the state, and any other key values or attributes in the output will be set as part of the changes.

3. **If there's a comment then it will be used as the comment of the state.**

   Here's an example of how one might write a shell script for use with a stateful command:

   ```
   #!/bin/bash
   #
   echo "Working hard..."

   # writing the state line
   echo  # an empty line here so the next line will be the last.
   echo "changed=yes comment='something has changed' whatever=123"
   ```

   And an example SLS file using this module:

   ```
   Run myscript:
     cmd.run:
       - name: /path/to/myscript
       - cwd: /
       - stateful: True

   Run only if myscript changed something:
     cmd.run:
       - name: echo hello
       - cwd: /
       - onchanges:
           - cmd: Run myscript
   ```

   Note that if the second `cmd.run` state also specifies `stateful: True` it can then be watched by some other states as well.

4. **The stateful argument can optionally include a test_name parameter.**

   This is used to specify a command to run in test mode. This command should return stateful data for changes that would be made by the command in the name parameter.

   New in version 2015.2.0.

   ```
   Run myscript:
     cmd.run:
       - name: /path/to/myscript
       - cwd: /
       - stateful:
         - test_name: /path/to/myscript test

   Run masterscript:
   ```

```
cmd.script:
  - name: masterscript
  - source: salt://path/to/masterscript
  - cwd: /
  - stateful:
    - test_name: masterscript test
```

### Should I use `cmd.run` or `cmd.wait`?

**Note**: Use `cmd.run` together with `onchanges` instead of `cmd.wait`.

These two states are often confused. The important thing to remember about them is that *`cmd.run`* states are run each time the SLS file that contains them is applied. If it is more desirable to have a command that only runs after some other state changes, then *`cmd.wait`* does just that. *`cmd.wait`* is designed to *watch* other states, and is executed when the state it is watching changes. Example:

```
/usr/local/bin/postinstall.sh:
  cmd.wait:
    - watch:
      - pkg: mycustompkg
  file.managed:
    - source: salt://utils/scripts/postinstall.sh

mycustompkg:
  pkg.installed:
    - require:
      - file: /usr/local/bin/postinstall.sh
```

`cmd.wait` itself does not do anything; all functionality is inside its `mod_watch` function, which is called by `watch` on changes.

`cmd.wait` will be deprecated in future due to the confusion it causes. The preferred format is using the *onchanges Requisite*, which works on `cmd.run` as well as on any other state. The example would then look as follows:

```
/usr/local/bin/postinstall.sh:
  cmd.run:
    - onchanges:
      - pkg: mycustompkg
  file.managed:
    - source: salt://utils/scripts/postinstall.sh

mycustompkg:
  pkg.installed:
    - require:
      - file: /usr/local/bin/postinstall.sh
```

### How do I create an environment from a pillar map?

The map that comes from a pillar cannot be directly consumed by the env option. To use it one must convert it to a list. Example:

```
printenv:
  cmd.run:
    - env:
      {% for key, value in pillar['keys'].iteritems() %}
      - '{{ key }}': '{{ value }}'
      {% endfor %}
```

salt.states.cmd.**call**(*name*, *func*, *args=()*, *kws=None*, *onlyif=None*, *unless=None*, *creates=None*, *output_loglevel='debug'*, *use_vt=False*, ***kwargs*)

Invoke a pre-defined Python function with arguments specified in the state declaration. This function is mainly used by the *salt.renderers.pydsl* renderer.

The interpretation of `onlyif` and `unless` arguments are identical to those of *cmd.run*, and all other arguments(`cwd`, `runas`, ...) allowed by *cmd.run* are allowed here, except that their effects apply only to the commands specified in *onlyif* and *unless* rather than to the function to be invoked.

In addition, the `stateful` argument has no effects here.

The return value of the invoked function will be interpreted as follows.

If it's a dictionary then it will be passed through to the state system, which expects it to have the usual structure returned by any salt state function.

Otherwise, the return value (denoted as `result` in the code below) is expected to be a JSON serializable object, and this dictionary is returned:

```
{
    'name': name
    'changes': {'retval': result},
    'result': True if result is None else bool(result),
    'comment': result if isinstance(result, string_types) else ''
}
```

salt.states.cmd.**mod_run_check**(*cmd_kwargs*, *onlyif*, *unless*, *creates*)

Execute the onlyif and unless logic. Return a result dict if: * onlyif failed (onlyif != 0) * unless succeeded (unless == 0) else return True

salt.states.cmd.**mod_watch**(*name*, ***kwargs*)

Execute a cmd function based on a watch call

salt.states.cmd.**run**(*name*, *onlyif=None*, *unless=None*, *creates=None*, *cwd=None*, *runas=None*, *shell=None*, *env=None*, *stateful=False*, *umask=None*, *output_loglevel='debug'*, *quiet=False*, *timeout=None*, *ignore_timeout=False*, *use_vt=False*, ***kwargs*)

Run a command if certain circumstances are met. Use `cmd.wait` if you want to use the `watch` requisite.

**name** The command to execute, remember that the command will execute with the path and permissions of the salt-minion.

**onlyif** A command to run as a check, run the named command only if the command passed to the `onlyif` option returns true

**unless** A command to run as a check, only run the named command if the command passed to the `unless` option returns false

**cwd** The current working directory to execute the command in, defaults to /root

**runas** The user name to run the command as

**shell** The shell to use for execution, defaults to the shell grain

**env** A list of environment variables to be set prior to execution. Example:

```
script-foo:
  cmd.run:
    - env:
      - BATCH: 'yes'
```

**Warning**: The above illustrates a common PyYAML pitfall, that **yes**, **no**, **on**, **off**, **true**, and **false** are all loaded as boolean `True` and `False` values, and must be enclosed in quotes to be used as strings. More info on this (and other) PyYAML idiosyncrasies can be found *here*.

Variables as values are not evaluated. So $PATH in the following example is a literal `$PATH':

```
script-bar:
  cmd.run:
    - env: "PATH=/some/path:$PATH"
```

One can still use the existing $PATH by using a bit of Jinja:

```
{% set current_path = salt['environ.get']('PATH', '/bin:/usr/bin') %}

mycommand:
  cmd.run:
    - name: ls -l /
    - env:
      - PATH: {{ [current_path, '/my/special/bin']|join(':') }}
```

**stateful** The command being executed is expected to return data about executing a state. For more information, see the *Using the ``Stateful'' Argument* section.

**umask** The umask (in octal) to use when running the command.

**output_loglevel** Control the loglevel at which the output from the command is logged. Note that the command being run will still be logged (loglevel: DEBUG) regardless, unless `quiet` is used for this value.

**quiet** The command will be executed quietly, meaning no log entries of the actual command or its return data. This is deprecated as of the **2014.1.0** release, and is being replaced with `output_loglevel: quiet`.

**timeout** If the command has not terminated after timeout seconds, send the subprocess sigterm, and if sigterm is ignored, follow up with sigkill

**ignore_timeout** Ignore the timeout of commands, which is useful for running nohup processes.

New in version 2015.8.0.

**creates** Only run if the file specified by `creates` does not exist.

New in version 2014.7.0.

**use_vt** Use VT utils (saltstack) to stream the command output more interactively to the console and the logs. This is experimental.

**bg** If `True`, run command in background and do not await or deliver it's results.

New in version 2016.3.6.

---

**Note**: cmd.run supports the usage of `reload_modules`. This functionality allows you to force Salt to reload all modules. You should only use `reload_modules` if your cmd.run does some sort of installation (such as `pip`), if you do not reload the modules future items in your state which rely on the software being installed will fail.

```
getpip:
  cmd.run:
    - name: /usr/bin/python /usr/local/sbin/get-pip.py
    - unless: which pip
    - require:
      - pkg: python
      - file: /usr/local/sbin/get-pip.py
    - reload_modules: True
```

salt.states.cmd.**script**(*name*, *source=None*, *template=None*, *onlyif=None*, *unless=None*, *creates=None*, *cwd=None*, *runas=None*, *shell=None*, *env=None*, *stateful=False*, *umask=None*, *timeout=None*, *use_vt=False*, *output_loglevel='debug'*, *defaults=None*, *context=None*, ***kwargs*)

Download a script and execute it with specified arguments.

**source** The location of the script to download. If the file is located on the master in the directory named spam, and is called eggs, the source string is salt://spam/eggs

**template** If this setting is applied then the named templating engine will be used to render the downloaded file. Currently jinja, mako, and wempy are supported

**name** Either ``cmd arg1 arg2 arg3...'' (cmd is not used) or a source ``salt://...''.

**onlyif** Run the named command only if the command passed to the `onlyif` option returns true

**unless** Run the named command only if the command passed to the `unless` option returns false

**cwd** The current working directory to execute the command in, defaults to /root

**runas** The name of the user to run the command as

**shell** The shell to use for execution. The default is set in grains['shell']

**env** A list of environment variables to be set prior to execution. Example:

```
salt://scripts/foo.sh:
  cmd.script:
    - env:
      - BATCH: 'yes'
```

> **Warning**: The above illustrates a common PyYAML pitfall, that **yes**, **no**, **on**, **off**, **true**, and **false** are all loaded as boolean `True` and `False` values, and must be enclosed in quotes to be used as strings. More info on this (and other) PyYAML idiosyncrasies can be found *here*.

Variables as values are not evaluated. So $PATH in the following example is a literal `$PATH':

```
salt://scripts/bar.sh:
  cmd.script:
    - env: "PATH=/some/path:$PATH"
```

One can still use the existing $PATH by using a bit of Jinja:

```
{% set current_path = salt['environ.get']('PATH', '/bin:/usr/bin') %}

mycommand:
  cmd.run:
    - name: ls -l /
    - env:
      - PATH: {{ [current_path, '/my/special/bin']|join(':') }}
```

**saltenv** [`base`] The Salt environment to use

**umask** The umask (in octal) to use when running the command.

**stateful** The command being executed is expected to return data about executing a state. For more information, see the *Using the ``Stateful'' Argument* section.

**timeout** If the command has not terminated after timeout seconds, send the subprocess sigterm, and if sigterm is ignored, follow up with sigkill

**args** String of command line args to pass to the script. Only used if no args are specified as part of the *name* argument. To pass a string containing spaces in YAML, you will need to doubly-quote it: ``arg1 `arg two' arg3''

**creates** Only run if the file specified by `creates` does not exist.

New in version 2014.7.0.

**use_vt** Use VT utils (saltstack) to stream the command output more interactively to the console and the logs. This is experimental.

**context** New in version 2016.3.0.

Overrides default context variables passed to the template.

**defaults** New in version 2016.3.0.

Default context passed to the template.

**output_loglevel** Control the loglevel at which the output from the command is logged. Note that the command being run will still be logged (loglevel: DEBUG) regardless, unless `quiet` is used for this value.

`salt.states.cmd.`**`wait`**(*name*, *onlyif=None*, *unless=None*, *creates=None*, *cwd=None*, *runas=None*, *shell=None*, *env=()*, *stateful=False*, *umask=None*, *output_loglevel='debug'*, *use_vt=False*, ***kwargs*)

Run the given command only if the watch statement calls it.

---

**Note**: Use *`cmd.run`* with `onchange` instead.

---

**name** The command to execute, remember that the command will execute with the path and permissions of the salt-minion.

**onlyif** A command to run as a check, run the named command only if the command passed to the `onlyif` option returns true

**unless** A command to run as a check, only run the named command if the command passed to the `unless` option returns false

**cwd** The current working directory to execute the command in, defaults to /root

**runas** The user name to run the command as

**shell** The shell to use for execution, defaults to /bin/sh

**env** A list of environment variables to be set prior to execution. Example:

```
script-foo:
  cmd.wait:
    - env:
      - BATCH: 'yes'
```

> **Warning**: The above illustrates a common PyYAML pitfall, that **yes**, **no**, **on**, **off**, **true**, and **false** are all loaded as boolean `True` and `False` values, and must be enclosed in quotes to be used as strings. More info on this (and other) PyYAML idiosyncrasies can be found *here*.

Variables as values are not evaluated. So $PATH in the following example is a literal `$PATH':

```
script-bar:
  cmd.wait:
    - env: "PATH=/some/path:$PATH"
```

One can still use the existing $PATH by using a bit of Jinja:

```
{% set current_path = salt['environ.get']('PATH', '/bin:/usr/bin') %}

mycommand:
  cmd.run:
    - name: ls -l /
    - env:
      - PATH: {{ [current_path, '/my/special/bin']|join(':') }}
```

**umask** The umask (in octal) to use when running the command.

**stateful** The command being executed is expected to return data about executing a state. For more information, see the *Using the ``Stateful'' Argument* section.

**creates** Only run if the file specified by `creates` does not exist.

New in version 2014.7.0.

**output_loglevel** Control the loglevel at which the output from the command is logged. Note that the command being run will still be logged (loglevel: DEBUG) regardless, unless `quiet` is used for this value.

**use_vt** Use VT utils (saltstack) to stream the command output more interactively to the console and the logs. This is experimental.

`salt.states.cmd.`**`wait_call`**(*name*, *func*, *args=()*, *kws=None*, *onlyif=None*, *unless=None*, *creates=None*, *stateful=False*, *use_vt=False*, *output_loglevel='debug'*, ***kwargs*)

`salt.states.cmd.`**`wait_script`**(*name*, *source=None*, *template=None*, *onlyif=None*, *unless=None*, *cwd=None*, *runas=None*, *shell=None*, *env=None*, *stateful=False*, *umask=None*, *use_vt=False*, *output_loglevel='debug'*, ***kwargs*)

Download a script from a remote source and execute it only if a watch statement calls it.

**source** The source script being downloaded to the minion, this source script is hosted on the salt master server. If the file is located on the master in the directory named spam, and is called eggs, the source string is salt://spam/eggs

**template** If this setting is applied then the named templating engine will be used to render the downloaded file, currently jinja, mako, and wempy are supported

**name** The command to execute, remember that the command will execute with the path and permissions of the salt-minion.

**onlyif** A command to run as a check, run the named command only if the command passed to the `onlyif` option returns true

**unless** A command to run as a check, only run the named command if the command passed to the `unless` option returns false

**cwd** The current working directory to execute the command in, defaults to /root

**runas** The user name to run the command as

**shell** The shell to use for execution, defaults to the shell grain

**env** A list of environment variables to be set prior to execution. Example:

```
salt://scripts/foo.sh:
  cmd.wait_script:
    - env:
      - BATCH: 'yes'
```

> **Warning**: The above illustrates a common PyYAML pitfall, that **yes**, **no**, **on**, **off**, **true**, and **false** are all loaded as boolean `True` and `False` values, and must be enclosed in quotes to be used as strings. More info on this (and other) PyYAML idiosyncrasies can be found here.

Variables as values are not evaluated. So $PATH in the following example is a literal `$PATH':

```
salt://scripts/bar.sh:
  cmd.wait_script:
    - env: "PATH=/some/path:$PATH"
```

One can still use the existing $PATH by using a bit of Jinja:

```
{% set current_path = salt['environ.get']('PATH', '/bin:/usr/bin') %}

mycommand:
  cmd.run:
    - name: ls -l /
```

```
    - env:
      - PATH: {{ [current_path, '/my/special/bin']|join(':') }}
```

**umask** The umask (in octal) to use when running the command.

**stateful** The command being executed is expected to return data about executing a state. For more information, see the *Using the ``Stateful'' Argument* section.

**use_vt**

Use VT utils (saltstack) to stream the command output more interactively to the console and the logs. This is experimental.

**output_loglevel** Control the loglevel at which the output from the command is logged. Note that the command being run will still be logged (loglevel: DEBUG) regardless, unless `quiet` is used for this value.

### 13.16.45 salt.states.composer

#### Installation of Composer Packages

These states manage the installed packages for composer for PHP. Note that either composer is installed and accessible via a bin directory or you can pass the location of composer in the state.

```
get-composer:
  cmd.run:
    - name: 'CURL=`which curl`; $CURL -sS https://getcomposer.org/installer | php'
    - unless: test -f /usr/local/bin/composer
    - cwd: /root/

install-composer:
  cmd.wait:
    - name: mv /root/composer.phar /usr/local/bin/composer
    - cwd: /root/
    - watch:
      - cmd: get-composer

/path/to/project:
  composer.installed:
    - no_dev: true
    - require:
      - cmd: install-composer


# Without composer installed in your PATH
# Note: composer.phar must be executable for state to work properly
/path/to/project:
  composer.installed:
    - composer: /path/to/composer.phar
    - php: /usr/local/bin/php
    - no_dev: true
```

`salt.states.composer.`**`installed`**(*name*, *composer=None*, *php=None*, *user=None*, *prefer_source=None*, *prefer_dist=None*, *no_scripts=None*, *no_plugins=None*, *optimize=None*, *no_dev=None*, *quiet=False*, *composer_home='/root'*, *always_check=True*)

Verify that the correct versions of composer dependencies are present.

**dir** Directory location of the composer.json file.

**composer** Location of the composer.phar file. If not set composer will just execute ``composer'' as if it is installed globally. (i.e. /path/to/composer.phar)
**php** Location of the php executable to use with composer. (i.e. /usr/bin/php)
**user** Which system user to run composer as.

New in version 2014.1.4.

**prefer_source** --prefer-source option of composer.
**prefer_dist** --prefer-dist option of composer.
**no_scripts** --no-scripts option of composer.
**no_plugins** --no-plugins option of composer.
**optimize** --optimize-autoloader option of composer. Recommended for production.
**no_dev** --no-dev option for composer. Recommended for production.
**quiet** --quiet option for composer. Whether or not to return output from composer.
**composer_home** $COMPOSER_HOME environment variable
**always_check** If True, _always_ run *composer install* in the directory. This is the default behavior. If False, only run *composer install* if there is no vendor directory present.

`salt.states.composer.`**`update`**(*name*, *composer=None*, *php=None*, *user=None*, *prefer_source=None*, *prefer_dist=None*, *no_scripts=None*, *no_plugins=None*, *optimize=None*, *no_dev=None*, *quiet=False*, *composer_home='/root'*)

Composer update the directory to ensure we have the latest versions of all project dependencies.
**dir** Directory location of the composer.json file.
**composer** Location of the composer.phar file. If not set composer will just execute ``composer'' as if it is installed globally. (i.e. /path/to/composer.phar)
**php** Location of the php executable to use with composer. (i.e. /usr/bin/php)
**user** Which system user to run composer as.

New in version 2014.1.4.

**prefer_source** --prefer-source option of composer.
**prefer_dist** --prefer-dist option of composer.
**no_scripts** --no-scripts option of composer.
**no_plugins** --no-plugins option of composer.
**optimize** --optimize-autoloader option of composer. Recommended for production.
**no_dev** --no-dev option for composer. Recommended for production.
**quiet** --quiet option for composer. Whether or not to return output from composer.
**composer_home** $COMPOSER_HOME environment variable

### 13.16.46 salt.states.cron

#### Management of cron, the Unix command scheduler

Cron declarations require a number of parameters. The following are the parameters used by Salt to define the various timing values for a cron job:

- `minute`
- `hour`
- `daymonth`
- `month`
- `dayweek` (0 to 6 are Sunday through Saturday, 7 can also be used for Sunday)

**Warning**: Any timing arguments not specified take a value of `*`. This means that setting `hour` to `5`, while not defining the `minute` param, will result in Salt adding a job that will execute every minute between 5 and 6 A.M.!

Additionally, the default user for these states is `root`. Therefore, if the cron job is for another user, it is necessary to specify that user with the `user` parameter.

A long time ago (before 2014.2), when making changes to an existing cron job, the name declaration is the parameter used to uniquely identify the job, so if an existing cron that looks like this:

```
date > /tmp/crontest:
  cron.present:
    - user: root
    - minute: 5
```

Is changed to this:

```
date > /tmp/crontest:
  cron.present:
    - user: root
    - minute: 7
    - hour: 2
```

Then the existing cron will be updated, but if the cron command is changed, then a new cron job will be added to the user's crontab.

The current behavior is still relying on that mechanism, but you can also specify an identifier to identify your crontabs:

```
date > /tmp/crontest:
  cron.present:
    - identifier: SUPERCRON
    - user: root
    - minute: 7
    - hour: 2
```

New in version 2014.1.2.

And, some months later, you modify it:

```
superscript > /tmp/crontest:
  cron.present:
    - identifier: SUPERCRON
    - user: root
    - minute: 3
    - hour: 4
```

New in version 2014.1.2.

The old **date > /tmp/crontest** will be replaced by **superscript > /tmp/crontest**.

Additionally, Salt also supports running a cron every `x minutes` very similarly to the Unix convention of using `*/5` to have a job run every five minutes. In Salt, this looks like:

```
date > /tmp/crontest:
  cron.present:
    - user: root
    - minute: '*/5'
```

The job will now run every 5 minutes.

Additionally, the temporal parameters (minute, hour, etc.) can be randomized by using `random` instead of using a specific value. For example, by using the `random` keyword in the `minute` parameter of a cron state, the same cron job can be pushed to hundreds or thousands of hosts, and they would each use a randomly-generated minute. This can be helpful when the cron job accesses a network resource, and it is not desirable for all hosts to run the job concurrently.

```
/path/to/cron/script:
  cron.present:
    - user: root
    - minute: random
    - hour: 2
```

New in version 0.16.0.

Since Salt assumes a value of `*` for unspecified temporal parameters, adding a parameter to the state and setting it to `random` will change that value from `*` to a randomized numeric value. However, if that field in the cron entry on the minion already contains a numeric value, then using the `random` keyword will not modify it.

Added the opportunity to set a job with a special keyword like `@reboot` or `@hourly`.

```
/path/to/cron/script:
  cron.present:
    - user: root
    - special: '@hourly'
```

The script will be executed every reboot if cron daemon support this option.

```
/path/to/cron/otherscript:
  cron.absent:
    - user: root
    - special: '@daily'
```

This counter part definition will ensure than a job with a special keyword is not set.

`salt.states.cron.`**`absent`**(*name*, *user='root'*, *identifier=False*, *special=None*, ***kwargs*)

Verifies that the specified cron job is absent for the specified user; only the name is matched when removing a cron job.

**name** The command that should be absent in the user crontab.

**user** The name of the user whose crontab needs to be modified, defaults to the root user

**identifier** Custom-defined identifier for tracking the cron line for future crontab edits. This defaults to the state id

**special** The special keyword used in the job (eg. @reboot, @hourly...)

`salt.states.cron.`**`env_absent`**(*name*, *user='root'*)

Verifies that the specified environment variable is absent from the crontab for the specified user

**name** The name of the environment variable to remove from the user crontab

**user** The name of the user whose crontab needs to be modified, defaults to the root user

`salt.states.cron.`**`env_present`**(*name*, *value=None*, *user='root'*)

Verifies that the specified environment variable is present in the crontab for the specified user.

**name** The name of the environment variable to set in the user crontab

**user** The name of the user whose crontab needs to be modified, defaults to the root user

**value** The value to set for the given environment variable

`salt.states.cron.`**`file`**(*name*, *source_hash=''*, *source_hash_name=None*, *user='root'*, *template=None*, *context=None*, *replace=True*, *defaults=None*, *env=None*, *backup=''*, ***kwargs*)

Provides file.managed-like functionality (templating, etc.) for a pre-made crontab file, to be assigned to a given user.

**name** The source file to be used as the crontab. This source file can be hosted on either the salt master server, or on an HTTP or FTP server. For files hosted on the salt file server, if the file is located on the master in the directory named spam, and is called eggs, the source string is `salt://spam/eggs`

If the file is hosted on a HTTP or FTP server then the source_hash argument is also required

**source_hash** This can be either a file which contains a source hash string for the source, or a source hash string. The source hash string is the hash algorithm followed by the hash of the file: `md5=e138491e9d5b97023cea823fe17bac22`

**source_hash_name** When `source_hash` refers to a hash file, Salt will try to find the correct hash by matching the filename/URI associated with that hash. By default, Salt will look for the filename being managed. When managing a file at path `/tmp/foo.txt`, then the following line in a hash file would match:

```
acbd18db4cc2f85cedef654fccc4a4d8    foo.txt
```

However, sometimes a hash file will include multiple similar paths:

```
37b51d194a7513e45b56f6524f2d51f2    ./dir1/foo.txt
acbd18db4cc2f85cedef654fccc4a4d8    ./dir2/foo.txt
73feffa4b7f6bb68e44cf984c85f6e88    ./dir3/foo.txt
```

In cases like this, Salt may match the incorrect hash. This argument can be used to tell Salt which filename to match, to ensure that the correct hash is identified. For example:

```
foo_crontab:
  cron.file:
    - name: https://mydomain.tld/dir2/foo.txt
    - source_hash: https://mydomain.tld/hashes
    - source_hash_name: ./dir2/foo.txt
```

---

**Note**: This argument must contain the full filename entry from the checksum file, as this argument is meant to disambiguate matches for multiple files that have the same basename. So, in the example above, simply using `foo.txt` would not match.

---

New in version 2016.3.5.

**user** The user to whom the crontab should be assigned. This defaults to root.

**template** If this setting is applied then the named templating engine will be used to render the downloaded file. Currently, jinja and mako are supported.

**context** Overrides default context variables passed to the template.

**replace** If the crontab should be replaced, if False then this command will be ignored if a crontab exists for the specified user. Default is True.

**defaults** Default context passed to the template.

**backup** Overrides the default backup mode for the user's crontab.

`salt.states.cron.`**`present`**(*name*, *user='root'*, *minute='*'*, *hour='*'*, *daymonth='*'*, *month='*'*, *dayweek='*'*, *comment=None*, *commented=False*, *identifier=False*, *special=None*)

Verifies that the specified cron job is present for the specified user. For more advanced information about what exactly can be set in the cron timing parameters, check your cron system's documentation. Most Unix-like systems' cron documentation can be found via the crontab man page: `man 5 crontab`.

**name** The command that should be executed by the cron job.

**user** The name of the user whose crontab needs to be modified, defaults to the root user

**minute** The information to be set into the minute section, this can be any string supported by your cron system's the minute field. Default is `*`

**hour** The information to be set in the hour section. Default is `*`

**daymonth** The information to be set in the day of month section. Default is `*`

**month** The information to be set in the month section. Default is *
**dayweek** The information to be set in the day of week section. Default is *
**comment** User comment to be added on line previous the cron job
**commented** The cron job is set commented (prefixed with #DISABLED#). Defaults to False.

New in version 2016.3.0.

**identifier** Custom-defined identifier for tracking the cron line for future crontab edits. This defaults to the state id
**special** A special keyword to specify periodicity (eg. @reboot, @hourly...)

New in version 2016.3.0.

### 13.16.47 salt.states.cyg

Installation of Cygwin packages.

A state module to manage cygwin packages. Packages can be installed or removed.

```
dos2unix:
  cyg.installed
```

**class** salt.states.cyg.**DictDiffer**(*current_dict*, *past_dict*)
Calculate the difference between two dictionaries.
1.items added
2.items removed
3.keys same in both but changed values
4.keys same in both and unchanged values

**added**()
Return a set of additions to past_dict.

**changed**()
Return a set of the keys with changed values.

**removed**()
Return a set of things removed from past_dict.

**same**()
True if the two dicts are the same.

**unchanged**()
Return a set of the keys with unchanged values.

salt.states.cyg.**installed**(*name*, *cyg_arch='x86_64'*, *mirrors=None*)
Make sure that a package is installed.
**name** The name of the package to install
**cyg_arch** [x86_64] The cygwin architecture to install the package into. Current options are x86 and x86_64
**mirrors** [None] List of mirrors to check. None will use a default mirror (kernel.org)
CLI Example:

```
rsync:
  cyg.installed:
    - mirrors:
      - http://mirror/without/public/key: ""
      - http://mirror/with/public/key: http://url/of/public/key
```

salt.states.cyg.**removed**(*name*, *cyg_arch='x86_64'*, *mirrors=None*)
Make sure that a package is not installed.
**name** The name of the package to uninstall

**cyg_arch** [x86_64] The cygwin architecture to remove the package from. Current options are x86 and x86_64
**mirrors** [None] List of mirrors to check. None will use a default mirror (kernel.org)
CLI Example:

```
rsync:
  cyg.removed:
    - mirrors:
      - http://mirror/without/public/key: ""
      - http://mirror/with/public/key: http://url/of/public/key
```

salt.states.cyg.**updated**(*name=None*, *cyg_arch='x86_64'*, *mirrors=None*)
Make sure all packages are up to date.
**name** [None] No affect, salt fails poorly without the arg available
**cyg_arch** [x86_64] The cygwin architecture to update. Current options are x86 and x86_64
**mirrors** [None] List of mirrors to check. None will use a default mirror (kernel.org)
CLI Example:

```
rsync:
  cyg.updated:
    - mirrors:
      - http://mirror/without/public/key: ""
      - http://mirror/with/public/key: http://url/of/public/key
```

### 13.16.48 salt.states.ddns

#### Dynamic DNS updates

Ensure a DNS record is present or absent utilizing RFC 2136 type dynamic updates.

**depends**

- dnspython

**Note**: The `dnspython` module is required when managing DDNS using a TSIG key. If you are not using a TSIG key, DDNS is allowed by ACLs based on IP address and the `dnspython` module is not required.

Example:

```
webserver:
  ddns.present:
    - zone: example.com
    - ttl: 60
    - data: 111.222.333.444
    - nameserver: 123.234.345.456
    - keyfile: /srv/salt/dnspy_tsig_key.txt
```

salt.states.ddns.**absent**(*name*, *zone*, *data=None*, *rdtype=None*, ***kwargs*)
Ensures that the named DNS record is absent.
**name** The host portion of the DNS record, e.g., `webserver'. Name and zone are concatenated when the entry is created unless name includes a trailing dot, so make sure that information is not duplicated in these two arguments.
**zone** The zone to check
**data** Data for the DNS record. E.g., the IP address for an A record. If omitted, all records matching name (and rdtype, if provided) will be purged.

**rdtype** DNS resource type. If omitted, all types will be purged.

****kwargs** Additional arguments the ddns.update function may need (e.g. nameserver, keyfile, keyname). Note that the nsupdate key file can't be reused by this function, the keyfile and other arguments must follow the dnspython spec.

`salt.states.ddns.`**`present`**(*name*, *zone*, *ttl*, *data*, *rdtype='A'*, ***kwargs*)

Ensures that the named DNS record is present with the given ttl.

**name** The host portion of the DNS record, e.g., `webserver'. Name and zone are concatenated when the entry is created unless name includes a trailing dot, so make sure that information is not duplicated in these two arguments.

**zone** The zone to check/update

**ttl** TTL for the record

**data** Data for the DNS record. E.g., the IP address for an A record.

**rdtype** DNS resource type. Default `A'.

****kwargs** Additional arguments the ddns.update function may need (e.g. nameserver, keyfile, keyname). Note that the nsupdate key file can't be reused by this function, the keyfile and other arguments must follow the dnspython spec.

### 13.16.49 salt.states.debconfmod

#### Management of debconf selections

**depends**

- debconf-utils package

The debconfmod state module manages the enforcement of debconf selections, this state can set those selections prior to package installation.

#### Available Functions

The debconfmod state has two functions, the `set` and `set_file` functions

**set** Set debconf selections from the state itself

**set_file** Set debconf selections from a file

```
nullmailer-debconf:
  debconf.set:
    - name: nullmailer
    - data:
        'shared/mailname': {'type': 'string', 'value': 'server.domain.tld'}
        'nullmailer/relayhost': {'type': 'string', 'value': 'mail.domain.tld'}
ferm-debconf:
  debconf.set:
    - name: ferm
    - data:
        'ferm/enable': {'type': 'boolean', 'value': True}
```

**Note:** Due to how PyYAML imports nested dicts (see *here*), the values in the `data` dict must be indented four spaces instead of two.

`salt.states.debconfmod.`**`set`**(*name*, *data*, ***kwargs*)

Set debconf selections

```
<state_id>:
  debconf.set:
    - name: <name>
    - data:
        <question>: {'type': <type>, 'value': <value>}
        <question>: {'type': <type>, 'value': <value>}

<state_id>:
  debconf.set:
    - name: <name>
    - data:
        <question>: {'type': <type>, 'value': <value>}
        <question>: {'type': <type>, 'value': <value>}
```

**name**: The package name to set answers for.
**data**: A set of questions/answers for debconf. Note that everything under this must be indented twice.
**question**: The question the is being pre-answered
**type**: The type of question that is being asked (string, boolean, select, etc.)
**value**: The answer to the question

salt.states.debconfmod.**set_file**(*name*, *source*, *template=None*, *context=None*, *defaults=None*, ***kwargs*)

Set debconf selections from a file or a template

```
<state_id>:
  debconf.set_file:
    - source: salt://pathto/pkg.selections

<state_id>:
  debconf.set_file:
    - source: salt://pathto/pkg.selections?saltenv=myenvironment

<state_id>:
  debconf.set_file:
    - source: salt://pathto/pkg.selections.jinja2
    - template: jinja
    - context:
        some_value: "false"
```

**source**: The location of the file containing the package selections
**template** If this setting is applied then the named templating engine will be used to render the package selections file, currently jinja, mako, and wempy are supported
**context** Overrides default context variables passed to the template.
**defaults** Default context passed to the template.

### 13.16.50 salt.states.dellchassis

Manage chassis via Salt Proxies.

New in version 2015.8.2.

Below is an example state that sets basic parameters:

```
my-dell-chassis:
  dellchassis.chassis:
    - chassis_name: my-dell-chassis
    - datacenter: dc-1-us
```

```
    - location: my-location
    - mode: 2
    - idrac_launch: 1
    - slot_names:
      - server-1: my-slot-name
      - server-2: my-other-slot-name
    - blade_power_states:
      - server-1: on
      - server-2: off
      - server-3: powercycle
```

However, it is possible to place the entire set of chassis configuration data in pillar. Here's an example pillar structure:

```
proxy:
  host: 10.27.20.18
  admin_username: root
  fallback_admin_username: root
  passwords:
    - super-secret
    - old-secret
  proxytype: fx2

  chassis:
    name: fx2-1
    username: root
    password: saltstack1
    datacenter: london
    location: rack-1-shelf-3
    management_mode: 2
    idrac_launch: 0
    slot_names:
      - 'server-1': blade1
      - 'server-2': blade2

    servers:
      server-1:
        idrac_password: saltstack1
        ipmi_over_lan: True
        ip: 172.17.17.132
        netmask: 255.255.0.0
        gateway: 172.17.17.1
      server-2:
        idrac_password: saltstack1
        ipmi_over_lan: True
        ip: 172.17.17.2
        netmask: 255.255.0.0
        gateway: 172.17.17.1
      server-3:
        idrac_password: saltstack1
        ipmi_over_lan: True
        ip: 172.17.17.20
        netmask: 255.255.0.0
        gateway: 172.17.17.1
      server-4:
        idrac_password: saltstack1
        ipmi_over_lan: True
        ip: 172.17.17.2
        netmask: 255.255.0.0
```

```
        gateway: 172.17.17.1

    switches:
      switch-1:
        ip: 192.168.1.2
        netmask: 255.255.255.0
        gateway: 192.168.1.1
        snmp: nonpublic
        password: saltstack1
      switch-2:
        ip: 192.168.1.3
        netmask: 255.255.255.0
        gateway: 192.168.1.1
        snmp: nonpublic
        password: saltstack1
```

And to go with it, here's an example state that pulls the data from the pillar stated above:

```
{% set details = pillar.get('proxy:chassis', {}) %}
standup-step1:
  dellchassis.chassis:
    - name: {{ details['name'] }}
    - location: {{ details['location'] }}
    - mode: {{ details['management_mode'] }}
    - idrac_launch: {{ details['idrac_launch'] }}
    - slot_names:
      {% for entry details['slot_names'] %}
        - {{ entry.keys()[0] }}: {{ entry[entry.keys()[0]]  }}
      {% endfor %}

blade_powercycle:
  dellchassis.chassis:
    - blade_power_states:
      - server-1: powercycle
      - server-2: powercycle
      - server-3: powercycle
      - server-4: powercycle

# Set idrac_passwords for blades.  racadm needs them to be called 'server-x'
{% for k, v in details['servers'].iteritems() %}
{{ k }}:
  dellchassis.blade_idrac:
    - idrac_password: {{ v['idrac_password'] }}
{% endfor %}

# Set management ip addresses, passwords, and snmp strings for switches
{% for k, v in details['switches'].iteritems() %}
{{ k }}-switch-setup:
  dellchassis.switch:
    - name: {{ k }}
    - ip: {{ v['ip'] }}
    - netmask: {{ v['netmask'] }}
    - gateway: {{ v['gateway'] }}
    - password: {{ v['password'] }}
    - snmp: {{ v['snmp'] }}
{% endfor %}
```

**Note**: This state module relies on the dracr.py execution module, which runs racadm commands on the chassis, blades, etc. The racadm command runs very slowly and, depending on your state, the proxy minion return might timeout before the racadm commands have completed. If you are repeatedly seeing minions timeout after state calls, please use the `-t` CLI argument to increase the timeout variable.

For example:

```
salt '*' state.sls my-dell-chasis-state-name -t 60
```

**Note**: The Dell CMC units perform adequately but many iDRACs are **excruciatingly** slow. Some functions can take minutes to execute.

salt.states.dellchassis.**blade_idrac**(*name*, *idrac_password=None*, *idrac_ipmi=None*, *idrac_ip=None*, *idrac_netmask=None*, *idrac_gateway=None*, *idrac_dnsname=None*, *idrac_dhcp=None*)

Set parameters for iDRAC in a blade.

**Parameters** **idrac_password** -- Password to use to connect to the iDRACs directly (idrac_ipmi and idrac_dnsname must be set directly on the iDRAC. They can't be set through the CMC. If this password is present, use it instead of the CMC password) :param idrac_ipmi: Enable/Disable IPMI over LAN :param idrac_ip: Set IP address for iDRAC :param idrac_netmask: Set netmask for iDRAC :param idrac_gateway: Set gateway for iDRAC :param idrac_dhcp: Turn on DHCP for iDRAC (True turns on, False does nothing

becaause setting a static IP will disable DHCP).

**Returns** A standard Salt changes dictionary

NOTE: If any of the IP address settings is configured, all of ip, netmask, and gateway must be present

salt.states.dellchassis.**chassis**(*name*, *chassis_name=None*, *password=None*, *datacenter=None*, *location=None*, *mode=None*, *idrac_launch=None*, *slot_names=None*, *blade_power_states=None*)

Manage a Dell Chassis.

**chassis_name** The name of the chassis.

**datacenter** The datacenter in which the chassis is located

**location** The location of the chassis.

**password** Password for the chassis. Note: If this password is set for the chassis, the current implementation of this state will set this password both on the chassis and the iDrac passwords on any configured blades. If the password for the blades should be distinct, they should be set separately with the blade_idrac function.

**mode** The management mode of the chassis. Viable options are:

- 0: None
- 1: Monitor
- 2: Manage and Monitor

**idrac_launch** The iDRAC launch method of the chassis. Viable options are:

- 0: Disabled (launch iDRAC using IP address)
- 1: Enabled (launch iDRAC using DNS name)

**slot_names** The names of the slots, provided as a list identified by their slot numbers.

**blade_power_states** The power states of a blade server, provided as a list and identified by their server numbers. Viable options are:

- on: Ensure the blade server is powered on.
- off: Ensure the blade server is powered off.
- powercycle: Power cycle the blade server.

Example:

```
my-dell-chassis:
  dellchassis.chassis:
    - chassis_name: my-dell-chassis
    - location: my-location
    - datacenter: london
    - mode: 2
    - idrac_launch: 1
    - slot_names:
      - 1: my-slot-name
      - 2: my-other-slot-name
    - blade_power_states:
      - server-1: on
      - server-2: off
      - server-3: powercycle
```

salt.states.dellchassis.**firmware_update**(*hosts=None*, *directory=''*)

State to update the firmware on host using the `racadm` command

**firmwarefile** filename (string) starting with `salt://`

**host** string representing the hostname supplied to the `racadm` command

**directory** Directory name where firmwarefile will be downloaded

```
dell-chassis-firmware-update:
  dellchassis.firmware_update:
    hosts:
      cmc:
        salt://firmware_cmc.exe
      server-1:
        salt://firmware.exe
    directory: /opt/firmwares
```

salt.states.dellchassis.**switch**(*name*, *ip=None*, *netmask=None*, *gateway=None*, *dhcp=None*, *password=None*, *snmp=None*)

Manage switches in a Dell Chassis.

**name** The switch designation (e.g. switch-1, switch-2)

**ip** The Static IP Address of the switch

**netmask** The netmask for the static IP

**gateway** The gateway for the static IP

**dhcp** True: Enable DHCP False: Do not change DHCP setup (disabling DHCP is automatic when a static IP is set)

**password** The access (root) password for the switch

**snmp** The SNMP community string for the switch

Example:

```
my-dell-chassis:
  dellchassis.switch:
    - switch: switch-1
    - ip: 192.168.1.1
    - netmask: 255.255.255.0
    - gateway: 192.168.1.254
    - dhcp: True
    - password: secret
    - snmp: public
```

### 13.16.51 salt.states.disk

Disk monitoring state

Monitor the state of disk resources.

The `disk.status` function can be used to report that the used space of a filesystem is within the specified limits.

```
used_space:
  disk.status:
    - name: /dev/xda1
    - maximum: 79%
    - minimum: 11%
```

It can be used with an `onfail` requisite, for example, to take additional action in response to or in preparation for other states.

```
storage_threshold:
  disk.status:
    - name: /dev/xda1
    - maximum: 97%

clear_cache:
  cmd.run:
    - name: rm -r /var/cache/app
    - onfail:
      - disk: storage_threshold
```

`salt.states.disk.`**`status`**(*name*, *maximum=None*, *minimum=None*)

Return the current disk usage stats for the named mount point

**name** Filesystem with which to check used space

**minimum** The required minimum amount of used space in percent

**maximum** The required maximum amount of used space in percent

### 13.16.52 salt.states.dockerio

#### Manage Docker containers

Deprecated since version 2015.8.0: Future feature development will be done only in *dockerng*. See the documentation for this module for information on the deprecation path.

Docker is a lightweight, portable, self-sufficient software container wrapper. The base supported wrapper type is LXC, cgroups, and the Linux Kernel.

**Note**: This state module requires docker-py version >= 0.6.0 which supports Docker Remote API version 1.12.

#### Available Functions

- built

```
corp/mysuperdocker_img:
  docker.built:
    - path: /path/to/dir/container
```

- pulled

```
ubuntu:
  docker.pulled:
    - tag: latest
```

- pushed

```
corp/mysuperdocker_img:
  docker.pushed
```

- installed

```
mysuperdocker-container:
  docker.installed:
    - name: mysuperdocker
    - hostname: superdocker
    - image: corp/mysuperdocker_img
```

- loaded

```
mysuperdocker-file:
  docker.loaded:
    - name: mysuperdocker
    - source: salt://_files/tmp/docker_image.tar
```

- running

```
my_service:
  docker.running:
    - container: mysuperdocker
    - image: corp/mysuperdocker_img
    - ports:
      - "5000/tcp":
            HostIp: ""
            HostPort: "5000"
```

---

**Note**: The `ports` argument above is a dictionary. The double indentation is required for PyYAML to load the data structure properly as a python dictionary. More information can be found *here*

---

- absent

```
mys_old_uperdocker:
  docker.absent
```

- run

```
/finish-install.sh:
  docker.run:
    - cid: mysuperdocker
    - unless: grep -q something /var/log/foo
    - docker_unless: grep -q done /install_log
```

### Use Cases

Ensures the container is running with the latest image available

```
my-service-image:
  docker.pulled:
    - name: registry/my-service:latest
    - force: true

my-service-container:
  docker.installed:
    - image: registry/my-service:latest
    - watch:
      - docker: my-service-image

my-service:
  docker.running:
    - container: my-service-container
    - watch:
      - docker: my-service-container
```

---

**Note**: The docker modules are named `dockerio` because the name `docker' would conflict with the underlying docker-py library.

---

`salt.states.dockerio.`**`absent`**(*name*)

Ensure that the container is absent; if not, it will will be killed and destroyed. (*docker inspect*)

**name**: Either the container name or id

`salt.states.dockerio.`**`built`**(*name*, *tag='latest'*, *path=None*, *quiet=False*, *nocache=False*, *rm=True*, *force=False*, *timeout=None*, **args*, ***kwargs*)

Build a docker image from a path or URL to a dockerfile. (*docker build*)

**name** Name of the image

**tag** tag of the image (defaults to `latest')

**path** URL (e.g. *url/branch/docker_dir/dockerfile*) or filesystem path to the dockerfile

`salt.states.dockerio.`**`installed`**(*name*, *image*, *tag='latest'*, *command=None*, *hostname=None*, *user=None*, *detach=True*, *stdin_open=False*, *tty=False*, *mem_limit=None*, *ports=None*, *environment=None*, *dns=None*, *volumes=None*, *volumes_from=None*, *cpu_shares=None*, *cpuset=None*, **args*, ***kwargs*)

Ensure that a container with the given name exists; if not, build a new container from the specified image. (*docker run*)

**name** Name for the container

**image** Image from which to build this container

**tag** tag of the image (defaults to `latest')

**environment**

**Environment variables for the container, either**

- a mapping of key, values
- a list of mappings of key, values

**ports**

**List of ports definitions, either**:

- a port to map
- a mapping of mapping portInHost : PortInContainer

**volumes** List of volumes (see notes for the running function)
For other parameters, see absolutely first the salt.modules.dockerio execution module and the docker-py python bindings for docker documentation for *docker.create_container*.

---

**Note**: This command does not verify that the named container is running the specified image.

---

`salt.states.dockerio.`**`loaded`**(*name*, *tag='latest'*, *source=None*, *source_hash='`*, *force=False*)
Load an image into the local docker registry (*docker load*)
**name** Name of the docker image
**tag** tag of the image (defaults to `latest')
**source** The source .tar file to download to the minion, created by docker save this source file can be hosted on either the salt master server, or on an HTTP or FTP server.

If the file is hosted on a HTTP or FTP server then the source_hash argument is also required

---

**Note**: See first the documentation for Salt file.managed

---

**source_hash**
**This can be one of the following**:

1. a source hash string
2. the URI of a file that contains source hash strings

**force** Load even if the image exists

`salt.states.dockerio.`**`mod_watch`**(*name*, *sfun=None*, **args*, ***kw*)

`salt.states.dockerio.`**`present`**(*name*, *image=None*, *tag='latest'*, *is_latest=False*)
If a container with the given name is not present, this state will fail. Supports optionally checking for specific image/tag (*docker inspect*)
**name**: container id
**image**: image the container should be running (defaults to any)
**tag**: tag of the image (defaults to `latest')
**is_latest**: also check if the container runs the latest version of the image ( latest defined as the latest pulled onto the local machine)

`salt.states.dockerio.`**`pulled`**(*name*, *tag='latest'*, *force=False*, *insecure_registry=False*, **args*, ***kwargs*)
Pull an image from a docker registry. (*docker pull*)

---

**Note**: See first the documentation for *docker login*, *docker pull*, *docker push*, and docker.import_image (docker import). NOTE that we added in SaltStack a way to authenticate yourself with the Docker Hub Registry by supplying your credentials (username, email & password) using pillars. For more information, see salt.modules.dockerio execution module.

---

**name** Name of the image
**tag** Tag of the image
**force** Pull even if the image is already pulled
**insecure_registry** Set to `True` to allow connections to non-HTTPS registries. Default `False`.

`salt.states.dockerio.`**`pushed`**(*name*, *tag='latest'*, *insecure_registry=False*)
Push an image from a docker registry. (*docker push*)

---

**Note**: See first the documentation for *docker login*, *docker pull*, *docker push*, and docker.import_image

(docker import). NOTE that we added in SaltStack a way to authenticate yourself with the Docker Hub Registry by supplying your credentials (username, email & password) using pillars. For more information, see salt.modules.dockerio execution module.

---

**name** Name of the image
**tag** Tag of the image [Optional]
**insecure_registry** Set to `True` to allow connections to non-HTTPS registries. Default `False`.

`salt.states.dockerio.`**`run`**(*name*, *cid=None*, *hostname=None*, *onlyif=None*, *unless=None*, *docked_onlyif=None*, *docked_unless=None*, **args*, ***kwargs*)

Run a command in a specific container

You can match by either name or hostname
**name** command to run in the container
**cid** Container id or name
**state_id** state_id
**onlyif** Only execute cmd if statement on the host returns 0
**unless** Do not execute cmd if statement on the host returns 0
**docked_onlyif** Only execute cmd if statement in the container returns 0
**docked_unless** Do not execute cmd if statement in the container returns 0

`salt.states.dockerio.`**`running`**(*name*, *image*, *tag='latest'*, *container=None*, *command=None*, *hostname=None*, *user=None*, *detach=True*, *stdin_open=False*, *tty=False*, *mem_limit=None*, *ports=None*, *environment=None*, *dns=None*, *volumes=None*, *volumes_from=None*, *start=True*, *cap_add=None*, *cap_drop=None*, *privileged=None*, *lxc_conf=None*, *network_mode=None*, *check_is_running=True*, *publish_all_ports=False*, *links=None*, *restart_policy=None*, *cpu_shares=None*, *cpuset=None*, *kill_signal=None*, **args*, ***kwargs*)

Ensure that a container is running. If the container does not exist, it will be created from the specified image. (*docker run*)
**name / container** Name for the container
**image** Image from which to build this container
**tag** tag of the image (defaults to `latest')
**environment**

**Environment variables for the container, either**

- a mapping of key, values
- a list of mappings of key, values

**ports**

**List of ports definitions, either**:

- a port to map
- a mapping of mapping portInHost : PortInContainer

```
- ports:
  - "5000/tcp":
        HostIp: ""
        HostPort: "5000"
```

**publish_all_ports** Publish all ports from the port list (default is false, only meaningful if port does not contain portinhost:portincontainer mapping)
**volumes** List of volumes to mount or create in the container (like `-v` of `docker run` command), mapping host directory to container directory.

To specify a volume in the container in terse list format:

```
- volumes:
  - "/var/log/service" # container-only volume
  - "/srv/timezone:/etc/timezone" # bound volume
  - "/usr/local/etc/passwd:/etc/passwd:ro" # read-only bound volume
```

You can also use the short dictionary form (note that the notion of source:target from docker is preserved):

```
- volumes:
  - /var/log/service: /var/log/service # mandatory read-write implied
```

Or, alternatively, to specify read-only mounting, use the extended form:

```
- volumes:
  - /home/user1:
      bind: /mnt/vol2
      ro: True
  - /var/www:
      bind: /mnt/vol1
      ro: False
```

Or (for backwards compatibility) another dict style:

```
- volumes:
    /home/user1:
      bind: /mnt/vol2
      ro: True
    /var/www:
      bind: /mnt/vol1
      ro: False
```

**volumes_from** List of containers to share volumes with

**dns** List of DNS servers.

```
- dns:
    - 127.0.0.1
```

**network_mode**

- `bridge': creates a new network stack for the container on the docker bridge
- `none': no networking for this container
- `container:[name|id]': reuses another container network stack)
- `host': use the host network stack inside the container

```
- network_mode: host
```

**restart_policy** Restart policy to apply when a container exits (no, on-failure[:max-retry], always)

```
- restart_policy:
    MaximumRetryCount: 5
    Name: on-failure
```

**cap_add** List of capabilities to add in a container.

**cap_drop** List of capabilities to drop in a container.

**check_is_running** Enable checking if a container should run or not. Useful for data-only containers that must be linked to another one. e.g. nginx <- static-files

**cpu_shares** CPU shares (relative weight)

```
- cpu_shares: 2
```

**cpuset** CPUs in which to allow execution (`0-3' or `0,1')

```
- cpuset: '0-3'
```

**kill_signal** If defined, its value will be sent as a kill signal to the running container. i.e. It will use client.kill(signal=kill_signal) instead of client.restart(), when the state is triggered by a watcher requisite.

possible use case: Soft reload of nginx

```
nginx:
  docker.running:
    - image: some-fictional-registry.com/nginx
    - tag: latest
    - kill_signal: SIGHUP
    - watch:
      - file: /etc/nginx/nginx.conf
```

This state will ask nginx to reload (instead of restart) each time the /etc/nginx/nginx.conf is modified.

New in version 2015.8.0.

For other parameters, see salt.modules.dockerio execution module and the docker-py python bindings for docker documentation <https://github.com/dotcloud/docker-py#api>`_ for *docker.create_container*.

---

**Note**: This command does not verify that the named container is running the specified image.

---

`salt.states.dockerio.`**`script`**`(*args, **kw)`

Placeholder function for a cmd.script alike.

---

**Note**: Not yet implemented. Its implementation might be very similar from *salt.states.dockerio.run*

---

## 13.16.53 salt.states.dockerng

Management of Docker containers

New in version 2015.8.0.

This is the state module to accompany the *dockerng* execution module.

### Why Make a Second Docker State Module?

We have received a lot of feedback on our Docker support. In the process of implementing recommended improvements, it became obvious that major changes needed to be made to the functions and return data. In the end, a complete rewrite was done.

The changes being too significant, it was decided that making a separate execution module and state module (called `dockerng`) would be the best option. This will give users a couple release cycles to modify their scripts, SLS files, etc. to use the new functionality, rather than forcing users to change everything immediately.

In the **Nitrogen** release of Salt (due in 2017), this execution module will take the place of the default Docker execution module, and backwards-compatible naming will be maintained for a couple releases after that to allow users time to replace references to `dockerng` with `docker`.

**Note**: To pull from a Docker registry, authentication must be configured. See *here* for more information on how to configure access to docker registries in *Pillar* data.

salt.states.dockerng.**absent**(*name*, *force=False*)

Ensure that a container is absent

**name** Name of the container

**force** [False] Set to `True` to remove the container even if it is running

Usage Examples:

```
mycontainer:
  dockerng.absent

multiple_containers:
  dockerng.absent:
    - names:
      - foo
      - bar
      - baz
```

salt.states.dockerng.**image_absent**(*name=None*, *images=None*, *force=False*)

Ensure that an image is absent from the Minion. Image names can be specified either using `repo:tag` notation, or just the repo name (in which case a tag of `latest` is assumed).

**images** Run this state on more than one image at a time. The following two examples accomplish the same thing:

```
remove_images:
  dockerng.image_absent:
    - names:
      - busybox
      - centos:6
      - nginx
```

```
remove_images:
  dockerng.image_absent:
    - images:
      - busybox
      - centos:6
      - nginx
```

However, the second example will be a bit quicker since Salt will do all the deletions in a single run, rather than executing the state separately on each image (as it would in the first example).

**force** [False] Salt will fail to remove any images currently in use by a container. Set this option to true to remove the image even if it is already present.

**Note**: This option can also be overridden by Pillar data. If the Minion has a pillar variable named `dockerng.running.force` which is set to `True`, it will turn on this option. This pillar variable can even be set at runtime. For example:

```
salt myminion state.sls docker_stuff pillar="{dockerng.force: True}"
```

If this pillar variable is present and set to `False`, then it will turn off this option.

For more granular control, setting a pillar variable named `dockerng.force.image_name` will affect only the named image.

salt.states.dockerng.**image_present**(*name*, *build=None*, *load=None*, *force=False*, *insecure_registry=False*, *client_timeout=60*, ***kwargs*)

Ensure that an image is present. The image can either be pulled from a Docker registry, built from a Dockerfile, or loaded from a saved image. Image names can be specified either using `repo:tag` notation, or just the repo name (in which case a tag of `latest` is assumed). Repo identifier is mandatory, we don't assume the default repository is docker hub.

If neither of the `build` or `load` arguments are used, then Salt will pull from the *configured registries*. If the specified image already exists, it will not be pulled unless `force` is set to `True`. Here is an example of a state that will pull an image from the Docker Hub:

```
myuser/myimage:mytag:
  dockerng.image_present
```

**build** Path to directory on the Minion containing a Dockerfile

```
myuser/myimage:mytag:
  dockerng.image_present:
    - build: /home/myuser/docker/myimage
```

The image will be built using *dockerng.build* and the specified image name and tag will be applied to it.

**load** Loads a tar archive created with *dockerng.load* (or the `docker load` Docker CLI command), and assigns it the specified repo and tag.

```
myuser/myimage:mytag:
  dockerng.image_present:
    - load: salt://path/to/image.tar
```

**force** [False] Set this parameter to `True` to force Salt to pull/build/load the image even if it is already present.

**client_timeout** Timeout in seconds for the Docker client. This is not a timeout for the state, but for receiving a response from the API.

salt.states.dockerng.**mod_watch**(*name*, *sfun=None*, ***kwargs*)

salt.states.dockerng.**network_absent**(*name*, *driver=None*)

Ensure that a network is absent.

**name** Name of the network

Usage Examples:

```
network_foo:
  dockerng.network_absent
```

salt.states.dockerng.**network_present**(*name*, *driver=None*, *containers=None*)

Ensure that a network is present.

**name** Name of the network

**driver** Type of driver for that network.

**containers**: List of container names that should be part of this network

Usage Examples:

```
network_foo:
  dockerng.network_present
```

```
network_bar:
  dockerng.network_present
    - name: bar
    - containers:
```

```
        - cont1
        - cont2
```

salt.states.dockerng.**running**(*name*, *image=None*, *force=False*, *stop_timeout=10*, *validate_ip_addrs=True*, *watch_action='force'*, *client_timeout=60*, *start=True*, ***kwargs*)

Ensure that a container with a specific configuration is present and running

**name** Name of the container

**image** Image to use for the container. Image names can be specified either using `repo:tag` notation, or just the repo name (in which case a tag of `latest` is assumed).

---

**Note**: This state will pull the image if it is not present. However, if the image needs to be built from a Dockerfile or loaded from a saved image, or if you would like to use requisites to trigger a replacement of the container when the image is updated, then the `dockerng.image_present` should be used to manage the image.

---

**force** [False] Set this parameter to `True` to force Salt to re-create the container irrespective of whether or not it is configured as desired.

**stop_timeout** [10] If the container needs to be replaced, the container will be stopped using *dockerng.stop*. The value of this parameter will be passed to *dockerng.stop* as the `timeout` value, telling Docker how long to wait for a graceful shutdown before killing the container.

**validate_ip_addrs** [True] For parameters which accept IP addresses as input, IP address validation will be performed. To disable, set this to `False`

**watch_action** [force] Control what type of action is taken when this state *watches* another state that has changes. The default action is `force`, which runs the state with `force` set to `True`, triggering a rebuild of the container.

If any other value is passed, it will be assumed to be a kill signal. If the container matches the specified configuration, and is running, then the action will be to send that signal to the container. Kill signals can be either strings or numbers, and are defined in the **Standard Signals** section of the `signal(7)` manpage. Run `man 7 signal` on a Linux host to browse this manpage. For example:

```
mycontainer:
  dockerng.running:
    - image: busybox
    - watch_action: SIGHUP
    - watch:
      - file: some_file
```

---

**Note**: If the container differs from the specified configuration, or is not running, then instead of sending a signal to the container, the container will be re-created/started and no signal will be sent.

---

**client_timeout** Timeout in seconds for the Docker client. This is not a timeout for this function, but for receiving a response from the API.

---

**Note**: This is only used if Salt needs to pull the requested image.

---

CONTAINER CONFIGURATION PARAMETERS

**command or cmd** Command to run in the container

```
foo:
  dockerng.running:
    - image: bar/baz:latest
```

```
    - command: bash
```

OR

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - cmd: bash
```

Changed in version 2015.8.1: `cmd` is now also accepted

**hostname** Hostname of the container. If not provided, and if a `name` has been provided, the `hostname` will default to the `name` that was passed.

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - hostname: web1
```

**Warning**: `hostname` cannot be set if `network_mode` is set to `host`. The below example will result in an error:

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - hostname: web1
    - network_mode: host
```

**domainname** Domain name of the container

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - hostname: domain.tld
```

**interactive** [False] Leave stdin open

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - interactive: True
```

**tty** [False] Attach TTYs

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - tty: True
```

**detach** [True] If `True`, run the container's command in the background (daemon mode)

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - detach: False
```

**user** User under which to run docker

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - user: foo
```

**memory** [0] Memory limit. Can be specified in bytes or using single-letter units (i.e. `512M`, `2G`, etc.). A value of `0` (the default) means no memory limit.

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - memory: 512M
```

**memory_swap** [-1] Total memory limit (memory plus swap). Set to `-1` to disable swap. A value of `0` means no swap limit.

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - memory_swap: 1G
```

**mac_address** MAC address to use for the container. If not specified, a random MAC address will be used.

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - mac_address: 01:23:45:67:89:0a
```

**network_disabled** [False] If `True`, networking will be disabled within the container

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - network_disabled: True
```

**working_dir** Working directory inside the container

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - working_dir: /var/log/nginx
```

**entrypoint** Entrypoint for the container

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - entrypoint: "mycmd --arg1 --arg2"
```

The entrypoint can also be specified as a list of arguments:

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - entrypoint:
      - mycmd
      - --arg1
      - --arg2
```

**environment** Either a list of variable/value mappings, or a list of strings in the format `VARNAME=value`. The below two examples are equivalent:

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - environment:
      - VAR1: value
      - VAR2: value
```

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - environment:
      - VAR1=value
      - VAR2=value
```

---

**Note**: Values must be strings. Otherwise it will be considered as an error.

---

**ports** A list of ports to expose on the container. Can either be a comma-separated list or a YAML list. If the protocol is omitted, the port will be assumed to be a TCP port. The below two examples are equivalent:

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - ports: 1111,2222/udp
```

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - ports:
      - 1111
      - 2222/udp
```

**volumes** [None] List of directories to expose as volumes. Can either be a comma-separated list or a YAML list. The below two examples are equivalent:

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - volumes: /mnt/vol1,/mnt/vol2
```

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - volumes:
      - /mnt/vol1
      - /mnt/vol2
```

**cpu_shares** CPU shares (relative weight)

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - cpu_shares: 0.5
```

**cpuset** CPUs on which which to allow execution, specified as a string containing a range (e.g. `0-3`) or a comma-separated list of CPUs (e.g. `0,1`).

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - cpuset: "0,1"
```

**binds** Files/directories to bind mount. Each bind mount should be passed in the format `<host_path>:<container_path>:<read_only>`, where `<read_only>` is one of `rw` (for read-write access) or `ro` (for read-only access).

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - binds: /srv/www:/var/www:ro,/etc/foo.conf:/usr/local/etc/foo.conf:rw
```

Binds can be passed as a YAML list instead of a comma-separated list:

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - binds:
      - /srv/www:/var/www:ro
      - /home/myuser/conf/foo.conf:/etc/foo.conf:rw
```

Optionally, the read-only information can be left off the end and the bind mount will be assumed to be read-write. The example below is equivalent to the one above:

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - binds:
      - /srv/www:/var/www:ro
      - /home/myuser/conf/foo.conf:/etc/foo.conf
```

**port_bindings** Bind exposed ports. Port bindings should be passed in the same way as the `--publish` argument to the `docker run` CLI command:

- `ip:hostPort:containerPort` - Bind a specific IP and port on the host to a specific port within the container.
- `ip::containerPort` - Bind a specific IP and an ephemeral port to a specific port within the container.
- `hostPort:containerPort` - Bind a specific port on all of the host's interfaces to a specific port within the container.
- `containerPort` - Bind an ephemeral port on all of the host's interfaces to a specific port within the container.

Multiple bindings can be separated by commas, or passed as a Python list. The below two examples are equivalent:

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - port_bindings: "5000:5000,2123:2123/udp,8080"
```

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - port_bindings:
      - 5000:5000
      - 2123:2123/udp
```

```
      - "8080"
```

**Note**: When configuring bindings for UDP ports, the protocol must be passed in the `containerPort` value, as seen in the examples above.

**lxc_conf** Additional LXC configuration parameters to set before starting the container.

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - lxc_conf:
      - lxc.utsname: docker
```

**Note**: These LXC configuration parameters will only have the desired effect if the container is using the LXC execution driver, which has not been the default for some time.

**publish_all_ports** [False] Allocates a random host port for each port exposed using the `ports` parameter

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - ports: 8080
    - publish_all_ports: True
```

**links** Link this container to another. Links should be specified in the format `<container_name_or_id>:<link_alias>`. Multiple links can be passed, either as a comma separated list or a YAML list. The below two examples are equivalent:

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - links: web1:link1,web2:link2
```

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - links:
      - web1:link1
      - web2:link2
```

**dns** List of DNS nameservers. Can be passed as a comma-separated list or a YAML list. The below two examples are equivalent:

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - dns: 8.8.8.8,8.8.4.4
```

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - dns:
      - 8.8.8.8
      - 8.8.4.4
```

**Note**: To skip IP address validation, use `validate_ip_addrs=False`

**dns_search** List of DNS search domains. Can be passed as a comma-separated list or a YAML list. The below two examples are equivalent:

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - dns_search: foo1.domain.tld,foo2.domain.tld
```

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - dns_search:
      - foo1.domain.tld
      - foo2.domain.tld
```

**volumes_from** Container names or IDs from which the container will get volumes. Can be passed as a comma-separated list or a YAML list. The below two examples are equivalent:

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - volumes_from: foo
```

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - volumes_from:
      - foo
```

**network_mode** [bridge] One of the following:

- `bridge` - Creates a new network stack for the container on the docker bridge
- `null` - No networking (equivalent of the Docker CLI argument `--net=none`)
- `container:<name_or_id>` - Reuses another container's network stack
- `host` - Use the host's network stack inside the container
- Any name that identifies an existing network that might be created with `dockerng.network_present`.

**Warning**: Using `host` mode gives the container full access to the hosts system's services (such as D-bus), and is therefore considered insecure.

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - network_mode: null
```

**restart_policy** Set a restart policy for the container. Must be passed as a string in the format `policy[:retry_count]` where `policy` is one of `always` or `on-failure`, and `retry_count` is an optional limit to the number of retries. The retry count is ignored when using the `always` restart policy.

```
foo:
  dockerng.running:
    - image: bar/baz:latest
```

```
    - restart_policy: on-failure:5

bar:
  dockerng.running:
    - image: bar/baz:latest
    - restart_policy: always
```

**cap_add** List of capabilities to add within the container. Can be passed as a comma-separated list or a Python list. The below two examples are equivalent:

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - cap_add: SYS_ADMIN,MKNOD
```

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - cap_add:
      - SYS_ADMIN
      - MKNOD
```

**Note**: This option requires Docker 1.2.0 or newer.

**cap_drop** List of capabilities to drop within the container. Can be passed as a comma-separated list or a Python list. The below two examples are equivalent:

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - cap_drop: SYS_ADMIN,MKNOD
```

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - cap_drop:
      - SYS_ADMIN
      - MKNOD
```

**Note**: This option requires Docker 1.2.0 or newer.

**privileged** Give extended privileges to container.

**extra_hosts** Additional hosts to add to the container's /etc/hosts file. Can be passed as a comma-separated list or a Python list. The below two exampels are equivalent:

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - extra_hosts: web1:10.9.8.7,web2:10.9.8.8
```

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - extra_hosts:
```

```
      - web1:10.9.8.7
      - web2:10.9.8.8
```

**Note**: To skip IP address validation, use `validate_ip_addrs=False`

**Note**: This option requires Docker 1.3.0 or newer.

**pid_mode** Set to `host` to use the host container's PID namespace within the container

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - pid_mode: host
```

**Note**: This option requires Docker 1.5.0 or newer.

**ulimits** List of ulimits. These limits should be passed in the format `<ulimit_name>:<soft_limit>:<hard_limit>`, with the hard limit being optional.

New in version 2016.3.6,2016.11.4,Nitrogen.

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - ulimits: nofile=1024:1024,nproc=60
```

Ulimits can be passed as a YAML list instead of a comma-separated list:

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - ulimits:
      - nofile=1024:1024
      - nproc=60
```

**labels** Add Metadata to the container. Can be a list of strings/dictionaries or a dictionary of strings (keys and values).

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - labels:
        - LABEL1
        - LABEL2
```

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - labels:
        KEY1: VALUE1
        KEY2: VALUE2
```

```
foo:
  dockerng.running:
    - image: bar/baz:latest
    - labels:
      - KEY1: VALUE1
      - KEY2: VALUE2
```

**start** [True] Set to `False` to suppress starting of the container if it exists, matches the desired configuration, but is not running. This is useful for data-only containers, or for non-daemonized container processes, such as the django `migrate` and `collectstatic` commands. In instances such as this, the container only needs to be started the first time.

`salt.states.dockerng.`**`stopped`**(*name=None*, *containers=None*, *stop_timeout=10*, *unpause=False*, *error_on_absent=True*)

Ensure that a container (or containers) is stopped

**name** Name or ID of the container

**containers** Run this state on more than one container at a time. The following two examples accomplish the same thing:

```
stopped_containers:
  dockerng.stopped:
    - names:
      - foo
      - bar
      - baz
```

```
stopped_containers:
  dockerng.stopped:
    - containers:
      - foo
      - bar
      - baz
```

However, the second example will be a bit quicker since Salt will stop all specified containers in a single run, rather than executing the state separately on each image (as it would in the first example).

**stop_timeout** [10] Timeout for graceful shutdown of the container. If this timeout is exceeded, the container will be killed.

**unpause** [False] Set to `True` to unpause any paused containers before stopping. If unset, then an error will be raised for any container that was paused.

**error_on_absent** [True] By default, this state will return an error if any of the specified containers are absent. Set this to `False` to suppress that error.

`salt.states.dockerng.`**`volume_absent`**(*name*, *driver=None*)

Ensure that a volume is absent.

New in version 2015.8.4,.

**name** Name of the volume

Usage Examples:

```
volume_foo:
  dockerng.volume_absent
```

`salt.states.dockerng.`**`volume_present`**(*name*, *driver=None*, *driver_opts=None*, *force=False*)

Ensure that a volume is present.

New in version 2015.8.4.

Changed in version 2015.8.6: This function no longer deletes and re-creates a volume if the existing volume's

driver does not match the `driver` parameter (unless the `force` parameter is set to `True`).

**name** Name of the volume

**driver** Type of driver for that volume. If `None` and the volume does not yet exist, the volume will be created using Docker's default driver. If `None` and the volume does exist, this function does nothing, even if the existing volume's driver is not the Docker default driver. (To ensure that an existing volume's driver matches the Docker default, you must explicitly name Docker's default driver here.)

**driver_opts** Options for the volume driver

**force** [False] If the volume already exists but the existing volume's driver does not match the driver specified by the `driver` parameter, this parameter controls whether the function errors out (if `False`) or deletes and re-creates the volume (if `True`).

New in version 2015.8.6.

Usage Examples:

```
volume_foo:
  dockerng.volume_present
```

```
volume_bar:
  dockerng.volume_present
    - name: bar
    - driver: local
    - driver_opts:
        foo: bar
```

```
volume_bar:
  dockerng.volume_present
    - name: bar
    - driver: local
    - driver_opts:
        - foo: bar
        - option: value
```

### 13.16.54 salt.states.drac

Management of Dell DRAC

The DRAC module is used to create and manage DRAC cards on Dell servers

Ensure the user damian is present

```
damian:
  drac.present:
    - name: damian
    - password: secret
    - permission: login,test_alerts,clear_logs
```

Ensure the user damian does not exist

```
damian:
  drac.absent:
    - name: damian
```

Ensure DRAC network is in a consistent state

```
my_network:
  drac.network:
```

```
    - ip: 10.225.108.29
    - netmask: 255.255.255.224
    - gateway: 10.225.108.1
```

salt.states.drac.**absent**(*name*)
Ensure a user does not exist on the Dell DRAC
**name**: The users username

salt.states.drac.**network**(*ip*, *netmask*, *gateway*)
Ensure the DRAC network settings are consistent

salt.states.drac.**present**(*name*, *password*, *permission*)
Ensure the user exists on the Dell DRAC
**name**: The users username
**password** The password used to authenticate
**permission** The permissions that should be assigned to a user

### 13.16.55 salt.states.elasticsearch_index

State module to manage Elasticsearch indices

New in version 2015.8.0.

salt.states.elasticsearch_index.**absent**(*name*)
Ensure that the named index is absent

salt.states.elasticsearch_index.**present**(*name*, *definition*)
Ensure that the named index is present

### 13.16.56 salt.states.elasticsearch_index_template

State module to manage Elasticsearch index templates

New in version 2015.8.0.

salt.states.elasticsearch_index_template.**absent**(*name*)
Ensure that the named index template is absent

salt.states.elasticsearch_index_template.**present**(*name*, *definition=None*)
Ensure that the named index template is present

### 13.16.57 salt.states.environ

Support for getting and setting the environment variables of the current salt process.

salt.states.environ.**setenv**(*name*, *value*, *false_unsets=False*, *clear_all=False*, *update_minion=False*, *permanent=False*)
Set the salt process environment variables.
**name** The environment key to set. Must be a string.
**value** Either a string or dict. When string, it will be the value set for the environment key of `name' above. When a dict, each key/value pair represents an environment variable to set.
**false_unsets** If a key's value is False and false_unsets is True, then the key will be removed from the salt processes environment dict entirely. If a key's value is False and false_unsets is not True, then the key's value will be set to an empty string. Default: False

**clear_all** USE WITH CAUTION! This option can unset environment variables needed for salt to function properly. If clear_all is True, then any environment variables not defined in the environ dict will be deleted. Default: False

**update_minion** If True, apply these environ changes to the main salt-minion process. If False, the environ changes will only affect the current salt subprocess. Default: False

**permanent** On Windows minions this will set the environment variable in the registry so that it is always added as a environment variable when applications open. If you want to set the variable to HKLM instead of HKCU just pass in ``HKLM'' for this parameter. On all other minion types this will be ignored. Note: This will only take affect on applications opened after this has been set.

Example:

```
a_string_env:
   environ.setenv:
     - name: foo
     - value: bar
     - update_minion: True

a_dict_env:
   environ.setenv:
     - name: does_not_matter
     - value:
         foo: bar
         baz: quux
```

## 13.16.58 salt.states.eselect

### Management of Gentoo configuration using eselect

A state module to manage Gentoo configuration via eselect

```
profile:
    eselect.set:
        target: hardened/linux/amd64
```

salt.states.eselect.**set**(*name*, *target*, *module_parameter=None*, *action_parameter=None*)

Verify that the given module is set to the given target

**name** The name of the module

**target** The target to be set for this module

**module_parameter** additional params passed to the defined module

**action_parameter** additional params passed to the defined action

## 13.16.59 salt.states.etcd_mod

### Manage etcd Keys

New in version 2015.8.0.

**depends**

- python-etcd

This state module supports setting and removing keys from etcd.

### Configuration

To work with an etcd server you must configure an etcd profile. The etcd config can be set in either the Salt Minion configuration file or in pillar:

```
my_etd_config:
  etcd.host: 127.0.0.1
  etcd.port: 4001
```

It is technically possible to configure etcd without using a profile, but this is not considered to be a best practice, especially when multiple etcd servers or clusters are available.

```
etcd.host: 127.0.0.1
etcd.port: 4001
```

---

**Note**: The etcd configuration can also be set in the Salt Master config file, but in order to use any etcd configurations defined in the Salt Master config, the *pillar_opts* must be set to `True`.

Be aware that setting `pillar_opts` to `True` has security implications as this makes all master configuration settings available in all minion's pillars.

---

### Available Functions

- `set`

  This will set a value to a key in etcd. Changes will be returned if the key has been created or the value of the key has been updated. This means you can watch these states for changes.

  ```
  /foo/bar/baz:
    etcd.set:
      - value: foo
      - profile: my_etcd_config
  ```

- `wait_set`

  Performs the same functionality as `set` but only if a watch requisite is `True`.

  ```
  /some/file.txt:
    file.managed:
      - source: salt://file.txt

  /foo/bar/baz:
    etcd.wait_set:
      - value: foo
      - profile: my_etcd_config
      - watch:
        - file: /some/file.txt
  ```

- `rm`

  This will delete a key from etcd. If the key exists then changes will be returned and thus you can watch for changes on the state, if the key does not exist then no changes will occur.

```
/foo/bar/baz:
  etcd.rm:
    - profile: my_etcd_config
```

- `wait_rm`

  Performs the same functionality as `rm` but only if a watch requisite is `True`.

```
/some/file.txt:
  file.managed:
    - source: salt://file.txt

/foo/bar/baz:
  etcd.wait_rm:
    - profile: my_etcd_config
    - watch:
      - file: /some/file.txt
```

`salt.states.etcd_mod.`**`mod_watch`**(*name*, ***kwargs*)
Execute a etcd function based on a watch call requisite.

`salt.states.etcd_mod.`**`rm`**(*name*, *recurse=False*, *profile=None*)
Deletes a key from etcd. This function is also aliased as `rm`.
**name** The etcd key name to remove, for example `/foo/bar/baz`.
**recurse** Optional, defaults to `False`. If `True` performs a recursive delete.
**profile** Optional, defaults to `None`. Sets the etcd profile to use which has been defined in the Salt Master config.

`salt.states.etcd_mod.`**`set`**(*name*, *value*, *profile=None*)
Set a key in etcd and can be called as `set`.
**name** The etcd key name, for example: `/foo/bar/baz`.
**value** The value the key should contain.
**profile** Optional, defaults to `None`. Sets the etcd profile to use which has been defined in the Salt Master config.

`salt.states.etcd_mod.`**`wait_rm`**(*name*, *recurse=False*, *profile=None*)
Deletes a key from etcd only if the watch statement calls it. This function is also aliased as `wait_rm`.
**name** The etcd key name to remove, for example `/foo/bar/baz`.
**recurse** Optional, defaults to `False`. If `True` performs a recursive delete, see: https://python-etcd.readthedocs.org/en/latest/#delete-a-key.
**profile** Optional, defaults to `None`. Sets the etcd profile to use which has been defined in the Salt Master config.

`salt.states.etcd_mod.`**`wait_set`**(*name*, *value*, *profile=None*)
Set a key in etcd only if the watch statement calls it. This function is also aliased as `wait_set`.
**name** The etcd key name, for example: `/foo/bar/baz`.
**value** The value the key should contain.
**profile** The etcd profile to use that has been configured on the Salt Master, this is optional and defaults to `None`.

### 13.16.60 salt.states.esxi

Manage VMware ESXi Hosts.

New in version 2015.8.4.

### Dependencies

- pyVmomi Python Module
- ESXCLI

### pyVmomi

PyVmomi can be installed via pip:

```
pip install pyVmomi
```

**Note:** Version 6.0 of pyVmomi has some problems with SSL error handling on certain versions of Python. If using version 6.0 of pyVmomi, Python 2.6, Python 2.7.9, or newer must be present. This is due to an upstream dependency in pyVmomi 6.0 that is not supported in Python versions 2.7 to 2.7.8. If the version of Python is not in the supported range, you will need to install an earlier version of pyVmomi. See Issue #29537 for more information.

Based on the note above, to install an earlier version of pyVmomi than the version currently listed in PyPi, run the following:

```
pip install pyVmomi==5.5.0.2014.1.1
```

The 5.5.0.2014.1.1 is a known stable version that this original ESXi State Module was developed against.

### ESXCLI

Currently, about a third of the functions used in the vSphere Execution Module require the ESXCLI package be installed on the machine running the Proxy Minion process.

The ESXCLI package is also referred to as the VMware vSphere CLI, or vCLI. VMware provides vCLI package installation instructions for vSphere 5.5 and vSphere 6.0.

Once all of the required dependencies are in place and the vCLI package is installed, you can check to see if you can connect to your ESXi host or vCenter server by running the following command:

```
esxcli -s <host-location> -u <username> -p <password> system syslog config get
```

If the connection was successful, ESXCLI was successfully installed on your system. You should see output related to the ESXi host's syslog configuration.

**Note:** Be aware that some functionality in this state module may depend on the type of license attached to the ESXi host.

For example, certain services are only available to manipulate service state or policies with a VMware vSphere Enterprise or Enterprise Plus license, while others are available with a Standard license. The `ntpd` service is restricted to an Enterprise Plus license, while `ssh` is available via the Standard license.

Please see the vSphere Comparison page for more information.

### About

This state module was written to be used in conjunction with Salt's *ESXi Proxy Minion*. For a tutorial on how to use Salt's ESXi Proxy Minion, please refer to the *ESXi Proxy Minion Tutorial* for configuration examples, dependency installation instructions, how to run remote execution functions against ESXi hosts via a Salt Proxy Minion, and a larger state example.

`salt.states.esxi.`**`coredump_configured`**(*name*, *enabled*, *dump_ip*, *host_vnic='vmk0'*, *dump_port=6500*)

Ensures a host's core dump configuration.

**name** Name of the state.

**enabled** Sets whether or not ESXi core dump collection should be enabled. This is a boolean value set to `True` or `False` to enable or disable core dumps.

Note that ESXi requires that the core dump must be enabled before any other parameters may be set. This also affects the `changes` results in the state return dictionary. If `enabled` is `False`, we can't obtain any previous settings to compare other state variables, resulting in many `old` references returning `None`.

Once `enabled` is `True` the `changes` dictionary comparisons will be more accurate. This is due to the way the system coredemp network configuration command returns data.

**dump_ip** The IP address of host that will accept the dump.

**host_vnic** Host VNic port through which to communicate. Defaults to `vmk0`.

**dump_port** TCP port to use for the dump. Defaults to `6500`.

Example:

```
configure-host-coredump:
  esxi.coredump_configured:
    - enabled: True
    - dump_ip: 'my-coredump-ip.example.com'
```

`salt.states.esxi.`**`ntp_configured`**(*name*, *service_running*, *ntp_servers=None*, *service_policy=None*, *service_restart=False*, *update_datetime=False*)

Ensures a host's NTP server configuration such as setting NTP servers, ensuring the NTP daemon is running or stopped, or restarting the NTP daemon for the ESXi host.

**name** Name of the state.

**service_running** Ensures the running state of the ntp daemon for the host. Boolean value where `True` indicates that ntpd should be running and `False` indicates that it should be stopped.

**ntp_servers** A list of servers that should be added to the ESXi host's NTP configuration.

**service_policy** The policy to set for the NTP service.

---

**Note**: When setting the service policy to `off` or `on`, you *must* quote the setting. If you don't, the yaml parser will set the string to a boolean, which will cause trouble checking for stateful changes and will error when trying to set the policy on the ESXi host.

---

**service_restart** If set to `True`, the ntp daemon will be restarted, regardless of its previous running state. Default is `False`.

**update_datetime** If set to `True`, the date/time on the given host will be updated to UTC. Default setting is `False`. This option should be used with caution since network delays and execution delays can result in time skews.

Example:

```
configure-host-ntp:
  esxi.ntp_configured:
    - service_running: True
    - ntp_servers:
```

```
      - 192.174.1.100
      - 192.174.1.200
    - service_policy: 'on'
    - service_restart: True
```

salt.states.esxi.**password_present**(*name*, *password*)

Ensures the given password is set on the ESXi host. Passwords cannot be obtained from host, so if a password is set in this state, the `vsphere.update_host_password` function will always run (except when using test=True functionality) and the state's changes dictionary will always be populated.

The username for which the password will change is the same username that is used to authenticate against the ESXi host via the Proxy Minion. For example, if the pillar definition for the proxy username is defined as `root`, then the username that the password will be updated for via this state is `root`.

**name** Name of the state.

**password** The new password to change on the host.

Example:

```
configure-host-password:
  esxi.password_present:
    - password: 'new-bad-password'
```

salt.states.esxi.**ssh_configured**(*name*, *service_running*, *ssh_key=None*, *ssh_key_file=None*, *service_policy=None*, *service_restart=False*, *certificate_verify=False*)

Manage the SSH configuration for a host including whether or not SSH is running or the presence of a given SSH key. Note: Only one ssh key can be uploaded for root. Uploading a second key will replace any existing key.

**name** Name of the state.

**service_running** Ensures whether or not the SSH service should be running on a host. Represented as a boolean value where `True` indicates that SSH should be running and `False` indicates that SSH should stopped.

In order to update SSH keys, the SSH service must be running.

**ssh_key** Public SSH key to added to the authorized_keys file on the ESXi host. You can use `ssh_key` or `ssh_key_file`, but not both.

**ssh_key_file** File containing the public SSH key to be added to the authorized_keys file on the ESXi host. You can use `ssh_key_file` or `ssh_key`, but not both.

**service_policy** The policy to set for the NTP service.

---

**Note**: When setting the service policy to `off` or `on`, you *must* quote the setting. If you don't, the yaml parser will set the string to a boolean, which will cause trouble checking for stateful changes and will error when trying to set the policy on the ESXi host.

---

**service_restart** If set to `True`, the SSH service will be restarted, regardless of its previous running state. Default is `False`.

**certificate_verify** If set to `True`, the SSL connection must present a valid certificate. Default is `False`.

Example:

```
configure-host-ssh:
  esxi.ssh_configured:
    - service_running: True
    - ssh_key_file: /etc/salt/ssh_keys/my_key.pub
    - service_policy: 'on'
    - service_restart: True
    - certificate_verify: True
```

salt.states.esxi.**syslog_configured**(*name*, *syslog_configs*, *firewall=True*, *reset_service=True*, *reset_syslog_config=False*, *reset_configs=None*)

Ensures the specified syslog configuration parameters. By default, this state will reset the syslog service after any new or changed parameters are set successfully.

**name** Name of the state.

**syslog_configs** Name of parameter to set (corresponds to the command line switch for esxcli without the double dashes (--))

Valid syslog_config values are `logdir`, `loghost`, `logdir-unique`, `default-rotate`, `default-size`, and `default-timeout`.

Each syslog_config option also needs a configuration value to set. For example, `loghost` requires URLs or IP addresses to use for logging. Multiple log servers can be specified by listing them, comma-separated, but without spaces before or after commas

(reference: https://blogs.vmware.com/vsphere/2012/04/configuring-multiple-syslog-servers-for-esxi-5.html)

**firewall** Enable the firewall rule set for syslog. Defaults to `True`.

**reset_service** After a successful parameter set, reset the service. Defaults to `True`.

**reset_syslog_config** Resets the syslog service to it's default settings. Defaults to `False`. If set to `True`, default settings defined by the list of syslog configs in `reset_configs` will be reset before running any other syslog settings.

**reset_configs** A comma-delimited list of parameters to reset. Only runs if `reset_syslog_config` is set to `True`. If `reset_syslog_config` is set to `True`, but no syslog configs are listed in `reset_configs`, then `reset_configs` will be set to `all` by default.

See `syslog_configs` parameter above for a list of valid options.

Example:

```
configure-host-syslog:
  esxi.syslog_configured:
    - syslog_configs:
        loghost: ssl://localhost:5432,tcp://10.1.0.1:1514
        default-timeout: 120
    - firewall: True
    - reset_service: True
    - reset_syslog_config: True
    - reset_configs: loghost,default-timeout
```

salt.states.esxi.**vmotion_configured**(*name*, *enabled*, *device='vmk0'*)

Configures a host's VMotion properties such as enabling VMotion and setting the device VirtualNic that VMotion will use.

**name** Name of the state.

**enabled** Ensures whether or not VMotion should be enabled on a host as a boolean value where `True` indicates that VMotion should be enabled and `False` indicates that VMotion should be disabled.

**device** The device that uniquely identifies the VirtualNic that will be used for VMotion for the host. Defaults to `vmk0`.

Example:

```
configure-vmotion:
  esxi.vmotion_configured:
    - enabled: True
    - device: sample-device
```

salt.states.esxi.**vsan_configured**(*name*, *enabled*, *add_disks_to_vsan=False*)

Configures a host's VSAN properties such as enabling or disabling VSAN, or adding VSAN-eligible disks to the VSAN system for the host.

**name** Name of the state.

**enabled** Ensures whether or not VSAN should be enabled on a host as a boolean value where `True` indicates that VSAN should be enabled and `False` indicates that VSAN should be disabled.

**add_disks_to_vsan** If set to `True`, any VSAN-eligible disks for the given host will be added to the host's VSAN system. Default is `False`.

Example:

```
configure-host-vsan:
  esxi.vsan_configured:
    - enabled: True
    - add_disks_to_vsan: True
```

### 13.16.61 salt.states.event

Send events through Salt's event system during state runs

`salt.states.event.`**`send`**(*name*, *data=None*, *preload=None*, *with_env=False*, *with_grains=False*, *with_pillar=False*, ***kwargs*)

Send an event to the Salt Master

New in version 2014.7.0.

Accepts the same arguments as the *event.send* execution module of the same name.

Example:

```
# ...snip bunch of states above

mycompany/mystaterun/status/update:
  event.send:
    - data:
        status: "Half-way through the state run!"

# ...snip bunch of states below
```

`salt.states.event.`**`wait`**(*name*, *sfun=None*)

Fire an event on the Salt master event bus if called from a watch statement

New in version 2014.7.0.

Example:

```
# Stand up a new web server.
apache:
  pkg:
    - installed
    - name: httpd
  service:
    - running
    - enable: True
    - name: httpd

# Notify the load balancer to update the pool once Apache is running.
refresh_pool:
  event:
    - wait
    - name: mycompany/loadbalancer/pool/update
    - data:
        new_web_server_ip: {{ grains['ipv4'] | first() }}
```

```
    - watch:
      - pkg: apache
```

### 13.16.62 salt.states.file

#### Operations on regular files, special files, directories, and symlinks

Salt States can aggressively manipulate files on a system. There are a number of ways in which files can be managed.

Regular files can be enforced with the *file.managed* state. This state downloads files from the salt master and places them on the target system. Managed files can be rendered as a jinja, mako, or wempy template, adding a dynamic component to file management. An example of *file.managed* which makes use of the jinja templating system would look like this:

```
/etc/http/conf/http.conf:
  file.managed:
    - source: salt://apache/http.conf
    - user: root
    - group: root
    - mode: 644
    - template: jinja
    - defaults:
        custom_var: "default value"
        other_var: 123
{% if grains['os'] == 'Ubuntu' %}
    - context:
        custom_var: "override"
{% endif %}
```

It is also possible to use the *py renderer* as a templating option. The template would be a Python script which would need to contain a function called `run()`, which returns a string. All arguments to the state will be made available to the Python script as globals. The returned string will be the contents of the managed file. For example:

```
def run():
    lines = ['foo', 'bar', 'baz']
    lines.extend([source, name, user, context])  # Arguments as globals
    return '\n\n'.join(lines)
```

---

**Note:** The `defaults` and `context` arguments require extra indentation (four spaces instead of the normal two) in order to create a nested dictionary. *More information.*

---

If using a template, any user-defined template variables in the file defined in `source` must be passed in using the `defaults` and/or `context` arguments. The general best practice is to place default values in `defaults`, with conditional overrides going into `context`, as seen above.

The template will receive a variable `custom_var`, which would be accessed in the template using `{{ custom_var }}`. If the operating system is Ubuntu, the value of the variable `custom_var` would be *override*, otherwise it is the default *default value*

The `source` parameter can be specified as a list. If this is done, then the first file to be matched will be the one that is used. This allows you to have a default file on which to fall back if the desired file does not exist on the salt fileserver. Here's an example:

```
/etc/foo.conf:
  file.managed:
    - source:
      - salt://foo.conf.{{ grains['fqdn'] }}
      - salt://foo.conf.fallback
    - user: foo
    - group: users
    - mode: 644
    - backup: minion
```

**Note**: Salt supports backing up managed files via the backup option. For more details on this functionality please review the *backup_mode documentation*.

The `source` parameter can also specify a file in another Salt environment. In this example `foo.conf` in the `dev` environment will be used instead.

```
/etc/foo.conf:
  file.managed:
    - source:
      - salt://foo.conf?saltenv=dev
    - user: foo
    - group: users
    - mode: '0644'
```

**Warning**: When using a mode that includes a leading zero you must wrap the value in single quotes. If the value is not wrapped in quotes it will be read by YAML as an integer and evaluated as an octal.

The `names` parameter, which is part of the state compiler, can be used to expand the contents of a single state declaration into multiple, single state declarations. Each item in the `names` list receives its own individual state `name` and is converted into its own low-data structure. This is a convenient way to manage several files with similar attributes.

There is more documentation about this feature in the *Names declaration* section of the

*Highstate docs*.

Special files can be managed via the `mknod` function. This function will create and enforce the permissions on a special file. The function supports the creation of character devices, block devices, and FIFO pipes. The function will create the directory structure up to the special file if it is needed on the minion. The function will not overwrite or operate on (change major/minor numbers) existing special files with the exception of user, group, and permissions. In most cases the creation of some special files require root permissions on the minion. This would require that the minion to be run as the root user. Here is an example of a character device:

```
/var/named/chroot/dev/random:
  file.mknod:
    - ntype: c
    - major: 1
    - minor: 8
    - user: named
    - group: named
    - mode: 660
```

Here is an example of a block device:

```
/var/named/chroot/dev/loop0:
  file.mknod:
    - ntype: b
    - major: 7
    - minor: 0
    - user: named
    - group: named
    - mode: 660
```

Here is an example of a fifo pipe:

```
/var/named/chroot/var/log/logfifo:
  file.mknod:
    - ntype: p
    - user: named
    - group: named
    - mode: 660
```

Directories can be managed via the `directory` function. This function can create and enforce the permissions on a directory. A directory statement will look like this:

```
/srv/stuff/substuf:
  file.directory:
    - user: fred
    - group: users
    - mode: 755
    - makedirs: True
```

If you need to enforce user and/or group ownership or permissions recursively on the directory's contents, you can do so by adding a `recurse` directive:

```
/srv/stuff/substuf:
  file.directory:
    - user: fred
    - group: users
    - mode: 755
    - makedirs: True
    - recurse:
      - user
      - group
      - mode
```

As a default, `mode` will resolve to `dir_mode` and `file_mode`, to specify both directory and file permissions, use this form:

```
/srv/stuff/substuf:
  file.directory:
    - user: fred
    - group: users
    - file_mode: 744
    - dir_mode: 755
    - makedirs: True
    - recurse:
      - user
      - group
      - mode
```

Symlinks can be easily created; the symlink function is very simple and only takes a few arguments:

```
/etc/grub.conf:
  file.symlink:
    - target: /boot/grub/grub.conf
```

Recursive directory management can also be set via the `recurse` function. Recursive directory management allows for a directory on the salt master to be recursively copied down to the minion. This is a great tool for deploying large code and configuration systems. A state using `recurse` would look something like this:

```
/opt/code/flask:
  file.recurse:
    - source: salt://code/flask
    - include_empty: True
```

A more complex `recurse` example:

```
{% set site_user = 'testuser' %}
{% set site_name = 'test_site' %}
{% set project_name = 'test_proj' %}
{% set sites_dir = 'test_dir' %}

django-project:
  file.recurse:
    - name: {{ sites_dir }}/{{ site_name }}/{{ project_name }}
    - user: {{ site_user }}
    - dir_mode: 2775
    - file_mode: '0644'
    - template: jinja
    - source: salt://project/templates_dir
    - include_empty: True
```

`salt.states.file.`**`absent`**(*name*)

Make sure that the named file or directory is absent. If it exists, it will be deleted. This will work to reverse any of the functions in the file state module. If a directory is supplied, it will be recursively deleted.

**name** The path which should be deleted

`salt.states.file.`**`accumulated`**(*name*, *filename*, *text*, ***kwargs*)

Prepare accumulator which can be used in template in file.managed state. Accumulator dictionary becomes available in template. It can also be used in file.blockreplace.

**name** Accumulator name

**filename** Filename which would receive this accumulator (see file.managed state documentation about `name`)

**text** String or list for adding in accumulator

**require_in / watch_in** One of them required for sure we fill up accumulator before we manage the file. Probably the same as filename

Example:

Given the following:

```
animals_doing_things:
  file.accumulated:
    - filename: /tmp/animal_file.txt
    - text: ' jumps over the lazy dog.'
    - require_in:
      - file: animal_file

animal_file:
  file.managed:
    - name: /tmp/animal_file.txt
```

```
    - source: salt://animal_file.txt
    - template: jinja
```

One might write a template for `animal_file.txt` like the following:

```
The quick brown fox{% for animal in accumulator['animals_doing_things'] %}{{
↪animal }}{% endfor %}
```

Collectively, the above states and template file will produce:

```
The quick brown fox jumps over the lazy dog.
```

Multiple accumulators can be ``chained'' together.

---

**Note**: The `accumulator' data structure is a Python dictionary. Do not expect any loop over the keys in a deterministic order!

---

`salt.states.file.`**`append`**(*name*, *text=None*, *makedirs=False*, *source=None*, *source_hash=None*, *template='jinja'*, *sources=None*, *source_hashes=None*, *defaults=None*, *context=None*, *ignore_whitespace=True*)

Ensure that some text appears at the end of a file.

The text will not be appended if it already exists in the file. A single string of text or a list of strings may be appended.

**name** The location of the file to append to.

**text** The text to be appended, which can be a single string or a list of strings.

**makedirs** If the file is located in a path without a parent directory, then the state will fail. If makedirs is set to True, then the parent directories will be created to facilitate the creation of the named file. Defaults to False.

**source** A single source file to append. This source file can be hosted on either the salt master server, or on an HTTP or FTP server. Both HTTPS and HTTP are supported as well as downloading directly from Amazon S3 compatible URLs with both pre-configured and automatic IAM credentials (see s3.get state documentation). File retrieval from Openstack Swift object storage is supported via swift://container/object_path URLs (see swift.get documentation).

For files hosted on the salt file server, if the file is located on the master in the directory named spam, and is called eggs, the source string is salt://spam/eggs.

If the file is hosted on an HTTP or FTP server, the source_hash argument is also required.

**source_hash**

**This can be one of the following**:

1. a source hash string
2. the URI of a file that contains source hash strings

The function accepts the first encountered long unbroken alphanumeric string of correct length as a valid hash, in order from most secure to least secure:

```
Type    Length
======  ======
sha512     128
sha384      96
sha256      64
sha224      56
sha1        40
md5         32
```

See the `source_hash` parameter description for *file.managed* function for more details and examples.

**template** The named templating engine will be used to render the appended-to file. Defaults to `jinja`. The following templates are supported:

- *cheetah*
- *genshi*
- *jinja*
- *mako*
- *py*
- *wempy*

**sources** A list of source files to append. If the files are hosted on an HTTP or FTP server, the source_hashes argument is also required.

**source_hashes** A list of source_hashes corresponding to the sources list specified in the sources argument.

**defaults** Default context passed to the template.

**context** Overrides default context variables passed to the template.

**ignore_whitespace** New in version 2015.8.4.

Spaces and Tabs in text are ignored by default, when searching for the appending content, one space or multiple tabs are the same for salt. Set this option to `False` if you want to change this behavior.

Multi-line example:

```
/etc/motd:
  file.append:
    - text: |
        Thou hadst better eat salt with the Philosophers of Greece,
        than sugar with the Courtiers of Italy.
        - Benjamin Franklin
```

Multiple lines of text:

```
/etc/motd:
  file.append:
    - text:
      - Trust no one unless you have eaten much salt with him.
      - "Salt is born of the purest of parents: the sun and the sea."
```

Gather text from multiple template files:

```
/etc/motd:
  file:
      - append
      - template: jinja
      - sources:
        - salt://motd/devops-messages.tmpl
        - salt://motd/hr-messages.tmpl
        - salt://motd/general-messages.tmpl
```

New in version 0.9.5.

`salt.states.file.`**`blockreplace`**(*name*, *marker_start='#-- start managed zone --`*, *marker_end='#-- end managed zone --`*, *source=None*, *source_hash=None*, *template='jinja'*, *sources=None*, *source_hashes=None*, *defaults=None*, *context=None*, *content='`*, *append_if_not_found=False*, *prepend_if_not_found=False*, *backup='.bak'*, *show_changes=True*)

Maintain an edit in a file in a zone delimited by two line markers

New in version 2014.1.0.

A block of content delimited by comments can help you manage several lines entries without worrying about old entries removal. This can help you maintaining an un-managed file containing manual edits. Note: this function will store two copies of the file in-memory (the original version and the edited version) in order to detect changes and only edit the targeted file if necessary.

**name** Filesystem path to the file to be edited

**marker_start** The line content identifying a line as the start of the content block. Note that the whole line containing this marker will be considered, so whitespace or extra content before or after the marker is included in final output

**marker_end** The line content identifying a line as the end of the content block. Note that the whole line containing this marker will be considered, so whitespace or extra content before or after the marker is included in final output. Note: you can use file.accumulated and target this state. All accumulated data dictionaries content will be added as new lines in the content

**content** The content to be used between the two lines identified by `marker_start` and `marker_end`

**source** The source file to download to the minion, this source file can be hosted on either the salt master server, or on an HTTP or FTP server. Both HTTPS and HTTP are supported as well as downloading directly from Amazon S3 compatible URLs with both pre-configured and automatic IAM credentials. (see s3.get state documentation) File retrieval from Openstack Swift object storage is supported via swift://container/object_path URLs, see swift.get documentation. For files hosted on the salt file server, if the file is located on the master in the directory named spam, and is called eggs, the source string is salt://spam/eggs. If source is left blank or None (use ~ in YAML), the file will be created as an empty file and the content will not be managed. This is also the case when a file already exists and the source is undefined; the contents of the file will not be changed or managed.

If the file is hosted on a HTTP or FTP server then the source_hash argument is also required.

A list of sources can also be passed in to provide a default source and a set of fallbacks. The first source in the list that is found to exist will be used and subsequent entries in the list will be ignored.

```
file_override_example:
  file.blockreplace:
    - name: /etc/example.conf
    - source:
      - salt://file_that_does_not_exist
      - salt://file_that_exists
```

**source_hash**

**This can be one of the following**:

1. a source hash string
2. the URI of a file that contains source hash strings

The function accepts the first encountered long unbroken alphanumeric string of correct length as a valid hash, in order from most secure to least secure:

```
Type    Length
======  ======
sha512     128
sha384      96
sha256      64
sha224      56
sha1        40
md5         32
```

See the `source_hash` parameter description for *`file.managed`* function for more details and examples.

**template** The named templating engine will be used to render the downloaded file. Defaults to `jinja`. The following templates are supported:

- *`cheetah`*

- *genshi*
- *jinja*
- *mako*
- *py*
- *wempy*

**context** Overrides default context variables passed to the template.

**defaults** Default context passed to the template.

**append_if_not_found** If markers are not found and set to True then the markers and content will be appended to the file. Default is `False`

**prepend_if_not_found** If markers are not found and set to True then the markers and content will be prepended to the file. Default is `False`

**backup** The file extension to use for a backup of the file if any edit is made. Set this to `False` to skip making a backup.

**dry_run** Don't make any edits to the file

**show_changes** Output a unified diff of the old file and the new file. If `False` return a boolean if any changes were made

Example of usage with an accumulator and with a variable:

```
{% set myvar = 42 %}
hosts-config-block-{{ myvar }}:
  file.blockreplace:
    - name: /etc/hosts
    - marker_start: "# START managed zone {{ myvar }} -DO-NOT-EDIT-"
    - marker_end: "# END managed zone {{ myvar }} --"
    - content: 'First line of content'
    - append_if_not_found: True
    - backup: '.bak'
    - show_changes: True

hosts-config-block-{{ myvar }}-accumulated1:
  file.accumulated:
    - filename: /etc/hosts
    - name: my-accumulator-{{ myvar }}
    - text: "text 2"
    - require_in:
      - file: hosts-config-block-{{ myvar }}

hosts-config-block-{{ myvar }}-accumulated2:
  file.accumulated:
    - filename: /etc/hosts
    - name: my-accumulator-{{ myvar }}
    - text: |
        text 3
        text 4
    - require_in:
      - file: hosts-config-block-{{ myvar }}
```

will generate and maintain a block of content in `/etc/hosts`:

```
# START managed zone 42 -DO-NOT-EDIT-
First line of content
text 2
text 3
text 4
# END managed zone 42 --
```

`salt.states.file.`**`comment`**(*name, regex, char='#', backup='.bak'*)

Comment out specified lines in a file.

**name** The full path to the file to be edited

**regex** A regular expression used to find the lines that are to be commented; this pattern will be wrapped in parenthesis and will move any preceding/trailing `^` or `$` characters outside the parenthesis (e.g., the pattern `^foo$` will be rewritten as `^(foo)$`) Note that you _need_ the leading ^, otherwise each time you run highstate, another comment char will be inserted.

**char** [`#`] The character to be inserted at the beginning of a line in order to comment it out

**backup** [`.bak`] The file will be backed up before edit with this file extension

> **Warning**: This backup will be overwritten each time `sed` / `comment` / `uncomment` is called. Meaning the backup will only be useful after the first invocation.

Set to False/None to not keep a backup.

Usage:

```
/etc/fstab:
  file.comment:
    - regex: ^bind 127.0.0.1
```

New in version 0.9.5.

`salt.states.file.`**`copy`**(*name*, *source*, *force=False*, *makedirs=False*, *preserve=False*, *user=None*, *group=None*, *mode=None*, *subdir=False*, ***kwargs*)

If the source file exists on the system, copy it to the named file. The named file will not be overwritten if it already exists unless the force option is set to True.

**name** The location of the file to copy to

**source** The location of the file to copy to the location specified with name

**force** If the target location is present then the file will not be moved, specify ``force: True'' to overwrite the target file

**makedirs** If the target subdirectories don't exist create them

**preserve** New in version 2015.5.0.

Set `preserve: True` to preserve user/group ownership and mode after copying. Default is `False`. If `preserve` is set to `True`, then user/group/mode attributes will be ignored.

**user** New in version 2015.5.0.

The user to own the copied file, this defaults to the user salt is running as on the minion. If `preserve` is set to `True`, then this will be ignored

**group** New in version 2015.5.0.

The group to own the copied file, this defaults to the group salt is running as on the minion. If `preserve` is set to `True` or on Windows this will be ignored

**mode** New in version 2015.5.0.

The permissions to set on the copied file, aka 644, `0775', `4664'. If `preserve` is set to `True`, then this will be ignored. Not supported on Windows.

The default mode for new files and directories corresponds umask of salt process. For existing files and directories it's not enforced.

**subdir** New in version 2015.5.0.

If the name is a directory then place the file inside the named directory

---

**Note**: The copy function accepts paths that are local to the Salt minion. This function does not support salt://, http://, or the other additional file paths that are supported by *`states.file.managed`* and *`states.file.recurse`*.

---

salt.states.file.**decode**(*name*, *encoded_data=None*, *contents_pillar=None*, *encoding_type='base64'*, *checksum='md5'*)

Decode an encoded file and write it to disk

New in version 2016.3.0.

**name** Path of the file to be written.

**encoded_data** The encoded file. Either this option or `contents_pillar` must be specified.

**contents_pillar** A Pillar path to the encoded file. Uses the same path syntax as *pillar.get*. The *hashutil.base64_encodefile* function can load encoded content into Pillar. Either this option or `encoded_data` must be specified.

**encoding_type** [`base64`] The type of encoding.

**checksum** [`md5`] The hashing algorithm to use to generate checksums. Wraps the *hashutil.digest* execution function.

Usage:

```
write_base64_encoded_string_to_a_file:
  file.decode:
    - name: /tmp/new_file
    - encoding_type: base64
    - contents_pillar: mypillar:thefile

# or

write_base64_encoded_string_to_a_file:
  file.decode:
    - name: /tmp/new_file
    - encoding_type: base64
    - encoded_data: |
        Z2V0IHNhbHRlZAo=
```

Be careful with multi-line strings that the YAML indentation is correct. E.g.,

```
write_base64_encoded_string_to_a_file:
  file.decode:
    - name: /tmp/new_file
    - encoding_type: base64
    - encoded_data: |
        {{ salt.pillar.get('path:to:data') | indent(8) }}
```

salt.states.file.**directory**(*name*, *user=None*, *group=None*, *recurse=None*, *dir_mode=None*, *file_mode=None*, *makedirs=False*, *clean=False*, *require=None*, *exclude_pat=None*, *follow_symlinks=False*, *force=False*, *backupname=None*, *allow_symlink=True*, ***kwargs*)

Ensure that a named directory is present and has the right perms

**name** The location to create or manage a directory

**user** The user to own the directory; this defaults to the user salt is running as on the minion

**group** The group ownership set for the directory; this defaults to the group salt is running as on the minion. On Windows, this is ignored

**recurse** Enforce user/group ownership and mode of directory recursively. Accepts a list of strings representing what you would like to recurse. If `mode` is defined, will recurse on both `file_mode` and `dir_mode` if they are defined. If `ignore_files` or `ignore_dirs` is included, files or directories will be left unchanged respectively. Example:

```
/var/log/httpd:
  file.directory:
    - user: root
    - group: root
```

```
    - dir_mode: 755
    - file_mode: 644
    - recurse:
      - user
      - group
      - mode
```

Leave files or directories unchanged:

```
/var/log/httpd:
  file.directory:
    - user: root
    - group: root
    - dir_mode: 755
    - file_mode: 644
    - recurse:
      - user
      - group
      - mode
      - ignore_dirs
```

New in version 2015.5.0.

**dir_mode / mode** The permissions mode to set any directories created. Not supported on Windows.

The default mode for new files and directories corresponds umask of salt process. For existing files and directories it's not enforced.

**file_mode** The permissions mode to set any files created if `mode' is run in `recurse'. This defaults to dir_mode. Not supported on Windows.

The default mode for new files and directories corresponds umask of salt process. For existing files and directories it's not enforced.

**makedirs** If the directory is located in a path without a parent directory, then the state will fail. If makedirs is set to True, then the parent directories will be created to facilitate the creation of the named file.

**clean** Make sure that only files that are set up by salt and required by this function are kept. If this option is set then everything in this directory will be deleted unless it is required.

**require** Require other resources such as packages or files

**exclude_pat** When `clean' is set to True, exclude this pattern from removal list and preserve in the destination.

**follow_symlinks** [False] If the desired path is a symlink (or `recurse` is defined and a symlink is encountered while recursing), follow it and check the permissions of the directory/file to which the symlink points.

New in version 2014.1.4.

**force** If the name of the directory exists and is not a directory and force is set to False, the state will fail. If force is set to True, the file in the way of the directory will be deleted to make room for the directory, unless backupname is set, then it will be renamed.

New in version 2014.7.0.

**backupname** If the name of the directory exists and is not a directory, it will be renamed to the backupname. If the backupname already exists and force is False, the state will fail. Otherwise, the backupname will be removed first.

New in version 2014.7.0.

**allow_symlink** [True] If allow_symlink is True and the specified path is a symlink, it will be allowed to remain if it points to a directory. If allow_symlink is False then the state will fail, unless force is also set to True, in which case it will be removed or renamed, depending on the value of the backupname argument.

New in version 2014.7.0.

`salt.states.file.`**`exists`**(*name*)

Verify that the named file or directory is present or exists. Ensures pre-requisites outside of Salt's purview (e.g., keytabs, private keys, etc.) have been previously satisfied before deployment.

**name** Absolute path which must exist

salt.states.file.**line**(*name*, *content*, *match=None*, *mode=None*, *location=None*, *before=None*, *after=None*, *show_changes=True*, *backup=False*, *quiet=False*, *indent=True*)

Line-based editing of a file.

New in version 2015.8.0.

**name** Filesystem path to the file to be edited.

**content** Content of the line.

**match** Match the target line for an action by a fragment of a string or regular expression.

If neither `before` nor `after` are provided, and `match` is also `None`, match becomes the `content` value.

**mode** Defines how to edit a line. One of the following options is required:

- **ensure** If line does not exist, it will be added.
- **replace** If line already exists, it will be replaced.
- **delete** Delete the line, once found.
- **insert** Insert a line.

---

**Note:** If `mode=insert` is used, at least one of the following options must also be defined: `location`, `before`, or `after`. If `location` is used, it takes precedence over the other two options.

---

**location** Defines where to place content in the line. Note this option is only used when `mode=insert` is specified. If a location is passed in, it takes precedence over both the `before` and `after` kwargs. Valid locations are:

- **start** Place the content at the beginning of the file.
- **end** Place the content at the end of the file.

**before** Regular expression or an exact case-sensitive fragment of the string. This option is only used when either the `ensure` or `insert` mode is defined.

**after** Regular expression or an exact case-sensitive fragment of the string. This option is only used when either the `ensure` or `insert` mode is defined.

**show_changes** Output a unified diff of the old file and the new file. If `False` return a boolean if any changes were made. Default is `True`

---

**Note:** Using this option will store two copies of the file in-memory (the original version and the edited version) in order to generate the diff.

---

**backup** Create a backup of the original file with the extension: ``Year-Month-Day-Hour-Minutes-Seconds''.

**quiet** Do not raise any exceptions. E.g. ignore the fact that the file that is tried to be edited does not exist and nothing really happened.

**indent** Keep indentation with the previous line. This option is not considered when the `delete` mode is specified.

salt.states.file.**managed**(*name*, *source=None*, *source_hash=''*, *source_hash_name=None*, *user=None*, *group=None*, *mode=None*, *template=None*, *makedirs=False*, *dir_mode=None*, *context=None*, *replace=True*, *defaults=None*, *env=None*, *backup=''*, *show_diff=None*, *show_changes=True*, *create=True*, *contents=None*, *contents_pillar=None*, *contents_grains=None*, *contents_newline=True*, *contents_delimiter=':'*, *allow_empty=True*, *follow_symlinks=True*, *check_cmd=None*, *skip_verify=False*, ***kwargs*)

Manage a given file, this function allows for a file to be downloaded from the salt master and potentially run through a templating system.

**name** The location of the file to manage

**source** The source file to download to the minion, this source file can be hosted on either the salt master

server (`salt://`), the salt minion local file system (`/`), or on an HTTP or FTP server (`http(s)://`, `ftp://`).

Both HTTPS and HTTP are supported as well as downloading directly from Amazon S3 compatible URLs with both pre-configured and automatic IAM credentials. (see s3.get state documentation) File retrieval from Openstack Swift object storage is supported via swift://container/object_path URLs, see swift.get documentation. For files hosted on the salt file server, if the file is located on the master in the directory named spam, and is called eggs, the source string is salt://spam/eggs. If source is left blank or None (use ~ in YAML), the file will be created as an empty file and the content will not be managed. This is also the case when a file already exists and the source is undefined; the contents of the file will not be changed or managed.

If the file is hosted on a HTTP or FTP server then the source_hash argument is also required.

A list of sources can also be passed in to provide a default source and a set of fallbacks. The first source in the list that is found to exist will be used and subsequent entries in the list will be ignored. Source list functionality only supports local files and remote files hosted on the salt master server or retrievable via HTTP, HTTPS, or FTP.

```
file_override_example:
  file.managed:
    - source:
      - salt://file_that_does_not_exist
      - salt://file_that_exists
```

**source_hash**

**This can be one of the following**:

1. a source hash string
2. the URI of a file that contains source hash strings

The function accepts the first encountered long unbroken alphanumeric string of correct length as a valid hash, in order from most secure to least secure:

```
Type    Length
======  ======
sha512     128
sha384      96
sha256      64
sha224      56
sha1        40
md5         32
```

**Using a Source Hash File** The file can contain several checksums for several files. Each line must contain both the file name and the hash. If no file name is matched, the first hash encountered will be used, otherwise the most secure hash with the correct source file name will be used.

When using a source hash file the source_hash argument needs to be a url, the standard download urls are supported, ftp, http, salt etc:

Example:

```
tomdroid-src-0.7.3.tar.gz:
  file.managed:
    - name: /tmp/tomdroid-src-0.7.3.tar.gz
    - source: https://launchpad.net/tomdroid/beta/0.7.3/+download/
↪tomdroid-src-0.7.3.tar.gz
    - source_hash: https://launchpad.net/tomdroid/beta/0.7.3/+download/
↪tomdroid-src-0.7.3.hash
```

The following lines are all supported formats:

```
/etc/rc.conf ef6e82e4006dee563d98ada2a2a80a27
sha254c8525aee419eb649f0233be91c151178b30f0dff8ebbdcc8de71b1d5c8bcc06a  /
 ↪etc/resolv.conf
ead48423703509d37c4a90e6a0d53e143b6fc268
```

Debian file type `*.dsc` files are also supported.

**Inserting the Source Hash in the SLS Data** Examples:

```
tomdroid-src-0.7.3.tar.gz:
  file.managed:
    - name: /tmp/tomdroid-src-0.7.3.tar.gz
    - source: https://launchpad.net/tomdroid/beta/0.7.3/+download/
 ↪tomdroid-src-0.7.3.tar.gz
    - source_hash: md5=79eef25f9b0b2c642c62b7f737d4f53f
```

**Known issues**: If the remote server URL has the hash file as an apparent sub-directory of the source file, the module will discover that it has already cached a directory where a file should be cached. For example:

```
tomdroid-src-0.7.3.tar.gz:
  file.managed:
    - name: /tmp/tomdroid-src-0.7.3.tar.gz
    - source: https://launchpad.net/tomdroid/beta/0.7.3/+download/
 ↪tomdroid-src-0.7.3.tar.gz
    - source_hash: https://launchpad.net/tomdroid/beta/0.7.3/+download/
 ↪tomdroid-src-0.7.3.tar.gz/+md5
```

**source_hash_name** When `source_hash` refers to a hash file, Salt will try to find the correct hash by matching the filename/URI associated with that hash. By default, Salt will look for the filename being managed. When managing a file at path `/tmp/foo.txt`, then the following line in a hash file would match:

```
acbd18db4cc2f85cedef654fccc4a4d8    foo.txt
```

However, sometimes a hash file will include multiple similar paths:

```
37b51d194a7513e45b56f6524f2d51f2    ./dir1/foo.txt
acbd18db4cc2f85cedef654fccc4a4d8    ./dir2/foo.txt
73feffa4b7f6bb68e44cf984c85f6e88    ./dir3/foo.txt
```

In cases like this, Salt may match the incorrect hash. This argument can be used to tell Salt which filename to match, to ensure that the correct hash is identified. For example:

```
/tmp/foo.txt:
  file.managed:
    - source: https://mydomain.tld/dir2/foo.txt
    - source_hash: https://mydomain.tld/hashes
    - source_hash_name: ./dir2/foo.txt
```

---

**Note**: This argument must contain the full filename entry from the checksum file, as this argument is meant to disambiguate matches for multiple files that have the same basename. So, in the example above, simply using `foo.txt` would not match.

---

New in version 2016.3.5.

**user** The user to own the file, this defaults to the user salt is running as on the minion

**group** The group ownership set for the file, this defaults to the group salt is running as on the minion On Windows, this is ignored

**mode** The permissions to set on this file, aka 644, 0775, 4664. Not supported on Windows.

The default mode for new files and directories corresponds umask of salt process. For existing files and directories it's not enforced.

**template** If this setting is applied, the named templating engine will be used to render the downloaded file. The following templates are supported:

- *cheetah*
- *genshi*
- *jinja*
- *mako*
- *py*
- *wempy*

**makedirs** [False] If set to `True`, then the parent directories will be created to facilitate the creation of the named file. If `False`, and the parent directory of the destination file doesn't exist, the state will fail.

**dir_mode** If directories are to be created, passing this option specifies the permissions for those directories. If this is not set, directories will be assigned permissions from the `mode' argument.

The default mode for new files and directories corresponds umask of salt process. For existing files and directories it's not enforced.

**replace** [True] If set to `False` and the file already exists, the file will not be modified even if changes would otherwise be made. Permissions and ownership will still be enforced, however.

**context** Overrides default context variables passed to the template.

**defaults** Default context passed to the template.

**backup** Overrides the default backup mode for this specific file. See *backup_mode documentation* for more details.

**show_diff** DEPRECATED: Please use show_changes.

If set to `False`, the diff will not be shown in the return data if changes are made.

**show_changes** Output a unified diff of the old file and the new file. If `False` return a boolean if any changes were made.

**create** [True] If set to `False`, then the file will only be managed if the file already exists on the system.

**contents** Specify the contents of the file. Cannot be used in combination with `source`. Ignores hashes and does not use a templating engine.

This value can be either a single string, a multiline YAML string or a list of strings. If a list of strings, then the strings will be joined together with newlines in the resulting file. For example, the below two example states would result in identical file contents:

```
/path/to/file1:
  file.managed:
    - contents:
      - This is line 1
      - This is line 2

/path/to/file2:
  file.managed:
    - contents: |
        This is line 1
        This is line 2
```

**contents_pillar** New in version 0.17.0.

Operates like `contents`, but draws from a value stored in pillar, using the pillar path syntax used in *pillar.get*. This is useful when the pillar value contains newlines, as referencing a pillar variable using a jinja/mako template can result in YAML formatting issues due to the newlines causing indentation mismatches.

For example, the following could be used to deploy an SSH private key:

```
/home/deployer/.ssh/id_rsa:
  file.managed:
    - user: deployer
    - group: deployer
    - mode: 600
    - contents_pillar: userdata:deployer:id_rsa
```

This would populate `/home/deployer/.ssh/id_rsa` with the contents of `pillar['userdata']['deployer']['id_rsa']`. An example of this pillar setup would be like so:

```
userdata:
  deployer:
    id_rsa: |
        -----BEGIN RSA PRIVATE KEY-----
        MIIEowIBAAKCAQEAoQiwO3JhBquPAalQF9qP1lLZNXVjYMIswrMe2HcWUVBgh+vY
        U7sCwx/dH6+VvNwmCoqmNnP+8gTPKGl1vgAObJAnMT623dMXjVKwnEagZPRJIxDy
        B/HaAre9euNiY3LvIzBTWRSeMfT+rWvIKVBpvwlgGrfgz70m0pqxu+UyFbAGLin+
        GpxzZAMaFpZw4sSbIlRuissXZj/sHpQb8p9M5IeO4Z3rjkCP1cxI
        -----END RSA PRIVATE KEY-----
```

---

**Note**: The private key above is shortened to keep the example brief, but shows how to do multiline string in YAML. The key is followed by a pipe character, and the mutliline string is indented two more spaces.

To avoid the hassle of creating an indented multiline YAML string, the *file_tree external pillar* can be used instead. However, this will not work for binary files in Salt releases before 2015.8.4.

---

**contents_grains** New in version 2014.7.0.

Operates like `contents`, but draws from a value stored in grains, using the grains path syntax used in *grains.get*. This functionality works similarly to `contents_pillar`, but with grains.

For example, the following could be used to deploy a ``message of the day'' file:

```
write_motd:
  file.managed:
    - name: /etc/motd
    - contents_grains: motd
```

This would populate `/etc/motd` file with the contents of the `motd` grain. The `motd` grain is not a default grain, and would need to be set prior to running the state:

```
salt '*' grains.set motd 'Welcome! This system is managed by Salt.'
```

**contents_newline** [True] New in version 2014.7.0.

Changed in version 2015.8.4: This option is now ignored if the contents being deployed contain binary data.

If `True`, files managed using `contents`, `contents_pillar`, or `contents_grains` will have a newline added to the end of the file if one is not present. Setting this option to `False` will omit this final newline.

**contents_delimiter** New in version 2015.8.4.

Can be used to specify an alternate delimiter for `contents_pillar` or `contents_grains`. This delimiter will be passed through to *pillar.get* or *grains.get* when retrieving the contents.

**allow_empty** [True] New in version 2015.8.4.

If set to `False`, then the state will fail if the contents specified by `contents_pillar` or `contents_grains` are empty.

**follow_symlinks** [True] New in version 2014.7.0.

If the desired path is a symlink follow it and make changes to the file to which the symlink points.

**check_cmd** New in version 2014.7.0.

The specified command will be run with an appended argument of a *temporary* file containing the new managed contents. If the command exits with a zero status the new managed contents will be written to the managed destination. If the command exits with a nonzero exit code, the state will fail and no changes will be made to the file.

For example, the following could be used to verify sudoers before making changes:

```
/etc/sudoers:
  file.managed:
    - user: root
    - group: root
    - mode: 0440
    - source: salt://sudoers/files/sudoers.jinja
    - template: jinja
    - check_cmd: /usr/sbin/visudo -c -f
```

**NOTE**: This `check_cmd` functions differently than the requisite `check_cmd`.

**skip_verify** [False] If `True`, hash verification of remote file sources (`http://`, `https://`, `ftp://`) will be skipped, and the `source_hash` argument will be ignored.

New in version 2016.3.0.

`salt.states.file.`**`missing`**(*name*)

Verify that the named file or directory is missing, this returns True only if the named file is missing but does not remove the file if it is present.

**name** Absolute path which must NOT exist

`salt.states.file.`**`mknod`**(*name*, *ntype*, *major=0*, *minor=0*, *user=None*, *group=None*, *mode=`0600'*)

Create a special file similar to the `nix mknod command. The supported device types are `p` (fifo pipe), `c` (character device), and `b` (block device). Provide the major and minor numbers when specifying a character device or block device. A fifo pipe does not require this information. The command will create the necessary dirs if needed. If a file of the same name not of the same type/major/minor exists, it will not be overwritten or unlinked (deleted). This is logically in place as a safety measure because you can really shoot yourself in the foot here and it is the behavior of `nix `mknod`. It is also important to note that not just anyone can create special devices. Usually this is only done as root. If the state is executed as none other than root on a minion, you may receive a permission error.

**name** name of the file

**ntype** node type `p' (fifo pipe), `c' (character device), or `b' (block device)

**major** major number of the device does not apply to a fifo pipe

**minor** minor number of the device does not apply to a fifo pipe

**user** owning user of the device/pipe

**group** owning group of the device/pipe

**mode** permissions on the device/pipe

Usage:

```
/dev/chr:
  file.mknod:
    - ntype: c
    - major: 180
    - minor: 31
```

```
    - user: root
    - group: root
    - mode: 660

/dev/blk:
  file.mknod:
    - ntype: b
    - major: 8
    - minor: 999
    - user: root
    - group: root
    - mode: 660

/dev/fifo:
  file.mknod:
    - ntype: p
    - user: root
    - group: root
    - mode: 660
```

New in version 0.17.0.

salt.states.file.**mod_run_check_cmd**(*cmd*, *filename*, ***check_cmd_opts*)

Execute the check_cmd logic.

Return a result dict if `check_cmd` succeeds (check_cmd == 0) otherwise return True

salt.states.file.**patch**(*name*, *source=None*, *hash=None*, *options=''*, *dry_run_first=True*, *env=None*, ***kwargs*)

Apply a patch to a file or directory.

---

**Note**: A suitable `patch` executable must be available on the minion when using this state function.

---

**name** The file or directory to which the patch will be applied.

**source** The source patch to download to the minion, this source file must be hosted on the salt master server. If the file is located in the directory named spam, and is called eggs, the source string is salt://spam/eggs. A source is required.

**hash** Hash of the patched file. If the hash of the target file matches this value then the patch is assumed to have been applied. The hash string is the hash algorithm followed by the hash of the file: md5=e138491e9d5b97023cea823fe17bac22

**options** Extra options to pass to patch.

**dry_run_first** [`True`] Run patch with `--dry-run` first to check if it will apply cleanly.

**env** Specify the environment from which to retrieve the patch file indicated by the `source` parameter. If not provided, this defaults to the environment from which the state is being executed.

Usage:

```
# Equivalent to ``patch --forward /opt/file.txt file.patch``
/opt/file.txt:
  file.patch:
    - source: salt://file.patch
    - hash: md5=e138491e9d5b97023cea823fe17bac22
```

salt.states.file.**prepend**(*name*, *text=None*, *makedirs=False*, *source=None*, *source_hash=None*, *template='jinja'*, *sources=None*, *source_hashes=None*, *defaults=None*, *context=None*)

Ensure that some text appears at the beginning of a file

The text will not be prepended again if it already exists in the file. You may specify a single line of text or a list of lines to append.

Multi-line example:

```
/etc/motd:
  file.prepend:
    - text: |
        Thou hadst better eat salt with the Philosophers of Greece,
        than sugar with the Courtiers of Italy.
        - Benjamin Franklin
```

Multiple lines of text:

```
/etc/motd:
  file.prepend:
    - text:
      - Trust no one unless you have eaten much salt with him.
      - "Salt is born of the purest of parents: the sun and the sea."
```

Gather text from multiple template files:

```
/etc/motd:
  file:
      - prepend
      - template: jinja
      - sources:
        - salt://motd/devops-messages.tmpl
        - salt://motd/hr-messages.tmpl
        - salt://motd/general-messages.tmpl
```

New in version 2014.7.0.

salt.states.file.**recurse**(*name*, *source*, *clean=False*, *require=None*, *user=None*, *group=None*, *dir_mode=None*, *file_mode=None*, *sym_mode=None*, *template=None*, *context=None*, *defaults=None*, *env=None*, *include_empty=False*, *backup=''*, *include_pat=None*, *exclude_pat=None*, *maxdepth=None*, *keep_symlinks=False*, *force_symlinks=False*, ***kwargs*)

Recurse through a subdirectory on the master and copy said subdirectory over to the specified path.

**name** The directory to set the recursion in

**source** The source directory, this directory is located on the salt master file server and is specified with the salt:// protocol. If the directory is located on the master in the directory named spam, and is called eggs, the source string is salt://spam/eggs

**clean** Make sure that only files that are set up by salt and required by this function are kept. If this option is set then everything in this directory will be deleted unless it is required.

**require** Require other resources such as packages or files

**user** The user to own the directory. This defaults to the user salt is running as on the minion

**group** The group ownership set for the directory. This defaults to the group salt is running as on the minion. On Windows, this is ignored

**dir_mode** The permissions mode to set on any directories created. Not supported on Windows.

The default mode for new files and directories corresponds umask of salt process. For existing files and directories it's not enforced.

**file_mode** The permissions mode to set on any files created. Not supported on Windows.

The default mode for new files and directories corresponds umask of salt process. For existing files and directories it's not enforced.

**sym_mode** The permissions mode to set on any symlink created. Not supported on Windows.

The default mode for new files and directories corresponds umask of salt process. For existing files and directories it's not enforced.

**template** If this setting is applied, the named templating engine will be used to render the downloaded file. The following templates are supported:

- *cheetah*
- *genshi*
- *jinja*
- *mako*
- *py*
- *wempy*

---

**Note**: The template option is required when recursively applying templates.

---

**context** Overrides default context variables passed to the template.

**defaults** Default context passed to the template.

**include_empty** Set this to True if empty directories should also be created (default is False)

**backup** Overrides the default backup mode for all replaced files. See *backup_mode documentation* for more details.

**include_pat** When copying, include only this pattern from the source. Default is glob match; if prefixed with `E@', then regexp match. Example:

```
- include_pat: hello*       :: glob matches 'hello01', 'hello02'
                               ... but not 'otherhello'
- include_pat: E@hello      :: regexp matches 'otherhello',
                               'hello01' ...
```

**exclude_pat** Exclude this pattern from the source when copying. If both *include_pat* and *exclude_pat* are supplied, then it will apply conditions cumulatively. i.e. first select based on include_pat, and then within that result apply exclude_pat.

Also, when `clean=True', exclude this pattern from the removal list and preserve in the destination. Example:

```
- exclude_pat: APPDATA*               :: glob matches APPDATA.01,
                                         APPDATA.02,.. for exclusion
- exclude_pat: E@(APPDATA)|(TEMPDATA) :: regexp matches APPDATA
                                         or TEMPDATA for exclusion
```

**maxdepth** When copying, only copy paths which are of depth *maxdepth* from the source path. Example:

```
- maxdepth: 0      :: Only include files located in the source
                      directory
- maxdepth: 1      :: Only include files located in the source
                      or immediate subdirectories
```

**keep_symlinks** Keep symlinks when copying from the source. This option will cause the copy operation to terminate at the symlink. If desire behavior similar to rsync, then set this to True.

**force_symlinks** Force symlink creation. This option will force the symlink creation. If a file or directory is obstructing symlink creation it will be recursively removed so that symlink creation can proceed. This option is usually not needed except in special circumstances.

`salt.states.file.`**`rename`**(*name*, *source*, *force=False*, *makedirs=False*)

If the source file exists on the system, rename it to the named file. The named file will not be overwritten if it already exists unless the force option is set to True.

**name** The location of the file to rename to

**source** The location of the file to move to the location specified with name

**force** If the target location is present then the file will not be moved, specify ``force: True'' to overwrite the target file

**makedirs** If the target subdirectories don't exist create them

salt.states.file.**replace**(*name*, *pattern*, *repl*, *count=0*, *flags=8*, *bufsize=1*, *append_if_not_found=False*, *prepend_if_not_found=False*, *not_found_content=None*, *backup='.bak'*, *show_changes=True*, *ignore_if_missing=False*)

Maintain an edit in a file.

New in version 0.17.0.

**name** Filesystem path to the file to be edited.

**pattern** A regular expression, to be matched using Python's `search()`.

**repl** The replacement text

**count** Maximum number of pattern occurrences to be replaced. Defaults to 0. If count is a positive integer n, no more than n occurrences will be replaced, otherwise all occurrences will be replaced.

**flags** A list of flags defined in the re module documentation. Each list item should be a string that will correlate to the human-friendly flag name. E.g., `['IGNORECASE','MULTILINE']`. Optionally, `flags` may be an int, with a value corresponding to the XOR (`|`) of all the desired flags. Defaults to 8 (which equates to `['MULTILINE']`).

---

**Note:** `file.replace` reads the entire file as a string to support multiline regex patterns. Therefore, when using anchors such as `^` or `$` in the pattern, those anchors may be relative to the line OR relative to the file. The default for `file.replace` is to treat anchors as relative to the line, which is implemented by setting the default value of `flags` to `['MULTILINE']`. When overriding the default value for `flags`, if `'MULTILINE'` is not present then anchors will be relative to the file. If the desired behavior is for anchors to be relative to the line, then simply add `'MULTILINE'` to the list of flags.

---

**bufsize** How much of the file to buffer into memory at once. The default value `1` processes one line at a time. The special value `file` may be specified which will read the entire file into memory before processing.

**append_if_not_found** [False] If set to `True`, and pattern is not found, then the content will be appended to the file.

New in version 2014.7.0.

**prepend_if_not_found** [False] If set to `True` and pattern is not found, then the content will be prepended to the file.

New in version 2014.7.0.

**not_found_content** Content to use for append/prepend if not found. If `None` (default), uses `repl`. Useful when `repl` uses references to group in pattern.

New in version 2014.7.0.

**backup** The file extension to use for a backup of the file before editing. Set to `False` to skip making a backup.

**show_changes** [True] Output a unified diff of the old file and the new file. If `False` return a boolean if any changes were made. Returns a boolean or a string.

**ignore_if_missing** [False] New in version 2016.3.4.

Controls what to do if the file is missing. If set to `False`, the state will display an error raised by the execution module. If set to `True`, the state will simply report no changes.

For complex regex patterns, it can be useful to avoid the need for complex quoting and escape sequences by making use of YAML's multiline string syntax.

```
complex_search_and_replace:
  file.replace:
    # <...snip...>
    - pattern: |
        CentOS \(2.6.32[^\n]+\n\s+root[^\n]+\n\)+
```

**Note:** When using YAML multiline string syntax in `pattern:`, make sure to also use that syntax in the `repl:` part, or you might loose line feeds.

`salt.states.file.`**`serialize`**(*name*, *dataset=None*, *dataset_pillar=None*, *user=None*, *group=None*, *mode=None*, *env=None*, *backup=''*, *makedirs=False*, *show_diff=True*, *create=True*, *merge_if_exists=False*, ***kwargs*)

Serializes dataset and store it into managed file. Useful for sharing simple configuration files.

**name** The location of the file to create

**dataset** The dataset that will be serialized

**dataset_pillar** Operates like `dataset`, but draws from a value stored in pillar, using the pillar path syntax used in *`pillar.get`*. This is useful when the pillar value contains newlines, as referencing a pillar variable using a jinja/mako template can result in YAML formatting issues due to the newlines causing indentation mismatches.

New in version 2015.8.0.

**formatter** Write the data as this format. Supported output formats:

- JSON
- YAML
- Python (via pprint.pformat)

**user** The user to own the directory, this defaults to the user salt is running as on the minion

**group** The group ownership set for the directory, this defaults to the group salt is running as on the minion

**mode** The permissions to set on this file, aka 644, 0775, 4664.

The default mode for new files and directories corresponds umask of salt process. For existing files and directories it's not enforced.

**backup** Overrides the default backup mode for this specific file.

**makedirs** Create parent directories for destination file.

New in version 2014.1.3.

**show_diff** If set to False, the diff will not be shown.

**create** Default is True, if create is set to False then the file will only be managed if the file already exists on the system.

**merge_if_exists** Default is False, if merge_if_exists is True then the existing file will be parsed and the dataset passed in will be merged with the existing content

New in version 2014.7.0.

For example, this state:

```
/etc/dummy/package.json:
  file.serialize:
    - dataset:
        name: naive
        description: A package using naive versioning
        author: A confused individual <iam@confused.com>
        dependencies:
            express: >= 1.2.0
            optimist: >= 0.1.0
        engine: node 0.4.1
    - formatter: json
```

will manage the file `/etc/dummy/package.json`:

```
{
  "author": "A confused individual <iam@confused.com>",
  "dependencies": {
    "express": ">= 1.2.0",
```

```
    "optimist": ">= 0.1.0"
  },
  "description": "A package using naive versioning",
  "engine": "node 0.4.1",
  "name": "naive"
}
```

salt.states.file.**symlink**(*name*, *target*, *force=False*, *backupname=None*, *makedirs=False*, *user=None*, *group=None*, *mode=None*, ***kwargs*)

Create a symbolic link (symlink, soft link)

If the file already exists and is a symlink pointing to any location other than the specified target, the symlink will be replaced. If the symlink is a regular file or directory then the state will return False. If the regular file or directory is desired to be replaced with a symlink pass force: True, if it is to be renamed, pass a backupname.

**name** The location of the symlink to create

**target** The location that the symlink points to

**force** If the name of the symlink exists and is not a symlink and force is set to False, the state will fail. If force is set to True, the file or directory in the way of the symlink file will be deleted to make room for the symlink, unless backupname is set, when it will be renamed

**backupname** If the name of the symlink exists and is not a symlink, it will be renamed to the backupname. If the backupname already exists and force is False, the state will fail. Otherwise, the backupname will be removed first.

**makedirs** If the location of the symlink does not already have a parent directory then the state will fail, setting makedirs to True will allow Salt to create the parent directory

**user** The user to own the file, this defaults to the user salt is running as on the minion

**group** The group ownership set for the file, this defaults to the group salt is running as on the minion. On Windows, this is ignored

**mode** The permissions to set on this file, aka 644, 0775, 4664. Not supported on Windows.

The default mode for new files and directories corresponds umask of salt process. For existing files and directories it's not enforced.

salt.states.file.**touch**(*name*, *atime=None*, *mtime=None*, *makedirs=False*)

Replicate the `nix ``touch'' command to create a new empty file or update the atime and mtime of an existing file.

Note that if you just want to create a file and don't care about atime or mtime, you should use `file.managed` instead, as it is more feature-complete. (Just leave out the `source`/`template`/`contents` arguments, and it will just create the file and/or check its permissions, without messing with contents)

**name** name of the file

**atime** atime of the file

**mtime** mtime of the file

**makedirs** whether we should create the parent directory/directories in order to touch the file

Usage:

```
/var/log/httpd/logrotate.empty:
  file.touch
```

New in version 0.9.5.

salt.states.file.**uncomment**(*name*, *regex*, *char='#'*, *backup='.bak'*)

Uncomment specified commented lines in a file

**name** The full path to the file to be edited

**regex** A regular expression used to find the lines that are to be uncommented. This regex should not include the comment character. A leading `^` character will be stripped for convenience (for easily switching between comment() and uncomment()). The regex will be searched for from the beginning of the line, ignoring leading spaces (we prepend `'^[ t]*'`)

**char** [#] The character to remove in order to uncomment a line
**backup** [.bak] The file will be backed up before edit with this file extension;

> **Warning:** This backup will be overwritten each time `sed` / `comment` / `uncomment` is called. Meaning the backup will only be useful after the first invocation.

Set to False/None to not keep a backup.

Usage:

```
/etc/adduser.conf:
  file.uncomment:
    - regex: EXTRA_GROUPS
```

New in version 0.9.5.

### 13.16.63 salt.states.firewall module

State to check firewall configurations .. versionadded:: 2016.3.0

`salt.states.firewall.`**`check`**(*name*, *port=None*, ***kwargs*)

Checks if there is an open connection from the minion to the defined host on a specific port.
**name** host name or ip address to test connection to
**port** The port to test the connection on
****kwargs**
**Additional parameters, parameters allowed are:** proto (tcp or udp) family (ipv4 or ipv6) timeout

```
testgoogle:
  firewall.check:
    - name: 'google.com'
    - port: 80
    - proto: 'tcp'
```

### 13.16.64 salt.states.firewalld

Management of firewalld

New in version 2015.8.0.

The following example applies changes to the public zone, blocks echo-reply and echo-request packets, does not set the zone to be the default, enables masquerading, and allows ports 22/tcp and 25/tcp.

```
public:
  firewalld.present:
    - name: public
    - block_icmp:
      - echo-reply
      - echo-request
    - default: False
    - masquerade: True
    - ports:
      - 22/tcp
      - 25/tcp
```

The following example applies changes to the public zone, enables masquerading and configures port forwarding TCP traffic from port 22 to 2222, and forwards TCP traffic from port 80 to 443 at 192.168.0.1.

```
my_zone:
  firewalld.present:
    - name: public
    - masquerade: True
    - port_fwd:
      - 22:2222:tcp
      - 80:443:tcp:192.168.0.1
```

The following example binds the public zone to interface eth0 and to all packets coming from the 192.168.1.0/24 subnet. It also removes the zone from all other interfaces or sources.

```
public:
  firewalld.bind:
    - name: public
    - interfaces:
      - eth0
    - sources:
      - 192.168.1.0/24
```

salt.states.firewalld.**bind**(*name*, *interfaces=None*, *sources=None*)

Ensure a zone is bound to specific interfaces or sources.

New in version 2016.3.0.

---

**Note**: This state does not enforce the existence of the zone. To ensure that the zone exists, use *firewalld.present*.

---

salt.states.firewalld.**present**(*name*, *block_icmp=None*, *default=None*, *masquerade=False*, *ports=None*, *port_fwd=None*, *services=None*)

Ensure a zone has specific attributes.

## 13.16.65 salt.states.gem

### Installation of Ruby modules packaged as gems

A state module to manage rubygems. Gems can be set up to be installed or removed. This module will use RVM or rbenv if they are installed. In that case, you can specify what ruby version and gemset to target.

```
addressable:
  gem.installed:
    - user: rvm
    - ruby: jruby@jgemset
```

salt.states.gem.**installed**(*name*, *ruby=None*, *gem_bin=None*, *user=None*, *version=None*, *rdoc=False*, *ri=False*, *pre_releases=False*, *proxy=None*, *source=None*)

Make sure that a gem is installed.

**name** The name of the gem to install

**ruby**: **None** Only for RVM or rbenv installations: the ruby version and gemset to target.

**gem_bin**: **None** Custom `gem` command to run instead of the default. Use this to install gems to a non-default ruby install. If you are using rvm or rbenv use the ruby argument instead.

**user**: **None** The user under which to run the `gem` command

New in version 0.17.0.

**version** [None] Specify the version to install for the gem. Doesn't play nice with multiple gems at once
**rdoc** [False] Generate RDoc documentation for the gem(s).
**ri** [False] Generate RI documentation for the gem(s).
**pre_releases** [False] Install pre-release version of gem(s) if available.
**proxy** [None] Use the specified HTTP proxy server for all outgoing traffic. Format: http://hostname{[]:port]
**source** [None] Use the specified HTTP gem source server to download gem. Format: http://hostname{[]:port]

`salt.states.gem.`**`removed`**(*name*, *ruby=None*, *user=None*, *gem_bin=None*)

Make sure that a gem is not installed.
**name** The name of the gem to uninstall
**gem_bin** [None] Full path to `gem` binary to use.
**ruby** [None] If RVM or rbenv are installed, the ruby version and gemset to use. Ignored if `gem_bin` is specified.
**user**: **None** The user under which to run the `gem` command

New in version 0.17.0.

`salt.states.gem.`**`sources_add`**(*name*, *ruby=None*, *user=None*)

Make sure that a gem source is added.
**name** The URL of the gem source to be added
**ruby**: **None** For RVM or rbenv installations: the ruby version and gemset to target.
**user**: **None** The user under which to run the `gem` command

New in version 0.17.0.

`salt.states.gem.`**`sources_remove`**(*name*, *ruby=None*, *user=None*)

Make sure that a gem source is removed.
**name** The URL of the gem source to be removed
**ruby**: **None** For RVM or rbenv installations: the ruby version and gemset to target.
**user**: **None** The user under which to run the `gem` command

New in version 0.17.0.

### 13.16.66 salt.states.git

States to manage git repositories and git configuration

---

**Important**: Before using git over ssh, make sure your remote host fingerprint exists in your `~/.ssh/known_hosts` file.

---

Changed in version 2015.8.8: This state module now requires git 1.6.5 (released 10 October 2009) or newer.

`salt.states.git.`**`config_set`**(*name*, *value=None*, *multivar=None*, *repo=None*, *user=None*, *password=None*, ***kwargs*)

New in version 2014.7.0.

Changed in version 2015.8.0: Renamed from `git.config` to `git.config_set`. For earlier versions, use `git.config`.

Ensure that a config value is set to the desired value(s)
**name** Name of the git config value to set
**value** Set a single value for the config item
**multivar** Set multiple values for the config item

**Note:** The order matters here, if the same parameters are set but in a different order, they will be removed and replaced in the order specified.

New in version 2015.8.0.

**repo** Location of the git repository for which the config value should be set. Required unless `global` is set to `True`.

**user** User under which to run git commands. By default, the commands are run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**global** [False] If `True`, this will set a global git config option

Changed in version 2015.8.0: Option renamed from `is_global` to `global`. For earlier versions, use `is_global`.

**Local Config Example**:

```
# Single value
mylocalrepo:
  git.config_set:
    - name: user.email
    - value: foo@bar.net
    - repo: /path/to/repo

# Multiple values
mylocalrepo:
  git.config_set:
    - name: mysection.myattribute
    - multivar:
      - foo
      - bar
      - baz
    - repo: /path/to/repo
```

**Global Config Example (User ``foo``)**:

```
mylocalrepo:
  git.config_set:
    - name: user.name
    - value: Foo Bar
    - user: foo
    - global: True
```

salt.states.git.**config_unset**(*name*, *value_regex=None*, *repo=None*, *user=None*, *password=None*, ***kwargs*)

New in version 2015.8.0.

Ensure that the named config key is not present

**name** The name of the configuration key to unset. This value can be a regex, but the regex must match the entire key name. For example, `foo\.` would not match all keys in the `foo` section, it would be necessary to use `foo\..+` to do so.

**value_regex** Regex indicating the values to unset for the matching key(s)

**Note:** This option behaves differently depending on whether or not `all` is set to `True`. If it is, then all

values matching the regex will be deleted (this is the only way to delete multiple values from a multivar). If `all` is set to `False`, then this state will fail if the regex matches more than one value in a multivar.

**all** [False] If `True`, unset all matches

**repo** Location of the git repository for which the config value should be set. Required unless `global` is set to `True`.

**user** User under which to run git commands. By default, commands are run by the user under which the minion is running.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**global** [False] If `True`, this will set a global git config option

**Examples**:

```
# Value matching 'baz'
mylocalrepo:
  git.config_unset:
    - name: foo.bar
    - value_regex: 'baz'
    - repo: /path/to/repo

# Ensure entire multivar is unset
mylocalrepo:
  git.config_unset:
    - name: foo.bar
    - all: True

# Ensure all variables in 'foo' section are unset, including multivars
mylocalrepo:
  git.config_unset:
    - name: 'foo\..+'
    - all: True

# Ensure that global config value is unset
mylocalrepo:
  git.config_unset:
    - name: foo.bar
    - global: True
```

`salt.states.git.`**`detached`**(*name*, *ref*, *target=None*, *remote='origin'*, *user=None*, *password=None*, *force_clone=False*, *force_checkout=False*, *fetch_remote=True*, *hard_reset=False*, *submodules=False*, *identity=None*, *https_user=None*, *https_pass=None*, *onlyif=False*, *unless=False*, ***kwargs*)

New in version 2016.3.0.

Make sure a repository is cloned to the given target directory and is a detached HEAD checkout of the commit ID resolved from `ref`.

**name** Address of the remote repository.

**ref** The branch, tag, or commit ID to checkout after clone. If a branch or tag is specified it will be resolved to a commit ID and checked out.

**target** Name of the target directory where repository is about to be cloned.

**remote** [origin] Git remote to use. If this state needs to clone the repo, it will clone it using this value as the initial remote name. If the repository already exists, and a remote by this name is not present, one will be added.

**user** User under which to run git commands. By default, commands are run by the user under which the minion is running.

**password**
Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**force_clone** [False] If the `target` directory exists and is not a git repository, then this state will fail. Set this argument to `True` to remove the contents of the target directory and clone the repo into it.

**force_checkout** [False] When checking out the revision ID, the state will fail if there are unwritten changes. Set this argument to `True` to discard unwritten changes when checking out.

**fetch_remote** [True] If `False` a fetch will not be performed and only local refs will be reachable.

**hard_reset** [False] If `True` a hard reset will be performed before the checkout and any uncommitted modifications to the working directory will be discarded. Untracked files will remain in place.

---

**Note:** Changes resulting from a hard reset will not trigger requisites.

---

**submodules** [False] Update submodules

**identity** A path on the minion (or a SaltStack fileserver URL, e.g. `salt://path/to/identity_file`) to a private key to use for SSH authentication.

**https_user** HTTP Basic Auth username for HTTPS (only) clones

**https_pass** HTTP Basic Auth password for HTTPS (only) clones

**onlyif** A command to run as a check, run the named command only if the command passed to the `onlyif` option returns true

**unless** A command to run as a check, only run the named command if the command passed to the `unless` option returns false

`salt.states.git.`**`latest`**(*name*, *rev='HEAD'*, *target=None*, *branch=None*, *user=None*, *password=None*, *update_head=True*, *force_checkout=False*, *force_clone=False*, *force_fetch=False*, *force_reset=False*, *submodules=False*, *bare=False*, *mirror=False*, *remote='origin'*, *fetch_tags=True*, *depth=None*, *identity=None*, *https_user=None*, *https_pass=None*, *onlyif=False*, *unless=False*, ***kwargs*)

Make sure the repository is cloned to the given directory and is up-to-date.

**name** Address of the remote repository, as passed to `git clone`

---

**Note:** From the Git documentation, there are two URL formats supported for SSH authentication. The below two examples are equivalent:

```
# ssh:// URL
ssh://user@server/project.git

# SCP-like syntax
user@server:project.git
```

A common mistake is to use an `ssh://` URL, but with a colon after the domain instead of a slash. This is invalid syntax in Git, and will therefore not work in Salt. When in doubt, confirm that a `git clone` works for the URL before using it in Salt.

It has been reported by some users that SCP-like syntax is incompatible with git repos hosted on Atlassian Stash/BitBucket Server. In these cases, it may be necessary to use `ssh://` URLs for SSH authentication.

---

**rev** [HEAD] The remote branch, tag, or revision ID to checkout after clone / before update. If specified, then Salt will also ensure that the tracking branch is set to `<remote>/<rev>`, unless `rev` refers to a tag or SHA1, in which case Salt will ensure that the tracking branch is unset.

If `rev` is not specified, it will be assumed to be `HEAD`, and Salt will not manage the tracking branch at all.

Changed in version 2015.8.0: If not specified, `rev` now defaults to the remote repository's HEAD.

**target** Name of the target directory where repository is about to be cloned

**branch** Name of the local branch into which to checkout the specified rev. If not specified, then Salt will not care what branch is being used locally and will just use whatever branch is currently there.

New in version 2015.8.0.

---

**Note**: If this argument is not specified, this means that Salt will not change the local branch if the repository is reset to another branch/tag/SHA1. For example, assume that the following state was run initially:

```
foo_app:
  git.latest:
    - name: https://mydomain.tld/apps/foo.git
    - target: /var/www/foo
    - user: www
```

This would have cloned the HEAD of that repo (since a `rev` wasn't specified), and because `branch` is not specified, the branch in the local clone at `/var/www/foo` would be whatever the default branch is on the remote repository (usually `master`, but not always). Now, assume that it becomes necessary to switch this checkout to the `dev` branch. This would require `rev` to be set, and probably would also require `force_reset` to be enabled:

```
foo_app:
  git.latest:
    - name: https://mydomain.tld/apps/foo.git
    - target: /var/www/foo
    - user: www
    - rev: dev
    - force_reset: True
```

The result of this state would be to perform a hard-reset to `origin/dev`. Since `branch` was not specified though, while `/var/www/foo` would reflect the contents of the remote repo's `dev` branch, the local branch would still remain whatever it was when it was cloned. To make the local branch match the remote one, set `branch` as well, like so:

```
foo_app:
  git.latest:
    - name: https://mydomain.tld/apps/foo.git
    - target: /var/www/foo
    - user: www
    - rev: dev
    - branch: dev
    - force_reset: True
```

This may seem redundant, but Salt tries to support a wide variety of use cases, and doing it this way allows for the use case where the local branch doesn't need to be strictly managed.

---

**user** Local system user under which to run git commands. By default, commands are run by the user under which the minion is running.

---

**Note**: This is not to be confused with the username for http(s)/SSH authentication.

---

New in version 0.17.0.

**password** Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

**update_head** [True] If set to `False`, then the remote repository will be fetched (if necessary) to ensure that the commit to which `rev` points exists in the local checkout, but no changes will be made to the local HEAD.

New in version 2015.8.3.

**force** [False] Deprecated since version 2015.8.0: Use `force_clone` instead. For earlier Salt versions, `force` must be used.

**force_checkout** [False] When checking out the local branch, the state will fail if there are unwritten changes. Set this argument to `True` to discard unwritten changes when checking out.

**force_clone** [False] If the `target` directory exists and is not a git repository, then this state will fail. Set this argument to `True` to remove the contents of the target directory and clone the repo into it.

**force_fetch** [False] If a fetch needs to be performed, non-fast-forward fetches will cause this state to fail. Set this argument to `True` to force the fetch even if it is a non-fast-forward update.

New in version 2015.8.0.

**force_reset** [False] If the update is not a fast-forward, this state will fail. Set this argument to `True` to force a hard-reset to the remote revision in these cases.

**submodules** [False] Update submodules on clone or branch change

**bare** [False] Set to `True` if the repository is to be a bare clone of the remote repository.

**mirror** Set to `True` if the repository is to be a mirror of the remote repository. This implies that `bare` set to `True`, and thus is incompatible with `rev`.

**remote** [origin] Git remote to use. If this state needs to clone the repo, it will clone it using this value as the initial remote name. If the repository already exists, and a remote by this name is not present, one will be added.

**remote_name** Deprecated since version 2015.8.0: Use `remote` instead. For earlier Salt versions, `remote_name` must be used.

**fetch_tags** [True] If `True`, then when a fetch is performed all tags will be fetched, even those which are not reachable by any branch on the remote.

**depth** Defines depth in history when git a clone is needed in order to ensure latest. E.g. `depth: 1` is useful when deploying from a repository with a long history. Use rev to specify branch. This is not compatible with tags or revision IDs.

**identity** Path to a private key to use for ssh URLs. This can be either a single string, or a list of strings. For example:

```
# Single key
git@github.com:user/repo.git:
  git.latest:
    - user: deployer
    - identity: /home/deployer/.ssh/id_rsa

# Two keys
git@github.com:user/repo.git:
  git.latest:
    - user: deployer
    - identity:
      - /home/deployer/.ssh/id_rsa
      - /home/deployer/.ssh/id_rsa_alternate
```

If multiple keys are specified, they will be tried one-by-one in order for each git command which needs to authenticate.

> **Warning:** Unless Salt is invoked from the minion using `salt-call`, the key(s) must be passphraseless. For greater security with passphraseless private keys, see the sshd(8) manpage for information on securing the keypair from the remote side in the `authorized_keys` file.

Changed in version 2015.8.7: Salt will no longer attempt to use passphrase-protected keys unless invoked from the minion using `salt-call`, to prevent blocking waiting for user input.

Changed in version 2016.3.0: Key can now be specified as a SaltStack fileserver URL (e.g. `salt://path/to/identity_file`).

**https_user** HTTP Basic Auth username for HTTPS (only) clones

New in version 2015.5.0.

**https_pass** HTTP Basic Auth password for HTTPS (only) clones

New in version 2015.5.0.

**onlyif** A command to run as a check, run the named command only if the command passed to the `onlyif` option returns true

**unless** A command to run as a check, only run the named command if the command passed to the `unless` option returns false

---

**Note:** Clashing ID declarations can be avoided when including different branches from the same git repository in the same SLS file by using the `name` argument. The example below checks out the `gh-pages` and `gh-pages-prod` branches from the same repository into separate directories. The example also sets up the `ssh_known_hosts` ssh key required to perform the git checkout.

Also, it has been reported that the SCP-like syntax for

```
gitlab.example.com:
  ssh_known_hosts:
    - present
    - user: root
    - enc: ecdsa
    - fingerprint: 4e:94:b0:54:c1:5b:29:a2:70:0e:e1:a3:51:ee:ee:e3

git-website-staging:
  git.latest:
    - name: git@gitlab.example.com:user/website.git
    - rev: gh-pages
    - target: /usr/share/nginx/staging
    - identity: /root/.ssh/website_id_rsa
    - require:
      - pkg: git
      - ssh_known_hosts: gitlab.example.com

git-website-staging:
  git.latest:
    - name: git@gitlab.example.com:user/website.git
    - rev: gh-pages
    - target: /usr/share/nginx/staging
    - identity: salt://website/id_rsa
    - require:
      - pkg: git
      - ssh_known_hosts: gitlab.example.com

git-website-prod:
  git.latest:
    - name: git@gitlab.example.com:user/website.git
```

```
    - rev: gh-pages-prod
    - target: /usr/share/nginx/prod
    - identity: /root/.ssh/website_id_rsa
    - require:
      - pkg: git
      - ssh_known_hosts: gitlab.example.com
```

salt.states.git.**mod_run_check**(*cmd_kwargs*, *onlyif*, *unless*)

Execute the onlyif and unless logic. Return a result dict if:

- onlyif failed (onlyif != 0)
- unless succeeded (unless == 0)

Otherwise, returns `True`

salt.states.git.**present**(*name*, *force=False*, *bare=True*, *template=None*, *separate_git_dir=None*, *shared=None*, *user=None*, *password=None*)

Ensure that a repository exists in the given directory

> **Warning**: If the minion has Git 2.5 or later installed, `name` points to a worktree, and `force` is set to `True`, then the worktree will be deleted. This has been corrected in Salt 2015.8.0.

**name** Path to the directory

Changed in version 2015.8.0: This path must now be absolute

**force** [False] If `True`, and if `name` points to an existing directory which does not contain a git repository, then the contents of that directory will be recursively removed and a new repository will be initialized in its place.

**bare** [True] If `True`, and a repository must be initialized, then the repository will be a bare repository.

> **Note**: This differs from the default behavior of *`git.init`*, make sure to set this value to `False` if a bare repo is not desired.

**template** If a new repository is initialized, this argument will specify an alternate **`template directory`_**

New in version 2015.8.0.

**separate_git_dir** If a new repository is initialized, this argument will specify an alternate `$GIT_DIR`

New in version 2015.8.0.

**shared** Set sharing permissions on git repo. See git-init(1) for more details.

New in version 2015.5.0.

**user** User under which to run git commands. By default, commands are run by the user under which the minion is running.

New in version 0.17.0.

**password**

Windows only. Required when specifying `user`. This parameter will be ignored on non-Windows platforms.

New in version 2016.3.4.

### 13.16.67 salt.states.github module

Github User State Module

New in version 2016.3.0..

This state is used to ensure presence of users in the Organization.

```
ensure user test is present in github:
    github.present:
        - name: 'Example TestUser1'
        - email: example@domain.com
        - username: 'gitexample'
```

salt.states.github.**absent**(*name*, *profile='github'*, ***kwargs*)

Ensure a github user is absent

```
ensure user test is absent in github:
    github.absent:
        - name: 'Example TestUser1'
        - email: example@domain.com
        - username: 'gitexample'
```

The following parameters are required:

**name** Github handle of the user in organization

salt.states.github.**present**(*name*, *profile='github'*, ***kwargs*)

Ensure a user is present

```
ensure user test is present in github:
    github.present:
        - fullname: 'Example TestUser1'
        - email: 'example@domain.com'
        - name: 'gitexample'
```

The following parameters are required:

**name** This is the github handle of the user in the organization

## 13.16.68 salt.states.glance

### Managing Images in OpenStack Glance

salt.states.glance.**image_present**(*name*, *visibility='public'*, *protected=None*, *checksum=None*, *location=None*, *wait_for=None*, *timeout=30*)

Checks if given image is present with properties set as specified.

An image should got through the stages `queued', `saving' before becoming `active'. The attribute `checksum' can only be checked once the image is active. If you don't specify `wait_for' but `checksum' the function will wait for the image to become active before comparing checksums. If you don't specify checksum either the function will return when the image reached `saving'. The default timeout for both is 30 seconds.

**Supported properties**:

- visibility (`public' or `private')
- protected (bool)
- checksum (string, md5sum)
- location (URL, to copy from)

## 13.16.69 salt.states.glusterfs

Manage glusterfs pool.

salt.states.glusterfs.**add_volume_bricks**(*name*, *bricks*)

Add brick(s) to an existing volume

**name** Volume name
**bricks** List of bricks to add to the volume

```
myvolume:
  glusterfs.add_volume_bricks:
    - bricks:
        - host1:/srv/gluster/drive1
        - host2:/srv/gluster/drive2

Replicated Volume:
  glusterfs.add_volume_bricks:
    - name: volume2
    - bricks:
      - host1:/srv/gluster/drive2
      - host2:/srv/gluster/drive3
```

salt.states.glusterfs.**created**(*name*, *bricks*, *stripe=False*, *replica=False*, *device_vg=False*, *transport='tcp'*, *start=False*, *force=False*)

Check if volume already exists
**name** name of the volume

```
myvolume:
  glusterfs.created:
    - bricks:
        - host1:/srv/gluster/drive1
        - host2:/srv/gluster/drive2

Replicated Volume:
  glusterfs.created:
    - name: volume2
    - bricks:
      - host1:/srv/gluster/drive2
      - host2:/srv/gluster/drive3
    - replica: 2
    - start: True
```

salt.states.glusterfs.**peered**(*name*)

Check if node is peered.
**name** The remote host with which to peer.

```
peer-cluster:
  glusterfs.peered:
    - name: two

peer-clusters:
  glusterfs.peered:
    - names:
      - one
      - two
      - three
      - four
```

salt.states.glusterfs.**started**(*name*)

Check if volume has been started
**name** name of the volume

```
mycluster:
  glusterfs.started: []
```

### 13.16.70 salt.states.gnomedesktop

#### Configuration of the GNOME desktop

Control the GNOME settings

```
localdesktop_wm_prefs:
    gnomedesktop.wm_preferences:
        - user: username
        - audible_bell: false
        - action_double_click_titlebar: 'toggle-maximize'
        - visual_bell: true
        - num_workspaces: 6
localdesktop_lockdown:
    gnomedesktop.desktop_lockdown:
        - user: username
        - disable_user_switching: true
localdesktop_interface:
    gnomedesktop.desktop_interface:
        - user: username
        - clock_show_date: true
        - clock_format: 12h
```

salt.states.gnomedesktop.**desktop_interface**(*name*, *user=None*, *automatic_mnemonics=None*, *buttons_have_icons=None*, *can_change_accels=None*, *clock_format=None*, *clock_show_date=None*, *clock_show_seconds=None*, *cursor_blink=None*, *cursor_blink_time=None*, *cursor_blink_timeout=None*, *cursor_size=None*, *cursor_theme=None*, *document_font_name=None*, *enable_animations=None*, *font_name=None*, *gtk_color_palette=None*, *gtk_color_scheme=None*, *gtk_im_module=None*, *gtk_im_preedit_style=None*, *gtk_im_status_style=None*, *gtk_key_theme=None*, *gtk_theme=None*, *gtk_timeout_initial=None*, *gtk_timeout_repeat=None*, *icon_theme=None*, *menubar_accel=None*, *menubar_detachable=None*, *menus_have_icons=None*, *menus_have_tearoff=None*, *monospace_font_name=None*, *show_input_method_menu=None*, *show_unicode_menu=None*, *text_scaling_factor=None*, *toolbar_detachable=None*, *toolbar_icons_size=None*, *toolbar_style=None*, *toolkit_accessibility=None*, ***kwargs*)

desktop_interface: sets values in the org.gnome.desktop.interface schema

salt.states.gnomedesktop.**desktop_lockdown**(*name*, *user=None*, *disable_application_handlers=None*, *disable_command_line=None*, *disable_lock_screen=None*, *disable_log_out=None*, *disable_print_setup=None*, *disable_printing=None*, *disable_save_to_disk=None*, *disable_user_switching=None*, *user_administration_disabled=None*, ***kwargs*)

desktop_lockdown: sets values in the org.gnome.desktop.lockdown schema

salt.states.gnomedesktop.**wm_preferences**(*name*, *user=None*, *action_double_click_titlebar=None*, *action_middle_click_titlebar=None*, *action_right_click_titlebar=None*, *application_based=None*, *audible_bell=None*, *auto_raise=None*, *auto_raise_delay=None*, *button_layout=None*, *disable_workarounds=None*, *focus_mode=None*, *focus_new_windows=None*, *mouse_button_modifier=None*, *num_workspaces=None*, *raise_on_click=None*, *resize_with_right_button=None*, *theme=None*, *titlebar_font=None*, *titlebar_uses_system_font=None*, *visual_bell=None*, *visual_bell_type=None*, *workspace_names=None*, ***kwargs*)

wm_preferences: sets values in the org.gnome.desktop.wm.preferences schema

### 13.16.71 salt.states.gpg module

#### Management of the GPG keychains

New in version 2016.3.0.

salt.states.gpg.**absent**(*name*, *keys=None*, *user=None*, *gnupghome=None*, ***kwargs*)

Ensure GPG public key is absent in keychain

**name** The unique name or keyid for the GPG public key.

**keys** The keyId or keyIds to add to the GPG keychain.

**user** Add GPG keys to the user's keychain

**gnupghome** Override GNUPG Home directory

salt.states.gpg.**present**(*name*, *keys=None*, *user=None*, *keyserver=None*, *gnupghome=None*, *trust=None*, ***kwargs*)

Ensure GPG public key is present in keychain

**name** The unique name or keyid for the GPG public key.

**keys** The keyId or keyIds to add to the GPG keychain.

**user** Add GPG keys to the user's keychain

**keyserver** The keyserver to retrieve the keys from.

**gnupghome** Override GNUPG Home directory

**trust** Trust level for the key in the keychain, ignored by default. Valid trust levels: expired, unknown, not_trusted, marginally, fully, ultimately

### 13.16.72 salt.states.grafana

Manage Grafana Dashboards

This module uses `elasticsearch`, which can be installed via package, or pip.

You can specify elasticsearch hosts directly to the module, or you can use an elasticsearch profile via pillars:

```
mygrafanaprofile:
  hosts:
    - es1.example.com:9200
    - es2.example.com:9200
  index: grafana-dash
```

```
# Basic usage (uses default pillar profile key 'grafana')
Ensure myservice dashboard is managed:
  grafana.dashboard_present:
    - name: myservice
    - dashboard_from_pillar: default
    - rows_from_pillar:
        - systemhealth
        - requests

# Passing hosts in
Ensure myservice dashboard is managed:
  grafana.dashboard_present:
    - name: myservice
    - dashboard_from_pillar: default
    - rows:
        - collapse: false
          editable: true
          height: 150px
          title: System Health
          panels:
            - aliasColors: {}
              id: 200000
              annotate:
                enable: false
              bars: false
              datasource: null
              editable: true
              error: false
              fill: 7
              grid:
                leftMax: 100
                leftMin: null
                rightMax: null
                rightMin: null
                threshold1: 60
                threshold1Color: rgb(216, 27, 27)
                threshold2: null
                threshold2Color: rgba(234, 112, 112, 0.22)
              leftYAxisLabel: ''
              legend:
                avg: false
                current: false
                max: false
                min: false
                show: false
                total: false
                values: false
              lines: true
              linewidth: 1
```

```
              nullPointMode: connected
              percentage: false
              pointradius: 5
              points: false
              renderer: flot
              resolution: 100
              scale: 1
              seriesOverrides: []
              span: 4
              stack: false
              steppedLine: false
              targets:
                - target: cloudwatch.aws.ec2.mysrv.cpuutilization.average
              title: CPU (asg average)
              tooltip:
                query_as_alias: true
                shared: false
                value_type: cumulative
              type: graph
              x-axis: true
              y-axis: true
              y_formats:
                - short
                - short
              zerofill: true
    - rows_from_pillar:
      - systemhealth
      - requests
    - profile:
        hosts:
          - es1.example.com:9200
          - es2.example.com:9200
        index: grafana-dash

# Using a profile from pillars
Ensure myservice dashboard is managed:
  grafana.dashboard_present:
    - name: myservice
    - dashboard:
        annotations:
          enable: true
          list: []
        editable: true
        hideAllLegends: false
        hideControls: false
        nav:
          - collapse: false
            enable: true
            notice: false
            now: true
            refresh_intervals:
              - 10s
              - 30s
              - 1m
              - 5m
              - 15m
              - 30m
              - 1h
```

```
            - 2h
            - 1d
          status: Stable
          time_options:
            - 5m
            - 15m
            - 1h
            - 2h
            - 3h
            - 4h
            - 6h
            - 12h
            - 1d
            - 2d
            - 4d
            - 7d
            - 16d
            - 30d
          type: timepicker
      originalTitle: dockerregistry
      refresh: 1m
      rows: []
      sharedCrosshair: false
      style: dark
      tags: []
      templating:
        enable: true
        list: []
      time:
        from: now-2h
        to: now
      timezone: browser
  - rows_from_pillars:
    - systemhealth
    - requests
  - profile: mygrafanaprofile
```

The behavior of this module is to create dashboards if they do not exist, to add rows if they do not exist in existing dashboards, and to update rows if they exist in dashboards. The module will not manage rows that are not defined, allowing users to manage their own custom rows.

`salt.states.grafana.`**`dashboard_absent`**(*name*, *hosts=None*, *profile='grafana'*)

Ensure the named grafana dashboard is deleted.

**name** Name of the grafana dashboard.

**profile** A pillar key or dict that contains a list of hosts and an elasticsearch index to use.

`salt.states.grafana.`**`dashboard_present`**(*name*, *dashboard=None*, *dashboard_from_pillar=None*, *rows=None*, *rows_from_pillar=None*, *profile='grafana'*)

Ensure the grafana dashboard exists and is managed.

**name** Name of the grafana dashboard.

**dashboard** A dict that defines a dashboard that should be managed.

**dashboard_from_pillar** A pillar key that contains a grafana dashboard dict. Mutually exclusive with dashboard.

**rows** A list of grafana rows.

**rows_from_pillar** A list of pillar keys that contain lists of grafana dashboard rows. Rows defined in the pillars will be appended to the rows defined in the state.

**profile** A pillar key or dict that contains a list of hosts and an elasticsearch index to use.

### 13.16.73 salt.states.grafana_dashboard module

Manage Grafana v2.0 Dashboards

New in version 2016.3.0.

```
grafana:
  grafana_timeout: 3
  grafana_token: qwertyuiop
  grafana_url: 'https://url.com'
```

```
Ensure minimum dashboard is managed:
  grafana_dashboard.present:
    - name: insightful-dashboard
    - base_dashboards_from_pillar:
      - default_dashboard
    - base_rows_from_pillar:
      - default_row
    - base_panels_from_pillar:
      - default_panel
    - dashboard:
        rows:
          - title: Usage
            panels:
              - targets:
                  - target: alias(constantLine(50), 'max')
                title: Imaginary
                type: graph
```

The behavior of this module is to create dashboards if they do not exist, to add rows if they do not exist in existing dashboards, and to update rows if they exist in dashboards. The module will not manage rows that are not defined, allowing users to manage their own custom rows.

`salt.states.grafana_dashboard.`**`absent`**(*name*, *profile='grafana'*)

Ensure the named grafana dashboard is absent.

**name** Name of the grafana dashboard.

**profile** A pillar key or dict that contains grafana information

`salt.states.grafana_dashboard.`**`present`**(*name*, *base_dashboards_from_pillar=None*, *base_panels_from_pillar=None*, *base_rows_from_pillar=None*, *dashboard=None*, *profile='grafana'*)

Ensure the grafana dashboard exists and is managed.

**name** Name of the grafana dashboard.

**base_dashboards_from_pillar** A pillar key that contains a list of dashboards to inherit from

**base_panels_from_pillar** A pillar key that contains a list of panels to inherit from

**base_rows_from_pillar** A pillar key that contains a list of rows to inherit from

**dashboard** A dict that defines a dashboard that should be managed.

**profile** A pillar key or dict that contains grafana information

### 13.16.74 salt.states.grafana_datasource module

Manage Grafana v2.0 data sources

New in version 2016.3.0.

```
grafana:
  grafana_timeout: 3
  grafana_token: qwertyuiop
  grafana_url: 'https://url.com'
```

```
Ensure influxdb data source is present:
  grafana_datasource.present:
    - name: influxdb
    - type: influxdb
    - url: http://localhost:8086
    - access: proxy
    - basic_auth: true
    - basic_auth_user: myuser
    - basic_auth_password: mypass
    - is_default: true
```

salt.states.grafana_datasource.**absent**(*name*, *profile='grafana'*)

Ensure that a data source is present.

**name** Name of the data source to remove.

salt.states.grafana_datasource.**present**(*name*, *type*, *url*, *access='proxy'*, *user=''*, *password=''*, *database=''*, *basic_auth=False*, *basic_auth_user=''*, *basic_auth_password=''*, *is_default=False*, *json_data=None*, *profile='grafana'*)

Ensure that a data source is present.

**name** Name of the data source.

**type** Which type of data source it is (`graphite', `influxdb' etc.).

**url** The URL to the data source API.

**user** Optional - user to authenticate with the data source

**password** Optional - password to authenticate with the data source

**basic_auth** Optional - set to True to use HTTP basic auth to authenticate with the data source.

**basic_auth_user** Optional - HTTP basic auth username.

**basic_auth_password** Optional - HTTP basic auth password.

**is_default** Default: False

## 13.16.75 salt.states.grains

### Manage grains on the minion

This state allows for grains to be set. Grains set or altered this way are stored in the `grains' file on the minions, by default at: /etc/salt/grains

Note: This does NOT override any grains set in the minion file.

salt.states.grains.**absent**(*name*, *destructive=False*, *delimiter=':'*, *force=False*)

New in version 2014.7.0.

Delete a grain from the grains config file

**name** The grain name

**destructive** If destructive is True, delete the entire grain. If destructive is False, set the grain's value to None. Defaults to False.

**force** If force is True, the existing grain will be overwritten regardless of its existing or provided value type. Defaults to False

New in version v2015.8.2.

**delimiter** A delimiter different from the default can be provided.

New in version v2015.8.2.

Changed in version v2015.8.2.

This state now support nested grains and complex values. It is also more conservative: if a grain has a value that is a list or a dict, it will not be removed unless the *force* parameter is True.

```
grain_name:
  grains.absent: []
```

salt.states.grains.**append**(*name*, *value*, *convert=False*, *delimiter=':'*)

New in version 2014.7.0.

Append a value to a list in the grains config file. The grain that is being appended to (name) must exist before the new value can be added.

**name** The grain name

**value** The value to append

**convert** If convert is True, convert non-list contents into a list. If convert is False and the grain contains non-list contents, an error is given. Defaults to False.

**delimiter** A delimiter different from the default can be provided.

New in version v2015.8.2.

```
grain_name:
  grains.append:
    - value: to_be_appended
```

salt.states.grains.**list_absent**(*name*, *value*, *delimiter=':'*)

Delete a value from a grain formed as a list.

New in version 2014.1.0.

**name** The grain name.

**value** The value to delete from the grain list.

**delimiter** A delimiter different from the default `:` can be provided.

New in version v2015.8.2.

The grain should be list type

```
roles:
  grains.list_absent:
    - value: db
```

For multiple grains, the syntax looks like:

```
roles:
  grains.list_absent:
    - value:
      - web
      - dev
```

salt.states.grains.**list_present**(*name*, *value*, *delimiter=':'*)

New in version 2014.1.0.

Ensure the value is present in the list-type grain. Note: If the grain that is provided in `name` is not present on the system, this new grain will be created with the corresponding provided value.

**name** The grain name.

**value** The value is present in the list type grain.

**delimiter** A delimiter different from the default `:` can be provided.

New in version v2015.8.2.

The grain should be list type

```
roles:
  grains.list_present:
    - value: web
```

For multiple grains, the syntax looks like:

```
roles:
  grains.list_present:
    - value:
      - web
      - dev
```

`salt.states.grains.`**`present`**(*name*, *value*, *delimiter=':'*, *force=False*)

Ensure that a grain is set

Changed in version v2015.8.2.

**name** The grain name

**value** The value to set on the grain

**force** If force is True, the existing grain will be overwritten regardless of its existing or provided value type. Defaults to False

New in version v2015.8.2.

**delimiter** A delimiter different from the default can be provided.

New in version v2015.8.2.

It is now capable to set a grain to a complex value (ie. lists and dicts) and supports nested grains as well.

If the grain does not yet exist, a new grain is set to the given value. For a nested grain, the necessary keys are created if they don't exist. If a given key is an existing value, it will be converted, but an existing value different from the given key will fail the state.

If the grain with the given name exists, its value is updated to the new value unless its existing or provided value is complex (list or dict). Use *force: True* to overwrite.

```
cheese:
  grains.present:
    - value: edam

nested_grain_with_complex_value:
  grains.present:
    - name: icinga:Apache SSL
    - value:
      - command: check_https
      - params: -H localhost -p 443 -S

with,a,custom,delimiter:
  grains.present:
    - value: yay
    - delimiter: ,
```

### 13.16.76 salt.states.group

#### Management of user groups

The group module is used to create and manage unix group settings, groups can be either present or absent:

```
cheese:
  group.present:
    - gid: 7648
    - system: True
    - addusers:
      - user1
      - users2
    - delusers:
      - foo

cheese:
  group.present:
    - gid: 7648
    - system: True
    - members:
      - foo
      - bar
      - user1
      - user2
```

salt.states.group.**absent**(*name*)

Ensure that the named group is absent

**name** The name of the group to remove

salt.states.group.**present**(*name*, *gid=None*, *system=False*, *addusers=None*, *delusers=None*, *members=None*)

Ensure that a group is present

**name** The name of the group to manage

**gid** The group id to assign to the named group; if left empty, then the next available group id will be assigned

**system** Whether or not the named group is a system group. This is essentially the `-r' option of `groupadd'.

**addusers** List of additional users to be added as a group members.

**delusers** Ensure these user are removed from the group membership.

**members** Replace existing group members with a list of new members.

**Note: Options `members' and `addusers/delusers' are mutually exclusive and** can not be used together.

### 13.16.77 salt.states.hg

#### Interaction with Mercurial repositories

Before using hg over ssh, make sure the remote host fingerprint already exists in ~/.ssh/known_hosts, and the remote host has this host's public key.

```
https://bitbucket.org/example_user/example_repo:
    hg.latest:
      - rev: tip
      - target: /tmp/example_repo
```

salt.states.hg.**latest**(*name*, *rev=None*, *target=None*, *clean=False*, *user=None*, *identity=None*, *force=False*, *opts=False*)

Make sure the repository is cloned to the given directory and is up to date

**name** Address of the remote repository as passed to ``hg clone''
**rev** The remote branch, tag, or revision hash to clone/pull
**target** Target destination directory path on minion to clone into
**clean** Force a clean update with -C (Default: False)
**user** Name of the user performing repository management operations

New in version 0.17.0.

**identity** Private SSH key on the minion server for authentication (ssh://)

New in version 2015.5.0.

**force** Force hg to clone into pre-existing directories (deletes contents)
**opts** Include additional arguments and options to the hg command line

## 13.16.78 salt.states.hipchat

### Send a message to Hipchat

This state is useful for sending messages to Hipchat during state runs.

New in version 2015.5.0.

```
hipchat-message:
  hipchat.send_message:
    - room_id: 123456
    - from_name: SuperAdmin
    - message: 'This state was executed successfully.'
    - api_key: peWcBiMOS9HrZG15peWcBiMOS9HrZG15
    - api_version: v1
```

The api key can be specified in the master or minion configuration like below:

```
hipchat:
  api_key: peWcBiMOS9HrZG15peWcBiMOS9HrZG15
  api_version: v1
```

salt.states.hipchat.**send_message**(*name*, *room_id*, *from_name*, *message*, *api_key=None*, *api_version=None*, *message_color='yellow'*, *notify=False*)

Send a message to a Hipchat room.

```
hipchat-message:
  hipchat.send_message:
    - room_id: 123456
    - from_name: SuperAdmin
    - message: 'This state was executed successfully.'
    - api_key: peWcBiMOS9HrZG15peWcBiMOS9HrZG15
    - api_version: v1
    - color: green
    - notify: True
```

The following parameters are required:
**name** The unique name for this event.
**room_id** The room to send the message to. Can either be the ID or the name.
**from_name** The name of that is to be shown in the ``from'' field. If not specified, defaults to.
**message** The message that is to be sent to the Hipchat room.
The following parameters are optional:
**api_key** The api key for Hipchat to use for authentication, if not specified in the configuration options of master or minion.

**api_version** The api version for Hipchat to use, if not specified in the configuration options of master or minion.

**color** The color the Hipchat message should be displayed in. One of the following, default: yellow ``yellow'', ``red'', ``green'', ``purple'', ``gray'', or ``random''.

**notify** Should a notification in the room be raised.

### 13.16.79 salt.states.host

#### Management of addresses and names in hosts file

The `/etc/hosts` file can be managed to contain definitions for specific hosts:

```
salt-master:
  host.present:
    - ip: 192.168.0.42
```

Or using the `names` directive, you can put several names for the same IP. (Do not try one name with space-separated values).

```
server1:
  host.present:
    - ip: 192.168.0.42
    - names:
      - server1
      - florida
```

**Note**: Changing the `names` in `host.present` does not cause an update to remove the old entry.

```
server1:
  host.present:
    - ip:
      - 192.168.0.42
      - 192.168.0.43
      - 192.168.0.44
    - names:
      - server1
```

You can replace all existing names for a particular IP address:

```
127.0.1.1:
  host.only:
    - hostnames:
      - foo.example.com
      - foo
```

Or delete all existing names for an address:

```
203.0.113.25:
    host.only:
      - hostnames: []
```

`salt.states.host.`**`absent`**(*name*, *ip*)

Ensure that the named host is absent

**name** The host to remove

**ip** The ip addr(s) of the host to remove

`salt.states.host.`**`only`**(*name*, *hostnames*)

Ensure that only the given hostnames are associated with the given IP address.

New in version 2016.3.0.

**name** The IP address to associate with the given hostnames.

**hostnames** Either a single hostname or a list of hostnames to associate with the given IP address in the given order. Any other hostname associated with the IP address is removed. If no hostnames are specified, all hostnames associated with the given IP address are removed.

`salt.states.host.`**`present`**(*name*, *ip*)

Ensures that the named host is present with the given ip

**name** The host to assign an ip to

**ip** The ip addr(s) to apply to the host

### 13.16.80 salt.states.htpasswd

Support for htpasswd module. Requires the apache2-utils package for Debian-based distros.

New in version 2014.7.0.

```
username:
  webutil.user_exists:
    - password: secr3t
    - htpasswd_file: /etc/nginx/htpasswd
    - options: d
    - force: true
```

`salt.states.htpasswd.`**`user_exists`**(*name*, *password=None*, *htpasswd_file=None*, *options='`*, *force=False*, *runas=None*)

Make sure the user is inside the specified htpasswd file

**name** User name

**password** User password

**htpasswd_file** Path to the htpasswd file

**options** See *salt.modules.htpasswd.useradd*

**force** Touch the file even if user already created

**runas** The system user to run htpasswd command with

### 13.16.81 salt.states.http

HTTP monitoring states

Perform an HTTP query and statefully return the result

New in version 2015.5.0.

`salt.states.http.`**`query`**(*name*, *match=None*, *match_type='string'*, *status=None*, ***kwargs*)

Perform an HTTP query and statefully return the result

New in version 2015.5.0.

**name** The name of the query.

**match** Specifies a pattern to look for in the return text. By default, this will perform a string comparison of looking for the value of match in the return text.

**match_type** Specifies the type of pattern matching to use. Default is `string`, but can also be set to `pcre` to use regular expression matching if a more complex pattern matching is required.

> **Note:** Despite the name of `match_type` for this argument, this setting actually uses Python's `re.search()` function rather than Python's `re.match()` function.

**status** The status code for a URL for which to be checked. Can be used instead of or in addition to the `match` setting.

If both `match` and `status` options are set, both settings will be checked. However, note that if only one option is `True` and the other is `False`, then `False` will be returned. If this case is reached, the comments in the return data will contain troubleshooting information.

For more information about the `http.query` state, refer to the *HTTP Tutorial*.

```
query_example:
  http.query:
    - name: 'http://example.com/'
    - status: '200'
```

### 13.16.82 salt.states.ifttt

#### Trigger an event in IFTTT

This state is useful for trigging events in IFTTT.

New in version 2015.8.0.

```
ifttt-event:
  ifttt.trigger_event:
    - event: TestEvent
    - value1: 'This state was executed successfully.'
    - value2: 'Another value we can send.'
    - value3: 'A third value we can send.'
```

The api key can be specified in the master or minion configuration like below: .. code-block:: yaml

**ifttt**: secret_key: bzMRb-KKIAaNOwKEEw792J7Eb-B3z7muhdhYblJn4V6

`salt.states.ifttt.`**`trigger_event`**(*name*, *event*, *value1=None*, *value2=None*, *value3=None*)

Trigger an event in IFTTT

```
ifttt-event:
  ifttt.trigger_event:
    - event: TestEvent
    - value1: 'A value that we want to send.'
    - value2: 'A second value that we want to send.'
    - value3: 'A third value that wen want to send.'
```

The following parameters are required:
**name** The unique name for this event.
**event** The name of the event to trigger in IFTTT.
The following parameters are optional:
**value1** One of the values that we can send to IFTT.
**value2** One of the values that we can send to IFTT.
**value3** One of the values that we can send to IFTT.

### 13.16.83 salt.states.incron

#### Management of incron, the inotify cron

The incron state module allows for user incrontabs to be cleanly managed.

Incron declarations require a number of parameters. The parameters needed to be declared: `path`, `mask`, and `cmd`. The `user` whose incrontab is to be edited also needs to be defined.

When making changes to an existing incron job, the `path` declaration is the unique factor, so if an existing cron that looks like this:

```
Watch for modifications in /home/user:
    incron.present:
        - user: root
        - path: /home/user
        - mask:
            - IN_MODIFY
        - cmd: 'echo "$$ $@"'
```

Is changed to this:

```
Watch for modifications and access in /home/user:
    incron.present:
        - user: root
        - path: /home/user
        - mask:
            - IN_MODIFY
            - IN_ACCESS
        - cmd: 'echo "$$ $@"'
```

Then the existing cron will be updated, but if the cron command is changed, then a new cron job will be added to the user's crontab.

New in version 0.17.0.

`salt.states.incron.`**`absent`**(*name*, *path*, *mask*, *cmd*, *user='root'*)

Verifies that the specified incron job is absent for the specified user; only the name is matched when removing a incron job.

**name** Unique comment describing the entry
**path** The path that should be watched
**user** The name of the user who's crontab needs to be modified, defaults to the root user
**mask** The mask of events that should be monitored for
**cmd** The cmd that should be executed

`salt.states.incron.`**`present`**(*name*, *path*, *mask*, *cmd*, *user='root'*)

Verifies that the specified incron job is present for the specified user. For more advanced information about what exactly can be set in the cron timing parameters, check your incron system's documentation. Most Unix-like systems' incron documentation can be found via the incrontab man page: `man 5 incrontab`.

**name** Unique comment describing the entry
**path** The path that should be watched
**user** The name of the user who's crontab needs to be modified, defaults to the root user
**mask** The mask of events that should be monitored for
**cmd** The cmd that should be executed

## 13.16.84 salt.states.influxdb_database

### Management of InfluxDB databases

(compatible with InfluxDB version 0.5+)

New in version 2014.7.0.

`salt.states.influxdb_database.`**`absent`**(*name*, *user=None*, *password=None*, *host=None*, *port=None*)

Ensure that the named database is absent
**name** The name of the database to remove
**user** The user to connect as (must be able to remove the database)
**password** The password of the user
**host** The host to connect to
**port** The port to connect to

`salt.states.influxdb_database.`**`present`**(*name*, *user=None*, *password=None*, *host=None*, *port=None*)

Ensure that the named database is present
**name** The name of the database to create
**user** The user to connect as (must be able to remove the database)
**password** The password of the user
**host** The host to connect to
**port** The port to connect to

## 13.16.85 salt.states.influxdb_user

### Management of InfluxDB users

(compatible with InfluxDB version 0.5+)

New in version 2014.7.0.

`salt.states.influxdb_user.`**`absent`**(*name*, *database=None*, *user=None*, *password=None*, *host=None*, *port=None*)

Ensure that the named cluster admin or database user is absent.
**name** The name of the user to remove
**database** The database to remove the user from
**user** The user to connect as (must be able to remove the user)
**password** The password of the user
**host** The host to connect to
**port** The port to connect to

`salt.states.influxdb_user.`**`present`**(*name*, *passwd*, *database=None*, *user=None*, *password=None*, *host=None*, *port=None*)

Ensure that the cluster admin or database user is present.
**name** The name of the user to manage
**passwd** The password of the user
**database** The database to create the user in
**user** The user to connect as (must be able to create the user)
**password** The password of the user
**host** The host to connect to
**port** The port to connect to

### 13.16.86 salt.states.infoblox module

states for infoblox stuff

ensures a record is either present or absent in an Infoblox DNS system

New in version 2016.3.0.

salt.states.infoblox.**absent**(*name*, *record_type*, *dns_view*, *infoblox_server=None*, *infoblox_user=None*, *infoblox_password=None*, *infoblox_api_version='v1.4.2'*, *sslVerify=True*)

Ensure a record does not exists
**name** Name of the record
**record_type** record type (host, a, cname, etc)
**dns_view** DNS View
**infoblox_server** infoblox server to connect to (will try pillar if not specified)
**infoblox_user** username to use to connect to infoblox (will try pillar if not specified)
**infoblox_password** password to use to connect to infoblox (will try pillar if not specified)
**verify_ssl** verify SSL certificates
Example:

```
some-state:
    infoblox.absent:
      - name: some.dns.record
      - record_type: host
      - dns_view: MyView
      - sslVerify: False
```

salt.states.infoblox.**present**(*name*, *value*, *record_type*, *dns_view*, *infoblox_server=None*, *infoblox_user=None*, *infoblox_password=None*, *infoblox_api_version='v1.4.2'*, *sslVerify=True*)

Ensure a record exists
**name** Name of the record
**value** Value of the record
**record_type** record type (host, a, cname, etc)
**dns_view** DNS View
**infoblox_server** infoblox server to connect to (will try pillar if not specified)
**infoblox_user** username to use to connect to infoblox (will try pillar if not specified)
**infoblox_password** password to use to connect to infoblox (will try pillar if not specified)
**verify_ssl** verify SSL certificates
Example:

```
some-state:
    infoblox.present:
      - name: some.dns.record
      - value: 10.1.1.3
      - record_type: host
      - sslVerify: False
```

### 13.16.87 salt.states.ini_manage

#### Manage ini files

**maintainer** <akilesh1597@gmail.com>

**maturity** new

**depends** re

**platform** all

salt.states.ini_manage.**options_absent**(*name*, *sections=None*)

```
/home/saltminion/api-paste.ini:
  ini.options_absent:
    - sections:
        test:
          - testkey
          - secondoption
        test1:
          - testkey1
```

options present in file and not specified in sections dict will be untouched

changes dict will contain the list of changes made

salt.states.ini_manage.**options_present**(*name*, *sections=None*)

```
/home/saltminion/api-paste.ini:
  ini.options_present:
    - sections:
        test:
          testkey: 'testval'
          secondoption: 'secondvalue'
        test1:
          testkey1: 'testval121'
```

options present in file and not specified in sections dict will be untouched

changes dict will contain the list of changes made

salt.states.ini_manage.**sections_absent**(*name*, *sections=None*)

```
/home/saltminion/api-paste.ini:
  ini.sections_absent:
    - sections:
        - test
        - test1
```

options present in file and not specified in sections will be deleted changes dict will contain the sections that changed

salt.states.ini_manage.**sections_present**(*name*, *sections=None*)

```
/home/saltminion/api-paste.ini:
  ini.sections_present:
    - sections:
        - section_one
        - section_two
```

This will only create empty sections. To also create options, use options_present state

options present in file and not specified in sections will be deleted changes dict will contain the sections that changed

### 13.16.88 salt.states.ipmi

#### Manage IPMI devices over LAN

The following configuration defaults can be defined in the minion, master config or pillar:

```
ipmi.config:
    api_host: 127.0.0.1
    api_user: admin
    api_pass: apassword
    api_port: 623
    api_kg: None
```

Every call can override the config defaults:

```
ensure myipmi system is set to network boot:
    ipmi.boot_device:
        - name: network
        - api_host: myipmi.hostname.com
        - api_user: root
        - api_pass: apassword
        - api_kg: None

ensure myipmi system is powered on:
    ipmi.power:
        - name: boot
        - api_host: myipmi.hostname.com
        - api_user: root
        - api_pass: apassword
```

salt.states.ipmi.**boot_device**(*name='default'*, ***kwargs*)

Request power state change

**name** = **default**

- network -- Request network boot
- hd -- Boot from hard drive
- safe -- Boot from hard drive, requesting `safe mode'
- optical -- boot from CD/DVD/BD drive
- setup -- Boot into setup utility
- default -- remove any IPMI directed boot device request

**kwargs**

- api_host=localhost
- api_user=admin
- api_pass=
- api_port=623
- api_kg=None

salt.states.ipmi.**power**(*name='power_on'*, *wait=300*, ***kwargs*)

Request power state change

**name**

**Ensure power state one of**:

- power_on -- system turn on
- power_off -- system turn off (without waiting for OS)
- shutdown -- request OS proper shutdown
- reset -- reset (without waiting for OS)

- boot -- If system is off, then `on', else `reset'

**wait** wait X seconds for the job to complete before forcing. (defaults to 300 seconds)

**kwargs**

- api_host=localhost
- api_user=admin
- api_pass=
- api_port=623
- api_kg=None

salt.states.ipmi.**user_absent**(*name*, *channel=14*, ***kwargs*)

Remove user Delete all user (uid) records having the matching name.

**name** string name of user to delete

**channel** channel to remove user access from defaults to 14 for auto.

**kwargs**

- api_host=localhost
- api_user=admin
- api_pass=
- api_port=623
- api_kg=None

salt.states.ipmi.**user_present**(*name*, *uid*, *password*, *channel=14*, *callback=False*, *link_auth=True*, *ipmi_msg=True*, *privilege_level='administrator'*, ***kwargs*)

Ensure IPMI user and user privileges.

**name** name of user (limit 16 bytes)

**uid** user id number (1 to 7)

**password** user password (limit 16 bytes)

**channel** ipmi channel defaults to 14 for auto

**callback** User Restricted to Callback

**False = User Privilege Limit is determined by the User Privilege Limit** parameter privilege_level, for both callback and non-callback connections.

**True = User Privilege Limit is determined by the privilege_level** parameter for callback connections, but is restricted to Callback level for non-callback connections. Thus, a user can only initiate a Callback when they `call in' to the BMC, but once the callback connection has been made, the user could potentially establish a session as an Operator.

**link_auth** User Link authentication True/False user name and password information will be used for link authentication, e.g. PPP CHAP) for the given channel. Link authentication itself is a global setting for the channel and is enabled/disabled via the serial/modem configuration parameters.

**ipmi_msg** User IPMI Messaging True/False user name and password information will be used for IPMI Messaging. In this case, `IPMI Messaging' refers to the ability to execute generic IPMI commands that are not associated with a particular payload type. For example, if IPMI Messaging is disabled for a user, but that user is enabled for activating the SOL payload type, then IPMI commands associated with SOL and session management, such as Get SOL Configuration Parameters and Close Session are available, but generic IPMI commands such as Get SEL Time are unavailable.) ipmi_msg

**privilege_level**

- callback
- user
- operator
- administrator
- proprietary
- no_access

**kwargs**

- api_host=localhost
- api_user=admin
- api_pass=
- api_port=623

- api_kg=None

### 13.16.89 salt.states.ipset

#### Management of ipsets

This is an ipset-specific module designed to manage IPSets for use in IPTables Firewalls.

```
setname:
  ipset.set_present:
    - set_type: bitmap:ip
    - range: 192.168.0.0/16
    - comment: True

setname:
  ipset.set_absent:
    - set_type: bitmap:ip
    - range: 192.168.0.0/16
    - comment: True

setname_entries:
  ipset.present:
    - set_name: setname
    - entry: 192.168.0.3
    - comment: Hello
    - require:
        - ipset: baz

setname_entries:
  ipset.present:
    - set_name: setname
    - entry:
        - 192.168.0.3
        - 192.168.1.3
    - comment: Hello
    - require:
        - ipset: baz

setname_entries:
  ipset.absent:
    - set_name: setname
    - entry:
        - 192.168.0.3
        - 192.168.1.3
    - comment: Hello
    - require:
        - ipset: baz

setname:
  ipset.flush:
```

salt.states.ipset.**absent**(*name*, *entry=None*, *entries=None*, *family='ipv4'*, ***kwargs*)

New in version 2014.7.0.

Remove a entry or entries from a chain

**name** A user-defined name to call this entry by in another part of a state or formula. This should not be an actual entry.

**family** Network family, ipv4 or ipv6.

salt.states.ipset.**flush**(*name*, *family='ipv4'*, ***kwargs*)
New in version 2014.7.0.

Flush current ipset set
**family** Networking family, either ipv4 or ipv6

salt.states.ipset.**present**(*name*, *entry=None*, *family='ipv4'*, ***kwargs*)
New in version 2014.7.0.

Append a entry to a set
**name** A user-defined name to call this entry by in another part of a state or formula. This should not be an actual entry.
**entry** A single entry to add to a set or a list of entries to add to a set
**family** Network family, ipv4 or ipv6.

salt.states.ipset.**set_absent**(*name*, *family='ipv4'*, ***kwargs*)
New in version 2014.7.0.

Verify the set is absent.
**family** Networking family, either ipv4 or ipv6

salt.states.ipset.**set_present**(*name*, *set_type*, *family='ipv4'*, ***kwargs*)
New in version 2014.7.0.

Verify the chain is exist.
**name** A user-defined set name.
**set_type** The type for the set
**family** Networking family, either ipv4 or ipv6

## 13.16.90 salt.states.iptables

### Management of iptables

This is an iptables-specific module designed to manage Linux firewalls. It is expected that this state module, and other system-specific firewall states, may at some point be deprecated in favor of a more generic `firewall` state.

```
httpd:
  iptables.append:
    - table: filter
    - chain: INPUT
    - jump: ACCEPT
    - match: state
    - connstate: NEW
    - dport: 80
    - proto: tcp
    - sport: 1025:65535
    - save: True

httpd:
  iptables.append:
    - table: filter
    - chain: INPUT
    - jump: ACCEPT
    - match:
        - state
        - comment
    - comment: "Allow HTTP"
```

```
    - connstate: NEW
    - dport: 80
    - proto: tcp
    - sport: 1025:65535
    - save: True

httpd:
  iptables.append:
    - table: filter
    - chain: INPUT
    - jump: ACCEPT
    - match:
        - state
        - comment
    - comment: "Allow HTTP"
    - connstate: NEW
    - source: '127.0.0.1'
    - dport: 80
    - proto: tcp
    - sport: 1025:65535
    - save: True

.. Invert Rule
httpd:
  iptables.append:
    - table: filter
    - chain: INPUT
    - jump: ACCEPT
    - match:
        - state
        - comment
    - comment: "Allow HTTP"
    - connstate: NEW
    - source: '! 127.0.0.1'
    - dport: 80
    - proto: tcp
    - sport: 1025:65535
    - save: True

httpd:
  iptables.append:
    - table: filter
    - chain: INPUT
    - jump: ACCEPT
    - match:
        - state
        - comment
    - comment: "Allow HTTP"
    - connstate: NEW
    - source: 'not 127.0.0.1'
    - dport: 80
    - proto: tcp
    - sport: 1025:65535
    - save: True

httpd:
  iptables.append:
    - table: filter
```

```
    - family: ipv6
    - chain: INPUT
    - jump: ACCEPT
    - match: state
    - connstate: NEW
    - dport: 80
    - proto: tcp
    - sport: 1025:65535
    - save: True

httpd:
  iptables.append:
    - table: filter
    - family: ipv4
    - chain: INPUT
    - jump: ACCEPT
    - match: state
    - connstate: NEW
    - dports:
        - 80
        - 443
    - proto: tcp
    - sport: 1025:65535
    - save: True

httpd:
  iptables.insert:
    - position: 1
    - table: filter
    - chain: INPUT
    - jump: ACCEPT
    - match: state
    - connstate: NEW
    - dport: 80
    - proto: tcp
    - sport: 1025:65535
    - save: True

httpd:
  iptables.insert:
    - position: 1
    - table: filter
    - family: ipv6
    - chain: INPUT
    - jump: ACCEPT
    - match: state
    - connstate: NEW
    - dport: 80
    - proto: tcp
    - sport: 1025:65535
    - save: True

httpd:
  iptables.delete:
    - table: filter
    - chain: INPUT
    - jump: ACCEPT
    - match: state
```

```
    - connstate: NEW
    - dport: 80
    - proto: tcp
    - sport: 1025:65535
    - save: True

httpd:
  iptables.delete:
    - position: 1
    - table: filter
    - chain: INPUT
    - jump: ACCEPT
    - match: state
    - connstate: NEW
    - dport: 80
    - proto: tcp
    - sport: 1025:65535
    - save: True

httpd:
  iptables.delete:
    - table: filter
    - family: ipv6
    - chain: INPUT
    - jump: ACCEPT
    - match: state
    - connstate: NEW
    - dport: 80
    - proto: tcp
    - sport: 1025:65535
    - save: True

default to accept:
  iptables.set_policy:
    - chain: INPUT
    - policy: ACCEPT
```

**Note**: Various functions of the `iptables` module use the `--check` option. If the version of `iptables` on the target system does not include this option, an alternate version of this check will be performed using the output of iptables-save. This may have unintended consequences on legacy releases of `iptables`.

`salt.states.iptables.`**`append`**(*name*, *table='filter'*, *family='ipv4'*, ***kwargs*)

New in version 0.17.0.

Add a rule to the end of the specified chain.

**name** A user-defined name to call this rule by in another part of a state or formula. This should not be an actual rule.

**table** The table that owns the chain which should be modified

**family** Network family, ipv4 or ipv6.

All other arguments are passed in with the same name as the long option that would normally be used for iptables, with one exception: `--state` is specified as *connstate* instead of *state* (not to be confused with *ctstate*).

Jump options that doesn't take arguments should be passed in with an empty string.

`salt.states.iptables.`**`chain_absent`**(*name*, *table='filter'*, *family='ipv4'*)

New in version 2014.1.0.

Verify the chain is absent.
**table** The table to remove the chain from
**family** Networking family, either ipv4 or ipv6

salt.states.iptables.**chain_present**(*name*, *table='filter'*, *family='ipv4'*)
New in version 2014.1.0.

Verify the chain is exist.
**name** A user-defined chain name.
**table** The table to own the chain.
**family** Networking family, either ipv4 or ipv6

salt.states.iptables.**delete**(*name*, *table='filter'*, *family='ipv4'*, ***kwargs*)
New in version 2014.1.0.

Delete a rule to a chain
**name** A user-defined name to call this rule by in another part of a state or formula. This should not be an actual rule.
**table** The table that owns the chain that should be modified
**family** Networking family, either ipv4 or ipv6
All other arguments are passed in with the same name as the long option that would normally be used for iptables, with one exception: `--state` is specified as *connstate* instead of *state* (not to be confused with *ctstate*).

Jump options that doesn't take arguments should be passed in with an empty string.

salt.states.iptables.**flush**(*name*, *table='filter'*, *family='ipv4'*, ***kwargs*)
New in version 2014.1.0.

Flush current iptables state
**table** The table that owns the chain that should be modified
**family** Networking family, either ipv4 or ipv6

salt.states.iptables.**insert**(*name*, *table='filter'*, *family='ipv4'*, ***kwargs*)
New in version 2014.1.0.

Insert a rule into a chain
**name** A user-defined name to call this rule by in another part of a state or formula. This should not be an actual rule.
**table** The table that owns the chain that should be modified
**family** Networking family, either ipv4 or ipv6
**position** The numerical representation of where the rule should be inserted into the chain. Note that `-1` is not a supported position value.
All other arguments are passed in with the same name as the long option that would normally be used for iptables, with one exception: `--state` is specified as *connstate* instead of *state* (not to be confused with *ctstate*).

Jump options that doesn't take arguments should be passed in with an empty string.

salt.states.iptables.**mod_aggregate**(*low*, *chunks*, *running*)
The mod_aggregate function which looks up all rules in the available low chunks and merges them into a single rules ref in the present low data

salt.states.iptables.**set_policy**(*name*, *table='filter'*, *family='ipv4'*, ***kwargs*)
New in version 2014.1.0.

Sets the default policy for iptables firewall tables
**table** The table that owns the chain that should be modified
**family** Networking family, either ipv4 or ipv6

**policy** The requested table policy

### 13.16.91 salt.states.jboss7

Manage JBoss 7 Application Server via CLI interface

New in version 2015.5.0.

This state uses the jboss-cli.sh script from a JBoss or Wildfly installation and parses its output to determine the execution result.

In order to run each state, a jboss_config dictionary with the following properties must be passed:

```
jboss:
   cli_path: '/opt/jboss/jboss-7.0/bin/jboss-cli.sh'
   controller: 10.11.12.13:9999
   cli_user: 'jbossadm'
   cli_password: 'jbossadm'
```

If the controller doesn't require a password, then the cli_user and cli_password parameters are optional.

Since same dictionary with configuration will be used in all the states, it may be more convenient to move JBoss configuration and other properties to the pillar.

Example of application deployment from local filesystem:

```
application_deployed:
  jboss7.deployed:
    - salt_source:
        target_file: '/tmp/webapp.war'
    - jboss_config: {{ pillar['jboss'] }}
```

For the sake of brevity, examples for each state assume that jboss_config is contained in the pillar.

`salt.states.jboss7.`**`bindings_exist`**(*name*, *jboss_config*, *bindings*, *profile=None*)

Ensures that given JNDI binding are present on the server. If a binding doesn't exist on the server it will be created. If it already exists its value will be changed.
**jboss_config**: Dict with connection properties (see state description)
**bindings**: Dict with bindings to set.
**profile**: The profile name (domain mode only)
Example:

```
jndi_entries_created:
  jboss7.bindings_exist:
    - bindings:
        'java:global/sampleapp/environment': 'DEV'
        'java:global/sampleapp/configurationFile': '/var/opt/sampleapp/config.
↪properties'
    - jboss_config: {{ pillar['jboss'] }}
```

`salt.states.jboss7.`**`datasource_exists`**(*name*, *jboss_config*, *datasource_properties*, *recreate=False*, *profile=None*)

Ensures that a datasource with given properties exist on the jboss instance. If datasource doesn't exist, it is created, otherwise only the properties that are different will be updated.
**name** Datasource property name
**jboss_config** Dict with connection properties (see state description)
**datasource_properties** Dict with datasource properties

**recreate** [False] If set to True and datasource exists it will be removed and created again. However, if there are deployments that depend on the datasource, it will not me possible to remove it.

**profile** [None] The profile name for this datasource (domain mode only)

Example:

```
sampleDS:
  jboss7.datasource_exists:
   - recreate: False
   - datasource_properties:
       driver-name: mysql
       connection-url: 'jdbc:mysql://localhost:3306/sampleDatabase'
       jndi-name: 'java:jboss/datasources/sampleDS'
       user-name: sampleuser
       password: secret
       min-pool-size: 3
       use-java-context: True
   - jboss_config: {{ pillar['jboss'] }}
   - profile: full-ha
```

`salt.states.jboss7.`**`deployed`**(*name*, *jboss_config*, *salt_source=None*)

Ensures that the given application is deployed on server.

**jboss_config**: Dict with connection properties (see state description)

**salt_source**:

**How to find the artifact to be deployed**.

**target_file**: Where to look in the minion's file system for the artifact to be deployed (e.g. `/tmp/application-web-0.39.war'). When source is specified, also specifies where to save the retrieved file.

**source**: (optional) File on salt master (e.g. salt://application-web-0.39.war). If absent, no files will be retrieved and the artifact in target_file will be used for the deployment.

**undeploy**: (optional) Regular expression to match against existing deployments. When present, if there is a deployment that matches the regular expression, it will be undeployed before the new artifact is deployed.

Examples:

Deployment of a file from minion's local file system:

```
application_deployed:
  jboss7.deployed:
    - salt_source:
        target_file: '/tmp/webapp.war'
    - jboss_config: {{ pillar['jboss'] }}
```

It is assumed that /tmp/webapp.war was made available by some other means. No applications will be undeployed; if an existing deployment that shares that name exists, then it will be replaced with the updated version.

Deployment of a file from the Salt master's file system:

```
application_deployed:
  jboss7.deployed:
   - salt_source:
        source: salt://application-web-0.39.war
        target_file: '/tmp/application-web-0.39.war'
        undeploy: 'application-web-.*'
   - jboss_config: {{ pillar['jboss'] }}
```

Here, application-web-0.39.war file is downloaded from Salt file system to /tmp/application-web-0.39.war file on minion. Existing deployments are checked if any of them matches `application-web-.*' regular expression, and if so then it is undeployed before deploying the application. This is useful to automate deployment of new application versions.

If the source parameter of salt_source is specified, it can use any protocol that the file states use. This includes not only downloading from the master but also HTTP, HTTPS, FTP, Amazon S3, and OpenStack Swift.

`salt.states.jboss7.`**`reloaded`**(*name*, *jboss_config*, *timeout=60*, *interval=5*)

Reloads configuration of jboss server.

**jboss_config**: Dict with connection properties (see state description)

**timeout**: Time to wait until jboss is back in running state. Default timeout is 60s.

**interval**: Interval between state checks. Default interval is 5s. Decreasing the interval may slightly decrease waiting time but be aware that every status check is a call to jboss-cli which is a java process. If interval is smaller than process cleanup time it may easily lead to excessive resource consumption.

This step performs the following operations:

- Ensures that server is in running or reload-required state (by reading server-state attribute)
- Reloads configuration
- Waits for server to reload and be in running state

Example:

```
configuration_reloaded:
   jboss7.reloaded:
    - jboss_config: {{ pillar['jboss'] }}
```

## 13.16.92 salt.states.jenkins module

### Management of Jenkins

New in version 2016.3.0.

`salt.states.jenkins.`**`absent`**(*name*, ***kwargs*)

Ensure the job is present in the Jenkins configured jobs

**name** The name of the Jenkins job to remove.

`salt.states.jenkins.`**`present`**(*name*, *config=None*, ***kwargs*)

Ensure the job is present in the Jenkins configured jobs

**name** The unique name for the Jenkins job

**config** The Salt URL for the file to use for configuring the job.

## 13.16.93 salt.states.k8s

Manage Kubernetes

New in version 2016.3.0.

```
kube_label_1:
  k8s.label_present:
    - name: mylabel
    - value: myvalue
    - node: myothernodename
    - apiserver: http://mykubeapiserer:8080

kube_label_2:
  k8s.label_absent:
```

```
    - name: mylabel
    - node: myothernodename
    - apiserver: http://mykubeapiserer:8080

kube_label_3:
  k8s.label_folder_present:
    - name: mylabel
    - node: myothernodename
    - apiserver: http://mykubeapiserer:8080
```

salt.states.k8s.**label_absent**(*name*, *node=None*, *apiserver=None*)
Ensure the label doesn't exist on the kube node.
**name** Name of the label.
**node** Override node ID.
**apiserver** K8S apiserver URL.

salt.states.k8s.**label_folder_absent**(*name*, *node=None*, *apiserver=None*)
Ensure the label folder doesn't exist on the kube node.
**name** Name of the label folder.
**node** Override node ID.
**apiserver** K8S apiserver URL.

salt.states.k8s.**label_present**(*name*, *value*, *node=None*, *apiserver=None*)
Ensure the label exists on the kube node.
**name** Name of the label.
**value** Value of the label.
**node** Override node ID.
**apiserver** K8S apiserver URL.

### 13.16.94 salt.states.keyboard

#### Management of keyboard layouts

The keyboard layout can be managed for the system:

```
us:
  keyboard.system
```

Or it can be managed for XOrg:

```
us:
  keyboard.xorg
```

salt.states.keyboard.**system**(*name*)
Set the keyboard layout for the system
**name** The keyboard layout to use

salt.states.keyboard.**xorg**(*name*)
Set the keyboard layout for XOrg
**layout** The keyboard layout to use

### 13.16.95 salt.states.keystone

#### Management of Keystone users

**depends**

- keystoneclient Python module

**configuration** See *salt.modules.keystone* for setup instructions.

```
Keystone tenants:
  keystone.tenant_present:
    - names:
      - admin
      - demo
      - service

Keystone roles:
  keystone.role_present:
    - names:
      - admin
      - Member

admin:
  keystone.user_present:
    - password: R00T_4CC3SS
    - email: admin@domain.com
    - roles:
        admin:   # tenants
          - admin  # roles
        service:
          - admin
          - Member
    - require:
      - keystone: Keystone tenants
      - keystone: Keystone roles

nova:
  keystone.user_present:
    - password: '$up3rn0v4'
    - email: nova@domain.com
    - tenant: service
    - roles:
        service:
          - admin
    - require:
      - keystone: Keystone tenants
      - keystone: Keystone roles

demo:
  keystone.user_present:
    - password: 'd3m0n$trati0n'
    - email: demo@domain.com
    - tenant: demo
    - roles:
        demo:
          - Member
    - require:
      - keystone: Keystone tenants
```

```
      - keystone: Keystone roles

nova service:
  keystone.service_present:
    - name: nova
    - service_type: compute
    - description: OpenStack Compute Service
```

salt.states.keystone.**endpoint_absent**(*name*, *profile=None*, ***connection_args*)
Ensure that the endpoint for a service doesn't exist in Keystone catalog
**name** The name of the service whose endpoints should not exist

salt.states.keystone.**endpoint_present**(*name*, *publicurl=None*, *internalurl=None*, *adminurl=None*, *region='RegionOne'*, *profile=None*, ***connection_args*)
Ensure the specified endpoints exists for service
**name** The Service name
**public url** The public url of service endpoint
**internal url** The internal url of service endpoint
**admin url** The admin url of the service endpoint
**region** The region of the endpoint

salt.states.keystone.**role_absent**(*name*, *profile=None*, ***connection_args*)
Ensure that the keystone role is absent.
**name** The name of the role that should not exist

salt.states.keystone.**role_present**(*name*, *profile=None*, ***connection_args*)
` Ensures that the keystone role exists
**name** The name of the role that should be present

salt.states.keystone.**service_absent**(*name*, *profile=None*, ***connection_args*)
Ensure that the service doesn't exist in Keystone catalog
**name** The name of the service that should not exist

salt.states.keystone.**service_present**(*name*, *service_type*, *description=None*, *profile=None*, ***connection_args*)
Ensure service present in Keystone catalog
**name** The name of the service
**service_type** The type of Openstack Service
**description (optional)** Description of the service

salt.states.keystone.**tenant_absent**(*name*, *profile=None*, ***connection_args*)
Ensure that the keystone tenant is absent.
**name** The name of the tenant that should not exist

salt.states.keystone.**tenant_present**(*name*, *description=None*, *enabled=True*, *profile=None*, ***connection_args*)
Ensures that the keystone tenant exists
**name** The name of the tenant to manage
**description** The description to use for this tenant
**enabled** Availability state for this tenant

salt.states.keystone.**user_absent**(*name*, *profile=None*, ***connection_args*)
Ensure that the keystone user is absent.
**name** The name of the user that should not exist

salt.states.keystone.**user_present**(*name*, *password*, *email*, *tenant=None*, *enabled=True*, *roles=None*, *profile=None*, *password_reset=True*, ***connection_args*)

Ensure that the keystone user is present with the specified properties.
**name** The name of the user to manage
**password** The password to use for this user.

> **Note:** If the user already exists and a different password was set for the user than the one specified here, the password for the user will be updated. Please set the `password_reset` option to `False` if this is not the desired behavior.

**password_reset** Whether or not to reset password after initial set. Defaults to `True`.
**email** The email address for this user
**tenant** The tenant for this user
**enabled** Availability state for this user
**roles** The roles the user should have under given tenants. Passed as a dictionary mapping tenant names to a list of roles in this tenant, i.e.:

```
roles:
    admin:   # tenant
      - admin  # role
    service:
      - admin
      - Member
```

### 13.16.96 salt.states.kmod

#### Loading and unloading of kernel modules

The Kernel modules on a system can be managed cleanly with the kmod state module:

```
add_kvm:
  kmod.present:
    - name: kvm_amd
remove_beep:
  kmod.absent:
    - name: pcspkr
```

Multiple modules can be specified for both kmod.present and kmod.absent.

```
add_sound:
  kmod.present:
    - mods:
      - snd_hda_codec_hdmi
      - snd_hda_codec
      - snd_hwdep
      - snd_hda_core
      - snd_pcm
      - snd_timer
      - snd
```

`salt.states.kmod.`**`absent`**(*name*, *persist=False*, *comment=True*, *mods=None*)
Verify that the named kernel module is not loaded
**name** The name of the kernel module to verify is not loaded
**persist** Remove module from `/etc/modules`
**comment** Comment out module in `/etc/modules` rather than remove it

**mods** A list of modules to verify are unloaded. If this argument is used, the `name` argument, although still required, is not used, and becomes a placeholder

New in version 2016.3.0.

`salt.states.kmod.`**`present`**(*name*, *persist=False*, *mods=None*)

Ensure that the specified kernel module is loaded

**name** The name of the kernel module to verify is loaded

**persist** Also add module to `/etc/modules`

**mods** A list of modules to verify are loaded. If this argument is used, the `name` argument, although still required, is not used, and becomes a placeholder

New in version 2016.3.0.

## 13.16.97 salt.states.layman

### Management of Gentoo Overlays using layman

A state module to manage Gentoo package overlays via layman

```
sunrise:
    layman.present
```

`salt.states.layman.`**`absent`**(*name*)

Verify that the overlay is absent

**name** The name of the overlay to delete

`salt.states.layman.`**`present`**(*name*)

Verify that the overlay is present

**name** The name of the overlay to add

## 13.16.98 salt.states.ldap

### Manage entries in an LDAP database

New in version 2016.3.0.

The `states.ldap` state module allows you to manage LDAP entries and their attributes.

`salt.states.ldap.`**`managed`**(*name*, *entries*, *connect_spec=None*)

Ensure the existence (or not) of LDAP entries and their attributes

Example:

```
ldapi:///:
  ldap.managed:
    - connect_spec:
        bind:
          method: sasl

    - entries:

      # make sure the entry doesn't exist
      - cn=foo,ou=users,dc=example,dc=com:
        - delete_others: True

      # make sure the entry exists with only the specified
```

```
    # attribute values
    - cn=admin,dc=example,dc=com:
      - delete_others: True
      - replace:
          cn:
            - admin
          description:
            - LDAP administrator
          objectClass:
            - simpleSecurityObject
            - organizationalRole
          userPassword:
            - {{pillar.ldap_admin_password}}

    # make sure the entry exists, its olcRootDN attribute
    # has only the specified value, the olcRootDN attribute
    # doesn't exist, and all other attributes are ignored
    - 'olcDatabase={1}hdb,cn=config':
      - replace:
          olcRootDN:
            - cn=admin,dc=example,dc=com
          # the admin entry has its own password attribute
          olcRootPW: []

    # note the use of 'default'.  also note how you don't
    # have to use list syntax if there is only one attribute
    # value
    - cn=foo,ou=users,dc=example,dc=com:
      - delete_others: True
      - default:
          userPassword: changeme
          shadowLastChange: 0
          # keep sshPublicKey if present, but don't create
          # the attribute if it is missing
          sshPublicKey: []
      - replace:
          cn: foo
          uid: foo
          uidNumber: 1000
          gidNumber: 1000
          gecos: Foo Bar
          givenName: Foo
          sn: Bar
          homeDirectory: /home/foo
          loginShell: /bin/bash
          objectClass:
            - inetOrgPerson
            - posixAccount
            - top
            - ldapPublicKey
            - shadowAccount
```

**Parameters**

- **name** -- The URL of the LDAP server. This is ignored if `connect_spec` is either a connection object or a dict with a `'url'` entry.
- **entries** -- A description of the desired state of zero or more LDAP entries.

`entries` is an iterable of dicts. Each of these dict's keys are the distinguished names (DNs) of LDAP entries to manage. Each of these dicts is processed in order. A later dict can reference an LDAP entry that was already mentioned in an earlier dict, which makes it possible for later dicts to enhance or alter the desired state of an LDAP entry.

The DNs are mapped to a description of the LDAP entry's desired state. These LDAP entry descriptions are themselves iterables of dicts. Each dict in the iterable is processed in order. They contain directives controlling the entry's state. The key names the directive type and the value is state information for the directive. The specific structure of the state information depends on the directive type.

The structure of `entries` looks like this:

```
[{dn1: [{directive1: directive1_state,
         directive2: directive2_state},
        {directive3: directive3_state}],
  dn2: [{directive4: directive4_state,
         directive5: directive5_state}]},
 {dn3: [{directive6: directive6_state}]}]
```

These are the directives:

- **`'delete_others'`** Boolean indicating whether to delete attributes not mentioned in this dict or any of the other directive dicts for this DN. Defaults to `False`.

  If you don't want to delete an attribute if present, but you also don't want to add it if it is missing or modify it if it is present, you can use either the `'default'` directive or the `'add'` directive with an empty value list.

- **`'default'`** A dict mapping an attribute name to an iterable of default values for that attribute. If the attribute already exists, it is left alone. If not, it is created using the given list of values.

  An empty value list is useful when you don't want to create an attribute if it is missing but you do want to preserve it if the `'delete_others'` key is `True`.

- **`'add'`** Attribute values to add to the entry. This is a dict mapping an attribute name to an iterable of values to add.

  An empty value list is useful when you don't want to create an attribute if it is missing but you do want to preserve it if the `'delete_others'` key is `True`.

- **`'delete'`** Attribute values to remove from the entry. This is a dict mapping an attribute name to an iterable of values to delete from the attribute. If the iterable is empty, all of the attribute's values are deleted.

- **`'replace'`** Attributes to replace. This is a dict mapping an attribute name to an iterable of values. Any existing values for the attribute are deleted, then the given values are added. The iterable may be empty.

In the above directives, the iterables of attribute values may instead be `None`, in which case an empty list is used, or a scalar such as a string or number, in which case a new list containing the scalar is used.

Note that if all attribute values are removed from an entry, the entire entry is deleted.

- **`connect_spec`** -- See the description of the `connect_spec` parameter of the *`ldap3.connect`* function in the *`ldap3`* execution module. If this is a dict and

the 'url' entry is not specified, the 'url' entry is set to the value of the name parameter.

**Returns**

A dict with the following keys:

- **'name'** This is the same object passed to the name parameter.
- **'changes'** This is a dict describing the changes made (or, in test mode, the changes that would have been attempted). If no changes were made (or no changes would have been attempted), then this dict is empty. Only successful changes are included.

  Each key is a DN of an entry that was changed (or would have been changed). Entries that were not changed (or would not have been changed) are not included. The value is a dict with two keys:

  - **'old'** The state of the entry before modification. If the entry did not previously exist, this key maps to None. Otherwise, the value is a dict mapping each of the old entry's attributes to a list of its values before any modifications were made. Unchanged attributes are excluded from this dict.
  - **'new'** The state of the entry after modification. If the entry was deleted, this key maps to None. Otherwise, the value is a dict mapping each of the entry's attributes to a list of its values after the modifications were made. Unchanged attributes are excluded from this dict.

  Example 'changes' dict where a new entry was created with a single attribute containing two values:

```
{'dn1': {'old': None,
         'new': {'attr1': ['val1', 'val2']}}}
```

  Example 'changes' dict where a new attribute was added to an existing entry:

```
{'dn1': {'old': {},
         'new': {'attr2': ['val3']}}}
```

- **'result'** One of the following values:
  - True if no changes were necessary or if all changes were applied successfully.
  - False if at least one change was unable to be applied.
  - None if changes would be applied but it is in test mode.

### 13.16.99 salt.states.linux_acl

Linux File Access Control Lists

Ensure a Linux ACL is present

```
root:
  acl.present:
    - name: /root
    - acl_type: user
    - acl_name: damian
    - perms: rwx
```

Ensure a Linux ACL does not exist

```
root:
  acl.absent:
    - name: /root
    - acl_type: user
    - acl_name: damian
    - perms: rwx
```

salt.states.linux_acl.**absent**(*name*, *acl_type*, *acl_name=''*, *perms=''*, *recurse=False*)
Ensure a Linux ACL does not exist

salt.states.linux_acl.**present**(*name*, *acl_type*, *acl_name=''*, *perms=''*, *recurse=False*)
Ensure a Linux ACL is present

## 13.16.100 salt.states.locale

### Management of languages/locales

Manage the available locales and the system default:

```
us_locale:
  locale.present:
    - name: en_US.UTF-8

default_locale:
  locale.system:
    - name: en_US.UTF-8
    - require:
      - locale: us_locale
```

salt.states.locale.**present**(*name*)
Generate a locale if it is not present

New in version 2014.7.0.

**name** The name of the locale to be present. Some distributions require the charmap to be specified as part of the locale at this point.

salt.states.locale.**system**(*name*)
Set the locale for the system

**name** The name of the locale to use

## 13.16.101 salt.states.lvm

### Management of Linux logical volumes

A state module to manage LVMs

```
/dev/sda:
  lvm.pv_present

my_vg:
  lvm.vg_present:
    - devices: /dev/sda

lvroot:
```

```
lvm.lv_present:
  - vgname: my_vg
  - size: 10G
  - stripes: 5
  - stripesize: 8K
```

salt.states.lvm.**lv_absent**(*name*, *vgname=None*)
Remove a given existing logical volume from a named existing volume group
**name** The logical volume to remove
**vgname** The volume group name

salt.states.lvm.**lv_present**(*name*, *vgname=None*, *size=None*, *extents=None*, *snapshot=None*, *pv='`*, ***kwargs*)
Create a new logical volume
**name** The name of the logical volume
**vgname** The volume group name for this logical volume
**size** The initial size of the logical volume
**extents** The number of logical extents to allocate
**snapshot** The name of the snapshot
**pv** The physical volume to use
**kwargs** Any supported options to lvcreate. See *linux_lvm* for more details.

salt.states.lvm.**pv_absent**(*name*)
Ensure that a Physical Device is not being used by lvm
**name** The device name to initialize.

salt.states.lvm.**pv_present**(*name*, ***kwargs*)
Set a physical device to be used as an LVM physical volume
**name** The device name to initialize.
**kwargs** Any supported options to pvcreate. See *linux_lvm* for more details.

salt.states.lvm.**vg_absent**(*name*)
Remove an LVM volume group
**name** The volume group to remove

salt.states.lvm.**vg_present**(*name*, *devices=None*, ***kwargs*)
Create an LVM volume group
**name** The volume group name to create
**devices** A list of devices that will be added to the volume group
**kwargs** Any supported options to vgcreate. See *linux_lvm* for more details.

### 13.16.102 salt.states.lvs_server

#### Management of LVS (Linux Virtual Server) Real Server

salt.states.lvs_server.**absent**(*name*, *protocol=None*, *service_address=None*, *server_address=None*)
Ensure the LVS Real Server in specified service is absent.
**name** The name of the LVS server.
**protocol** The service protocol(only support `tcp`, `udp` and `fwmark` service).
**service_address** The LVS service address.
**server_address** The LVS real server address.

salt.states.lvs_server.**present**(*name*, *protocol=None*, *service_address=None*, *server_address=None*, *packet_forward_method='dr'*, *weight=1*)
Ensure that the named service is present.

**name** The LVS server name
**protocol** The service protocol
**service_address** The LVS service address
**server_address** The real server address.
**packet_forward_method** The LVS packet forwarding method(`dr` for direct routing, `tunnel` for tunneling, `nat` for network access translation).
**weight** The capacity of a server relative to the others in the pool.

```
lvsrs:
  lvs_server.present:
    - protocol: tcp
    - service_address: 1.1.1.1:80
    - server_address: 192.168.0.11:8080
    - packet_forward_method: dr
    - weight: 10
```

### 13.16.103 salt.states.lvs_service

#### Management of LVS (Linux Virtual Server) Service

`salt.states.lvs_service.`**`absent`**(*name*, *protocol=None*, *service_address=None*)
Ensure the LVS service is absent.
**name** The name of the LVS service
**protocol** The service protocol
**service_address** The LVS service address

`salt.states.lvs_service.`**`present`**(*name*, *protocol=None*, *service_address=None*, *scheduler='wlc'*)
Ensure that the named service is present.
**name** The LVS service name
**protocol** The service protocol
**service_address** The LVS service address
**scheduler** Algorithm for allocating TCP connections and UDP datagrams to real servers.

```
lvstest:
  lvs_service.present:
    - service_address: 1.1.1.1:80
    - protocol: tcp
    - scheduler: rr
```

### 13.16.104 salt.states.lxc

#### Manage Linux Containers

`salt.states.lxc.`**`absent`**(*name*, *stop=False*, *path=None*)
Ensure a container is not present, destroying it if present
**name** Name of the container to destroy
**stop** stop before destroying default: false

New in version 2015.5.2.

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

```
web01:
  lxc.absent
```

salt.states.lxc.**cloned**(*name*, *orig*, *snapshot=True*, *size=None*, *vgname=None*, *path=None*, *profile=None*)

Deprecated since version 2015.5.0: Use *lxc.present*

salt.states.lxc.**created**(*name*, ***kwargs*)

Deprecated since version 2015.5.0: Use *lxc.present*

salt.states.lxc.**edited_conf**(*name*, *lxc_conf=None*, *lxc_conf_unset=None*)

**Warning**: This state is unsuitable for setting parameters that appear more than once in an LXC config file, or parameters which must appear in a certain order (such as when configuring more than one network interface). It is slated to be replaced, and as of version 2015.5.0 it is deprecated.

Edit LXC configuration options

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

```
setconf:
  lxc.edited_conf:
    - name: ubuntu
    - lxc_conf:
        - network.ipv4.ip: 10.0.3.6
    - lxc_conf_unset:
        - lxc.utsname
```

salt.states.lxc.**frozen**(*name*, *start=True*, *path=None*)

New in version 2015.5.0.

Ensure that a container is frozen

**Note**: This state does not enforce the existence of the named container, it just freezes the container if it is running. To ensure that the named container exists, use *lxc.present*.

**name** The name of the container

**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

**start** [True] Start container first, if necessary. If `False`, then this state will fail if the container is not running.

```
web01:
  lxc.frozen

web02:
  lxc.frozen:
    - start: False
```

salt.states.lxc.**present**(*name*, *running=None*, *clone_from=None*, *snapshot=False*, *profile=None*, *network_profile=None*, *template=None*, *options=None*, *image=None*, *config=None*, *fstype=None*, *size=None*, *backing=None*, *vgname=None*, *lvname=None*, *path=None*)

Changed in version 2015.8.0: The *lxc.created* state has been renamed to `lxc.present`, and the *lxc.cloned* state has been merged into this state.

Create the named container if it does not exist
**name** The name of the container to be created
**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

**running** [False]

- If `True`, ensure that the container is running
- If `False`, ensure that the container is stopped
- If `None`, do nothing with regards to the running state of the container

New in version 2015.8.0.

**clone_from** Create named container as a clone of the specified container
**snapshot** [False] Use Copy On Write snapshots (LVM). Only supported with `clone_from`.
**profile** Profile to use in container creation (see the LXC Tutorial for more information). Values in a profile will be overridden by the parameters listed below.
**network_profile** Network Profile to use in container creation (see the LXC Tutorial for more information). Values in a profile will be overridden by the parameters listed below.

New in version 2015.5.2.

**Container Creation Arguments**
**template** The template to use. E.g., `ubuntu' or `fedora'. Conflicts with the `image` argument.

---

**Note**: The `download` template requires the following three parameters to be defined in `options`:

- **dist** - The name of the distribution
- **release** - Release name/version
- **arch** - Architecture of the container

The available images can be listed using the *lxc.images* function.

---

options

New in version 2015.5.0.

Template-specific options to pass to the lxc-create command. These correspond to the long options (ones beginning with two dashes) that the template script accepts. For example:

```
web01:
  lxc.present:
    - template: download
    - options:
        dist: centos
        release: 6
        arch: amd64
```

Remember to double-indent the options, due to *how PyYAML works*.

**image** A tar archive to use as the rootfs for the container. Conflicts with the `template` argument.
**backing** The type of storage to use. Set to `lvm` to use an LVM group. Defaults to filesystem within /var/lib/lxc.
**fstype** Filesystem type to use on LVM logical volume
**size** Size of the volume to create. Only applicable if `backing` is set to `lvm`.
**vgname** [lxc] Name of the LVM volume group in which to create the volume for this container. Only applicable if `backing` is set to `lvm`.
**lvname** Name of the LVM logical volume in which to create the volume for this container. Only applicable if `backing` is set to `lvm`.

`salt.states.lxc.`**`running`**(*name*, *restart=False*, *path=None*)

Changed in version 2015.5.0: The *lxc.started* state has been renamed to `lxc.running`

Ensure that a container is running

---

**Note**: This state does not enforce the existence of the named container, it just starts the container if it is not running. To ensure that the named container exists, use *lxc.present*.

---

**name** The name of the container
**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

**restart** [False] Restart container if it is already running

```
web01:
  lxc.running

web02:
  lxc.running:
    - restart: True
```

salt.states.lxc.**set_pass**(*name*, ***kwargs*)
Deprecated since version 2015.5.0.

This state function has been disabled, as it did not conform to design guidelines. Specifically, due to the fact that *lxc.set_password* uses `chpasswd(8)` to set the password, there was no method to make this action idempotent (in other words, the password would be changed every time). This makes this state redundant, since the following state will do the same thing:

```
setpass:
  module.run:
    - name: set_pass
    - m_name: root
    - password: secret
```

salt.states.lxc.**started**(*name*, *path=None*, *restart=False*)
Deprecated since version 2015.5.0: Use *lxc.running*

salt.states.lxc.**stopped**(*name*, *kill=False*, *path=None*)
Ensure that a container is stopped

---

**Note**: This state does not enforce the existence of the named container, it just stops the container if it running or frozen. To ensure that the named container exists, use *lxc.present*, or use the *lxc.absent* state to ensure that the container does not exist.

---

**name** The name of the container
**path** path to the container parent default: /var/lib/lxc (system default)

New in version 2015.8.0.

**kill** [False] Do not wait for the container to stop, kill all tasks in the container. Older LXC versions will stop containers like this irrespective of this argument.

New in version 2015.5.0.

```
web01:
  lxc.stopped
```

### 13.16.105 salt.states.mac_assistive module

#### Allows you to manage assistive access on OS X minions with 10.9+

Install, enable and disable assitive access on OS X minions

```
/usr/bin/osacript:
  assistive.installed:
    - enabled: True
```

salt.states.mac_assistive.**installed**(*name*, *enabled=True*)

Make sure that we have the given bundle ID or path to command installed in the assistive access panel.

**name** The bundle ID or path to command

**enable** Should assistive access be enabled on this application?

### 13.16.106 salt.states.mac_defaults module

#### Writing/reading defaults from an OS X minion

salt.states.mac_defaults.**write**(*name*, *domain*, *value*, *vtype='string'*, *user=None*)

Write a default to the system

**name** The key of the given domain to write to

**domain** The name of the domain to write to

**value** The value to write to the given key

**vtype** The type of value to be written, vaid types are string, data, int[eger], float, bool[ean], date, array, array-add, dict, dict-add

**user** The user to write the defaults to

### 13.16.107 salt.states.mac_keychain module

#### Installing of certificates to the keychain

Install certificats to the OS X keychain

```
/mnt/test.p12:
  keychain.installed:
    - password: test123
```

salt.states.mac_keychain.**default_keychain**(*name*, *domain='user'*, *user=None*)

Set the default keychain to use

**name** The chain in which to use as the default

**domain** The domain to use valid values are user|system|common|dynamic, the default is user

**user** The user to run as

salt.states.mac_keychain.**installed**(*name*, *password*, *keychain='/Library/Keychains/System.keychain'*, ***kwargs*)

Install a p12 certificate file into the OS X keychain

**name** The certificate to install

**password** The password for the certificate being installed formatted in the way described for openssl command in the PASS PHRASE ARGUMENTS section

**keychain** The keychain to install the certificate to, this defaults to /Library/Keychains/System.keychain

**allow_any** Allow any application to access the imported certificate without warning

**keychain_password** If your keychain is likely to be locked pass the password and it will be unlocked before running the import

salt.states.mac_keychain.**uninstalled**(*name*, *password*, *keychain='/Library/Keychains/System.keychain'*, *keychain_password=None*)

Uninstall a p12 certificate file from the OS X keychain

**name** The certificate to uninstall, this can be a path for a .p12 or the friendly name

**password** The password for the certificate being installed formatted in the way described for openssl command in the PASS PHRASE ARGUMENTS section

**cert_name** The friendly name of the certificate, this can be used instead of giving a certificate

**keychain** The keychain to remove the certificate from, this defaults to /Library/Keychains/System.keychain

**keychain_password** If your keychain is likely to be locked pass the password and it will be unlocked before running the import

### 13.16.108 salt.states.mac_xattr module

#### Allows you to manage extended attributes on files or directories

Install, enable and disable assitive access on OS X minions

```
/path/to/file:
  xattr.exists:
    - attributes:
        - com.file.attr=test
        - com.apple.quarantine=0x00001111
```

salt.states.mac_xattr.**delete**(*name*, *attributes*)

Make sure the given attributes are deleted from the file/directory

**name** The path to the file/directory

**attributes** The attributes that should be removed from the file/directory, this is accepted as an array.

salt.states.mac_xattr.**exists**(*name*, *attributes*)

Make sure the given attributes exist on the file/directory

**name** The path to the file/directory

**attributes** The attributes that should exist on the file/directory, this is accepted as an array, with key and value split with an equals sign, if you want to specify a hex value then add 0x to the beginning of the value.

### 13.16.109 salt.states.makeconf

#### Management of Gentoo make.conf

A state module to manage Gentoo's `make.conf` file

```
makeopts:
  makeconf.present:
    - value: '-j3'
```

salt.states.makeconf.**absent**(*name*)

Verify that the variable is not in the `make.conf`.

**name** The variable name. This will automatically be converted to upper case since variables in `make.conf` are in upper case

salt.states.makeconf.**present**(*name*, *value=None*, *contains=None*, *excludes=None*)

Verify that the variable is in the `make.conf` and has the provided settings. If value is set, contains and excludes will be ignored.

**name** The variable name. This will automatically be converted to upper case since variables in `make.conf` are in upper case

**value** Enforce that the value of the variable is set to the provided value

**contains** Enforce that the value of the variable contains the provided value

**excludes** Enforce that the value of the variable does not contain the provided value.

### 13.16.110 salt.states.marathon_app module

Configure Marathon apps via a salt proxy.

```
my_app:
  marathon_app.config:
    - config:
        cmd: "while [ true ] ; do echo 'Hello Marathon' ; sleep 5 ; done"
        cpus: 0.1
        mem: 10
        instances: 3
```

New in version 2015.8.2.

salt.states.marathon_app.**absent**(*name*)

Ensure that the marathon app with the given id is not present.

**Parameters** **name** -- The app name/id

**Returns** A standard Salt changes dictionary

salt.states.marathon_app.**config**(*name*, *config*)

Ensure that the marathon app with the given id is present and is configured to match the given config values.

**Parameters**

- **name** -- The app name/id
- **config** -- The configuration to apply (dict)

**Returns** A standard Salt changes dictionary

### 13.16.111 salt.states.mdadm

#### Managing software RAID with mdadm

A state module for creating or destroying software RAID devices.

```
/dev/md0:
  raid.present:
    - level: 5
    - devices:
      - /dev/xvdd
      - /dev/xvde
      - /dev/xvdf
    - chunk: 256
    - run: True
```

salt.states.mdadm.**absent**(*name*)

Verify that the raid is absent

**name** The name of raid device to be destroyed

```
/dev/md0:
  raid:
    - absent
```

salt.states.mdadm.**present**(*name*, *level*, *devices*, ***kwargs*)

Verify that the raid is present

Changed in version 2014.7.0.

**name** The name of raid device to be created

**level** The RAID level to use when creating the raid.

**devices** A list of devices used to build the array.

**kwargs** Optional arguments to be passed to mdadm.

Example:

```
/dev/md0:
  raid.present:
    - level: 5
    - devices:
      - /dev/xvdd
      - /dev/xvde
      - /dev/xvdf
    - chunk: 256
    - run: True
```

### 13.16.112 salt.states.memcached

#### States for Management of Memcached Keys

New in version 2014.1.0.

salt.states.memcached.**absent**(*name*, *value=None*, *host=`127.0.0.1'*, *port=11211*, *time=0*)

Ensure that a memcached key is not present.

**name** The key

**value** [None] If specified, only ensure that the key is absent if it matches the specified value.

**host** The memcached server IP address

**port** The memcached server port

```
foo:
  memcached.absent

bar:
  memcached.absent:
    - host: 10.0.0.1
```

salt.states.memcached.**managed**(*name*, *value=None*, *host=`127.0.0.1'*, *port=11211*, *time=0*, *min_compress_len=0*)

Manage a memcached key.

**name** The key to manage

**value** The value to set for that key

**host** The memcached server IP address

**port** The memcached server port

```
foo:
  memcached.managed:
    - value: bar
```

### 13.16.113 salt.states.modjk

State to control Apache modjk

salt.states.modjk.**worker_activated**(*name*, *workers=None*, *profile='default'*)
Activate all the workers in the modjk load balancer

Example:

```
loadbalancer:
  modjk.worker_activated:
    - workers:
      - app1
      - app2
```

salt.states.modjk.**worker_disabled**(*name*, *workers=None*, *profile='default'*)
Disable all the workers in the modjk load balancer

Example:

```
loadbalancer:
  modjk.worker_disabled:
    - workers:
      - app1
      - app2
```

salt.states.modjk.**worker_recover**(*name*, *workers=None*, *profile='default'*)
Recover all the workers in the modjk load balancer

Example:

```
loadbalancer:
  modjk.worker_recover:
    - workers:
      - app1
      - app2
```

salt.states.modjk.**worker_stopped**(*name*, *workers=None*, *profile='default'*)
Stop all the workers in the modjk load balancer

Example:

```
loadbalancer:
  modjk.worker_stopped:
    - workers:
      - app1
      - app2
```

### 13.16.114 salt.states.modjk_worker

#### Manage modjk workers

Send commands to a **modjk** load balancer via the peer system.

This module can be used with the *prereq* requisite to remove/add the worker from the load balancer before deploying/restarting service.

Mandatory Settings:

- The minion needs to have permission to publish the **modjk**.* functions (see *here* for information on configuring peer publishing permissions)
- The modjk load balancer must be configured as stated in the **modjk** execution module *documentation*

salt.states.modjk_worker.**activate**(*name*, *lbn*, *target*, *profile='default'*, *expr_form='glob'*)
Activate the named worker from the lbn load balancers at the targeted minions

Example:

```
disable-before-deploy:
  modjk_worker.activate:
    - name: {{ grains['id'] }}
    - lbn: application
    - target: 'roles:balancer'
    - expr_form: grain
```

salt.states.modjk_worker.**disable**(*name*, *lbn*, *target*, *profile='default'*, *expr_form='glob'*)
Disable the named worker from the lbn load balancers at the targeted minions. The worker will get traffic only for current sessions and won't get new ones.

Example:

```
disable-before-deploy:
  modjk_worker.disable:
    - name: {{ grains['id'] }}
    - lbn: application
    - target: 'roles:balancer'
    - expr_form: grain
```

salt.states.modjk_worker.**stop**(*name*, *lbn*, *target*, *profile='default'*, *expr_form='glob'*)
Stop the named worker from the lbn load balancers at the targeted minions The worker won't get any traffic from the lbn

Example:

```
disable-before-deploy:
  modjk_worker.stop:
    - name: {{ grains['id'] }}
    - lbn: application
    - target: 'roles:balancer'
    - expr_form: grain
```

### 13.16.115 salt.states.module

#### Execution of Salt modules from within states

These states allow individual execution module calls to be made via states. To call a single module function use a *module.run* state:

```
mine.send:
  module.run:
    - name: network.interfaces
```

Note that this example is probably unnecessary to use in practice, since the `mine_functions` and `mine_interval` config parameters can be used to schedule updates for the mine (see *here* for more info).

It is sometimes desirable to trigger a function call after a state is executed, for this the *module.wait* state can be used:

```
mine.send:
  module.wait:
    - name: network.interfaces
    - watch:
      - file: /etc/network/interfaces
```

All arguments that the `module` state does not consume are passed through to the execution module function being executed:

```
fetch_out_of_band:
  module.run:
    - name: git.fetch
    - cwd: /path/to/my/repo
    - user: myuser
    - opts: '--all'
```

Due to how the state system works, if a module function accepts an argument called, `name`, then `m_name` must be used to specify that argument, to avoid a collision with the `name` argument.

Here is a list of keywords hidden by the state system, which must be prefixed with `m_`:

- fun
- name
- names
- state
- saltenv

For example:

```
disable_nfs:
  module.run:
    - name: service.disable
    - m_name: nfs
```

Note that some modules read all or some of the arguments from a list of keyword arguments. For example:

```
mine.send:
  module.run:
    - func: network.ip_addrs
    - kwargs:
        interface: eth0
```

```
cloud.create:
  module.run:
    - func: cloud.create
    - provider: test-provider
    - m_names:
      - test-vlad
    - kwargs: {
          ssh_username: 'ubuntu',
          image: 'ami-8d6d9daa',
          securitygroup: 'default',
          size: 'c3.large',
```

```
        location: 'ap-northeast-1',
        delvol_on_destroy: 'True'
    }
```

salt.states.module.**mod_watch**(*name*, ***kwargs*)

This function is an alias of `run`.

Run a single module function

**name** The module function to execute

**returner** Specify the returner to send the return of the module execution to

****kwargs** Pass any arguments needed to execute the function

salt.states.module.**run**(*name*, ***kwargs*)

Run a single module function

**name** The module function to execute

**returner** Specify the returner to send the return of the module execution to

****kwargs** Pass any arguments needed to execute the function

salt.states.module.**wait**(*name*, ***kwargs*)

Run a single module function only if the watch statement calls it

**name** The module function to execute

****kwargs** Pass any arguments needed to execute the function

---

**Note**: Like the *cmd.run* state, this state will return `True` but not actually execute, unless one of the following two things happens:

1. The state has a *watch requisite*, and the state which it is watching changes.
2. Another state has a *watch_in requisite* which references this state, and the state wth the `watch_in` changes.

---

### 13.16.116 salt.states.mongodb_database

Management of Mongodb databases

Only deletion is supported, creation doesn't make sense and can be done using mongodb_user.present

salt.states.mongodb_database.**absent**(*name*, *user=None*, *password=None*, *host=None*, *port=None*)

Ensure that the named database is absent

**name** The name of the database to remove

**user** The user to connect as (must be able to create the user)

**password** The password of the user

**host** The host to connect to

**port** The port to connect to

### 13.16.117 salt.states.mongodb_user

#### Management of Mongodb users

---

**Note**: This module requires PyMongo to be installed.

---

salt.states.mongodb_user.**absent**(*name*, *user=None*, *password=None*, *host=None*, *port=None*, *database='admin'*)

Ensure that the named user is absent

**name** The name of the user to remove
**user** MongoDB user with sufficient privilege to create the user
**password** Password for the admin user specified by the `user` parameter
**host** The hostname/IP address of the MongoDB server
**port** The port on which MongoDB is listening
**database** The database from which to remove the user specified by the `name` parameter

`salt.states.mongodb_user.`**`present`**(*name*, *passwd*, *database='admin'*, *user=None*, *password=None*, *host='localhost'*, *port=27017*)

Ensure that the user is present with the specified properties
**name** The name of the user to manage
**passwd** The password of the user to manage
**user** MongoDB user with sufficient privilege to create the user
**password** Password for the admin user specified with the `user` parameter
**host** The hostname/IP address of the MongoDB server
**port** The port on which MongoDB is listening
**database** The database in which to create the user

> **Note**: If the database doesn't exist, it will be created.

Example:

```
mongouser-myapp:
  mongodb_user.present:
  - name: myapp
  - passwd: password-of-myapp
  # Connect as admin:sekrit
  - user: admin
  - password: sekrit
```

### 13.16.118 salt.states.monit

#### Monit state

Manage monit states

```
```

**monit_enable_service_monitoring**:

**monit.monitor**:

- name: service

**monit_disable_service_monitoring**:

**monit.unmonitor**:

- name: service

> **Note**: Use of these states require that the *monit* execution module is available.

`salt.states.monit.`**`monitor`**(*name*)

Get the summary from module monit and try to see if service is being monitored. If not then monitor the service.

salt.states.monit.**unmonitor**(*name*)
Get the summary from module monit and try to see if service is being monitored. If it is then stop monitoring the service.

### 13.16.119 salt.states.mount

#### Mounting of filesystems

Mount any type of mountable filesystem with the mounted function:

```
/mnt/sdb:
  mount.mounted:
    - device: /dev/sdb1
    - fstype: ext4
    - mkmnt: True
    - opts:
      - defaults

/srv/bigdata:
  mount.mounted:
    - device: UUID=066e0200-2867-4ebe-b9e6-f30026ca2314
    - fstype: xfs
    - opts: nobootwait,noatime,nodiratime,nobarrier,logbufs=8
    - dump: 0
    - pass_num: 2
    - persist: True
    - mkmnt: True
```

salt.states.mount.**mod_watch**(*name*, *user=None*, ***kwargs*)
The mounted watcher, called to invoke the watch command.
**name** The name of the mount point

salt.states.mount.**mounted**(*name*, *device*, *fstype*, *mkmnt=False*, *opts='defaults'*, *dump=0*, *pass_num=0*, *config='/etc/fstab'*, *persist=True*, *mount=True*, *user=None*, *match_on='auto'*, *extra_mount_invisible_options=None*, *extra_mount_invisible_keys=None*, *extra_mount_ignore_fs_keys=None*, *extra_mount_translate_options=None*, *hidden_opts=None*)
Verify that a device is mounted
**name** The path to the location where the device is to be mounted
**device** The device name, typically the device node, such as `/dev/sdb1` or `UUID=066e0200-2867-4ebe-b9e6-f30026ca2314` or `LABEL=DATA`
**fstype** The filesystem type, this will be `xfs`, `ext2/3/4` in the case of classic filesystems, and `fuse` in the case of fuse mounts
**mkmnt** If the mount point is not present then the state will fail, set `mkmnt: True` to create the mount point if it is otherwise not present
**opts** A list object of options or a comma delimited list
**dump** The dump value to be passed into the fstab, Default is `0`
**pass_num** The pass value to be passed into the fstab, Default is `0`
**config** Set an alternative location for the fstab, Default is `/etc/fstab`
**persist** Set if the mount should be saved in the fstab, Default is `True`
**mount** Set if the mount should be mounted immediately, Default is `True`
**user** The user to own the mount; this defaults to the user salt is running as on the minion
**match_on** A name or list of fstab properties on which this state should be applied. Default is `auto`, a special value indicating to guess based on fstype. In general, `auto` matches on name for recognized special devices and device otherwise.

**extra_mount_invisible_options** A list of extra options that are not visible through the `/proc/self/mountinfo` interface.

If a option is not visible through this interface it will always remount the device. This option extends the builtin `mount_invisible_options` list.

**extra_mount_invisible_keys** A list of extra key options that are not visible through the `/proc/self/mountinfo` interface.

If a key option is not visible through this interface it will always remount the device. This option extends the builtin `mount_invisible_keys` list.

A good example for a key option is the password option:

```
password=badsecret
```

**extra_ignore_fs_keys** A dict of filesystem options which should not force a remount. This will update the internal dictionary. The dict should look like this:

```
{
    'ramfs': ['size']
}
```

**extra_mount_translate_options** A dict of mount options that gets translated when mounted. To prevent a remount add additional options to the default dictionary. This will update the internal dictionary. The dictionary should look like this:

```
{
    'tcp': 'proto=tcp',
    'udp': 'proto=udp'
}
```

**hidden_opts** A list of mount options that will be ignored when considering a remount as part of the state application

New in version 2015.8.2.

`salt.states.mount.`**`swap`**(*name*, *persist=True*, *config='/etc/fstab'*)

Activates a swap device

```
/root/swapfile:
  mount.swap
```

---

**Note:** `swap` does not currently support LABEL

---

`salt.states.mount.`**`unmounted`**(*name*, *device=None*, *config='/etc/fstab'*, *persist=False*, *user=None*)

New in version 0.17.0.

Verify that a device is not mounted

**name** The path to the location where the device is to be unmounted from

**device** The device to be unmounted. This is optional because the device could be mounted in multiple places.

New in version 2015.5.0.

**config** Set an alternative location for the fstab, Default is `/etc/fstab`

**persist** Set if the mount should be purged from the fstab, Default is `False`

**user** The user to own the mount; this defaults to the user salt is running as on the minion

### 13.16.120 salt.states.mysql_database

#### Management of MySQL databases (schemas)

**depends**

- MySQLdb Python module

**configuration** See *salt.modules.mysql* for setup instructions.

The mysql_database module is used to create and manage MySQL databases. Databases can be set as either absent or present.

```
frank:
  mysql_database.present
```

salt.states.mysql_database.**absent**(*name*, ***connection_args*)

Ensure that the named database is absent

**name** The name of the database to remove

salt.states.mysql_database.**present**(*name*, *character_set=None*, *collate=None*, ***connection_args*)

Ensure that the named database is present with the specified properties

**name** The name of the database to manage

### 13.16.121 salt.states.mysql_grants

#### Management of MySQL grants (user permissions)

**depends**

- MySQLdb Python module

**configuration** See *salt.modules.mysql* for setup instructions.

The mysql_grants module is used to grant and revoke MySQL permissions.

The `name` you pass in purely symbolic and does not have anything to do with the grant itself.

The `database` parameter needs to specify a `priv_level' in the same specification as defined in the MySQL documentation:

- *
- *.*
- db_name.*
- db_name.tbl_name
- etc...

This state is not able to set password for the permission from the specified host. See *salt.states.mysql_user* for further instructions.

```
frank_exampledb:
   mysql_grants.present:
    - grant: select,insert,update
    - database: exampledb.*
    - user: frank
    - host: localhost
```

```
frank_otherdb:
  mysql_grants.present:
    - grant: all privileges
    - database: otherdb.*
    - user: frank

restricted_singletable:
  mysql_grants.present:
    - grant: select
    - database: somedb.sometable
    - user: joe
```

salt.states.mysql_grants.**absent**(*name*, *grant=None*, *database=None*, *user=None*, *host='localhost'*, *grant_option=False*, *escape=True*, ***connection_args*)

Ensure that the grant is absent

**name** The name (key) of the grant to add

**grant** The grant priv_type (i.e. select,insert,update OR all privileges)

**database** The database priv_level (i.e. db.tbl OR db.*)

**user** The user to apply the grant to

**host** The network/host that the grant should apply to

salt.states.mysql_grants.**present**(*name*, *grant=None*, *database=None*, *user=None*, *host='localhost'*, *grant_option=False*, *escape=True*, *revoke_first=False*, *ssl_option=False*, ***connection_args*)

Ensure that the grant is present with the specified properties

**name** The name (key) of the grant to add

**grant** The grant priv_type (i.e. select,insert,update OR all privileges)

**database** The database priv_level (i.e. db.tbl OR db.*)

**user** The user to apply the grant to

**host** The network/host that the grant should apply to

**grant_option** Adds the WITH GRANT OPTION to the defined grant. Default is `False`

**escape** Defines if the database value gets escaped or not. Default is `True`

**revoke_first** By default, MySQL will not do anything if you issue a command to grant privileges that are more restrictive than what's already in place. This effectively means that you cannot downgrade permissions without first revoking permissions applied to a db.table/user pair first.

To have Salt forcibly revoke perms before applying a new grant, enable the `revoke_first options.

WARNING: This will *remove* permissions for a database before attempting to apply new permissions. There is no guarantee that new permissions will be applied correctly which can leave your database security in an unknown and potentially dangerous state. Use with caution!

Default is `False`

**ssl_option** Adds the specified ssl options for the connecting user as requirements for this grant. Value is a list of single-element dicts corresponding to the list of ssl options to use.

Possible key/value pairings for the dicts in the value:

```
- SSL: True
- X509: True
- SUBJECT: <subject>
- ISSUER: <issuer>
- CIPHER: <cipher>
```

The non-boolean ssl options take a string as their values, which should be an appropriate value as specified by the MySQL documentation for these options.

Default is `False` (no ssl options will be used)

## 13.16.122 salt.states.mysql_query

### Execution of MySQL queries

New in version 2014.7.0.

**depends**

- MySQLdb Python module

**configuration** See *salt.modules.mysql* for setup instructions.

The mysql_query module is used to execute queries on MySQL databases. Its output may be stored in a file or in a grain.

```
query_id:
  mysql_query.run
    - database: my_database
    - query:    "SELECT * FROM table;"
    - output:   "/tmp/query_id.txt"
```

salt.states.mysql_query.**run**(*name*, *database*, *query*, *output=None*, *grain=None*, *key=None*, *overwrite=True*, ***connection_args*)

Execute an arbitrary query on the specified database

**name** Used only as an ID

**database** The name of the database to execute the query on

**query** The query to execute

**output** grain: output in a grain other: the file to store results None: output to the result comment (default)

**grain**: grain to store the output (need output=grain)

**key**: the specified grain will be treated as a dictionary, the result of this state will be stored under the specified key.

**overwrite**: The file or grain will be overwritten if it already exists (default)

## 13.16.123 salt.states.mysql_user

### Management of MySQL users

**depends**

- MySQLdb Python module

**configuration** See *salt.modules.mysql* for setup instructions.

```
frank:
  mysql_user.present:
    - host: localhost
    - password: bobcat
```

New in version 0.16.2: Authentication overrides have been added.

The MySQL authentication information specified in the minion config file can be overridden in states using the following arguments: `connection_host`, `connection_port`, `connection_user`, `connection_pass`, `connection_db`, `connection_unix_socket`, `connection_default_file` and `connection_charset`.

```
frank:
  mysql_user.present:
    - host: localhost
    - password: "bob@cat"
    - connection_user: someuser
    - connection_pass: somepass
    - connection_charset: utf8
    - saltenv:
      - LC_ALL: "en_US.utf8"
```

This state is not able to grant permissions for the user. See *salt.states.mysql_grants* for further instructions.

salt.states.mysql_user.**absent**(*name*, *host='localhost'*, ***connection_args*)

Ensure that the named user is absent

**name** The name of the user to remove

salt.states.mysql_user.**present**(*name*, *host='localhost'*, *password=None*, *password_hash=None*, *allow_passwordless=False*, *unix_socket=False*, *password_column=None*, ***connection_args*)

Ensure that the named user is present with the specified properties. A passwordless user can be configured by omitting `password` and `password_hash`, and setting `allow_passwordless` to `True`.

**name** The name of the user to manage

**host** Host for which this user/password combo applies

**password** The password to use for this user. Will take precedence over the `password_hash` option if both are specified.

**password_hash** The password in hashed form. Be sure to quote the password because YAML doesn't like the `*`. A password hash can be obtained from the mysql command-line client like so:

```
mysql> SELECT PASSWORD('mypass');
+-------------------------------------------+
| PASSWORD('mypass')                        |
+-------------------------------------------+
| *6C8989366EAF75BB670AD8EA7A7FC1176A95CEF4 |
+-------------------------------------------+
1 row in set (0.00 sec)
```

**allow_passwordless** If `True`, then `password` and `password_hash` can be omitted to permit a passwordless login.

New in version 0.16.2.

**unix_socket** If `True` and allow_passwordless is `True`, the unix_socket auth plugin will be used.

### 13.16.124 salt.states.network

#### Configuration of network interfaces

The network module is used to create and manage network settings, interfaces can be set as either managed or ignored. By default all interfaces are ignored unless specified.

---

**Note:** Prior to version 2014.1.0, only RedHat-based systems (RHEL, CentOS, Scientific Linux, etc.) are supported. Support for Debian/Ubuntu is new in 2014.1.0 and should be considered experimental.

Other platforms are not yet supported.

---

```
system:
  network.system:
    - enabled: True
    - hostname: server1.example.com
    - gateway: 192.168.0.1
    - gatewaydev: eth0
    - nozeroconf: True
    - nisdomain: example.com
    - require_reboot: True

eth0:
  network.managed:
    - enabled: True
    - type: eth
    - proto: none
    - ipaddr: 10.1.0.1
    - netmask: 255.255.255.0
    - dns:
      - 8.8.8.8
      - 8.8.4.4

eth0-range0:
  network.managed:
    - type: eth
    - ipaddr_start: 192.168.1.1
    - ipaddr_end: 192.168.1.10
    - clonenum_start: 10
    - mtu: 9000

bond0-range0:
  network.managed:
    - type: eth
    - ipaddr_start: 192.168.1.1
    - ipaddr_end: 192.168.1.10
    - clonenum_start: 10
    - mtu: 9000

eth1.0-range0:
  network.managed:
    - type: eth
    - ipaddr_start: 192.168.1.1
    - ipaddr_end: 192.168.1.10
    - clonenum_start: 10
    - vlan: True
    - mtu: 9000

bond0.1-range0:
  network.managed:
    - type: eth
    - ipaddr_start: 192.168.1.1
    - ipaddr_end: 192.168.1.10
    - clonenum_start: 10
    - vlan: True
    - mtu: 9000

.. note::
    add support of ranged interfaces (vlan, bond and eth) for redhat system,
    Important:type must be eth.
```

```
routes:
  network.routes:
    - name: eth0
    - routes:
      - name: secure_network
        ipaddr: 10.2.0.0
        netmask: 255.255.255.0
        gateway: 10.1.0.3
      - name: HQ_network
        ipaddr: 10.100.0.0
        netmask: 255.255.0.0
        gateway: 10.1.0.10

eth2:
  network.managed:
    - enabled: True
    - type: slave
    - master: bond0

eth3:
  network.managed:
    - enabled: True
    - type: slave
    - master: bond0

eth4:
  network.managed:
    - enabled: True
    - type: eth
    - proto: dhcp
    - bridge: br0

eth5:
  network.managed:
    - enabled: True
    - type: eth
    - proto: dhcp
    - noifupdown: True  # Do not restart the interface
                        # you need to reboot/reconfigure manualy

bond0:
  network.managed:
    - type: bond
    - ipaddr: 10.1.0.1
    - netmask: 255.255.255.0
    - mode: active-backup
    - proto: static
    - dns:
      - 8.8.8.8
      - 8.8.4.4
    - ipv6:
    - enabled: False
    - slaves: eth2 eth3
    - require:
      - network: eth2
      - network: eth3
    - miimon: 100
```

```
    - arp_interval: 250
    - downdelay: 200
    - lacp_rate: fast
    - max_bonds: 1
    - updelay: 0
    - use_carrier: on
    - xmit_hash_policy: layer2
    - mtu: 9000
    - autoneg: on
    - speed: 1000
    - duplex: full
    - rx: on
    - tx: off
    - sg: on
    - tso: off
    - ufo: off
    - gso: off
    - gro: off
    - lro: off

bond0.2:
  network.managed:
    - type: vlan
    - ipaddr: 10.1.0.2
    - use:
      - network: bond0
    - require:
      - network: bond0

bond0.3:
  network.managed:
    - type: vlan
    - ipaddr: 10.1.0.3
    - use:
      - network: bond0
    - require:
      - network: bond0

bond0.10:
  network.managed:
    - type: vlan
    - ipaddr: 10.1.0.4
    - use:
      - network: bond0
    - require:
      - network: bond0

bond0.12:
  network.managed:
    - type: vlan
    - ipaddr: 10.1.0.5
    - use:
      - network: bond0
    - require:
      - network: bond0
br0:
  network.managed:
    - enabled: True
```

```
    - type: bridge
    - proto: dhcp
    - bridge: br0
    - delay: 0
    - ports: eth4
    - bypassfirewall: True
    - use:
      - network: eth4
    - require:
      - network: eth4

system:
  network.system:
    - enabled: True
    - hostname: server1.example.com
    - gateway: 192.168.0.1
    - gatewaydev: eth0
    - nozeroconf: True
    - nisdomain: example.com
    - require_reboot: True
    - apply_hostname: True

lo:
  network.managed:
    - name: lo
    - type: eth
    - onboot: yes
    - userctl: no
    - ipv6_autoconf: no
    - enable_ipv6: true
    - ipaddrs:
      - 127.0.0.1/8
      - 10.1.0.4/32
      - 10.1.0.12/32
    - ipv6addrs:
      - fc00::1/128
      - fc00::100/128

.. note::
    Apply changes to hostname immediately.

.. versionadded:: 2015.5.0
```

**Note**: When managing bridged interfaces on a Debian or Ubuntu based system, the ports argument is required. Red Hat systems will ignore the argument.

salt.states.network.**managed**(*name*, *type*, *enabled=True*, ***kwargs*)

Ensure that the named interface is configured properly.

**name** The name of the interface to manage

**type** Type of interface and configuration.

**enabled** Designates the state of this interface.

**kwargs** The IP parameters for this interface.

salt.states.network.**routes**(*name*, ***kwargs*)

Manage network interface static routes.

**name** Interface name to apply the route to.

**kwargs** Named routes

salt.states.network.**system**(*name*, ***kwargs*)

Ensure that global network settings are configured properly.

**name** Custom name to represent this configuration change.

**kwargs** The global parameters for the system.

### 13.16.125 salt.states.nftables

#### Management of nftables

This is an nftables-specific module designed to manage Linux firewalls. It is expected that this state module, and other system-specific firewall states, may at some point be deprecated in favor of a more generic *firewall* state.

```
httpd:
  nftables.append:
    - table: filter
    - chain: input
    - jump: accept
    - match: state
    - connstate: new
    - dport: 80
    - proto: tcp
    - sport: 1025:65535
    - save: True

httpd:
  nftables.append:
    - table: filter
    - family: ipv6
    - chain: INPUT
    - jump: ACCEPT
    - match: state
    - connstate: NEW
    - dport: 80
    - proto: tcp
    - sport: 1025:65535
    - save: True

httpd:
  nftables.insert:
    - position: 1
    - table: filter
    - chain: INPUT
    - jump: ACCEPT
    - match: state
    - connstate: NEW
    - dport: 80
    - proto: tcp
    - sport: 1025:65535
    - save: True

httpd:
  nftables.insert:
    - position: 1
    - table: filter
    - family: ipv6
```

```
    - chain: INPUT
    - jump: ACCEPT
    - match: state
    - connstate: NEW
    - dport: 80
    - proto: tcp
    - sport: 1025:65535
    - save: True

httpd:
  nftables.delete:
    - table: filter
    - chain: INPUT
    - jump: ACCEPT
    - match: state
    - connstate: NEW
    - dport: 80
    - proto: tcp
    - sport: 1025:65535
    - save: True

httpd:
  nftables.delete:
    - position: 1
    - table: filter
    - chain: INPUT
    - jump: ACCEPT
    - match: state
    - connstate: NEW
    - dport: 80
    - proto: tcp
    - sport: 1025:65535
    - save: True

httpd:
  nftables.delete:
    - table: filter
    - family: ipv6
    - chain: INPUT
    - jump: ACCEPT
    - match: state
    - connstate: NEW
    - dport: 80
    - proto: tcp
    - sport: 1025:65535
    - save: True
```

salt.states.nftables.**append**(*name*, *family='ipv4'*, ***kwargs*)

New in version 0.17.0.

Append a rule to a chain

**name** A user-defined name to call this rule by in another part of a state or formula. This should not be an actual rule.

**family** Network family, ipv4 or ipv6.

All other arguments are passed in with the same name as the long option that would normally be used for nftables, with one exception: *--state* is specified as *connstate* instead of *state* (not to be confused with *ctstate*).

salt.states.nftables.**chain_absent**(*name*, *table='filter'*, *family='ipv4'*)

New in version 2014.7.0.

Verify the chain is absent.
**family** Networking family, either ipv4 or ipv6

salt.states.nftables.**chain_present**(*name*, *table='filter'*, *table_type=None*, *hook=None*, *priority=None*, *family='ipv4'*)
New in version 2014.7.0.

Verify the chain is exist.
**name** A user-defined chain name.
**table** The table to own the chain.
**family** Networking family, either ipv4 or ipv6

salt.states.nftables.**delete**(*name*, *family='ipv4'*, ***kwargs*)
New in version 2014.7.0.

Delete a rule to a chain
**name** A user-defined name to call this rule by in another part of a state or formula. This should not be an actual rule.
**family** Networking family, either ipv4 or ipv6
All other arguments are passed in with the same name as the long option that would normally be used for nftables, with one exception: *--state* is specified as *connstate* instead of *state* (not to be confused with *ctstate*).

salt.states.nftables.**flush**(*name*, *family='ipv4'*, ***kwargs*)
New in version 2014.7.0.

Flush current nftables state
**family** Networking family, either ipv4 or ipv6

salt.states.nftables.**insert**(*name*, *family='ipv4'*, ***kwargs*)
New in version 2014.7.0.

Insert a rule into a chain
**name** A user-defined name to call this rule by in another part of a state or formula. This should not be an actual rule.
**family** Networking family, either ipv4 or ipv6
All other arguments are passed in with the same name as the long option that would normally be used for nftables, with one exception: *--state* is specified as *connstate* instead of *state* (not to be confused with *ctstate*).

### 13.16.126 salt.states.npm

#### Installation of NPM Packages

These states manage the installed packages for node.js using the Node Package Manager (npm). Note that npm must be installed for these states to be available, so npm states should include a requisite to a pkg.installed state for the package which provides npm (simply `npm` in most cases). Example:

```
npm:
  pkg.installed

yaml:
  npm.installed:
    - require:
      - pkg: npm
```

salt.states.npm.**bootstrap**(*name*, *user=None*, *silent=True*)
Bootstraps a node.js application.

Will execute `npm install --json' on the specified directory.

**user** The user to run NPM with

New in version 0.17.0.

salt.states.npm.**installed**(*name*, *pkgs=None*, *dir=None*, *user=None*, *force_reinstall=False*, *registry=None*, *env=None*)

Verify that the given package is installed and is at the correct version (if specified).

```
coffee-script:
  npm.installed:
    - user: someuser

coffee-script@1.0.1:
  npm.installed: []
```

**name** The package to install

Changed in version 2014.7.2: This parameter is no longer lowercased by salt so that case-sensitive NPM package names will work.

**pkgs** A list of packages to install with a single npm invocation; specifying this argument will ignore the `name` argument

New in version 2014.7.0.

**dir** The target directory in which to install the package, or None for global installation

**user** The user to run NPM with

New in version 0.17.0.

**registry** The NPM registry from which to install the package

New in version 2014.7.0.

**env** A list of environment variables to be set prior to execution. The format is the same as the *cmd.run*. state function.

New in version 2014.7.0.

**force_reinstall** Install the package even if it is already installed

salt.states.npm.**removed**(*name*, *dir=None*, *user=None*)

Verify that the given package is not installed.

**dir** The target directory in which to install the package, or None for global installation

**user** The user to run NPM with

New in version 0.17.0.

## 13.16.127 salt.states.ntp

### Management of NTP servers

New in version 2014.1.0.

This state is used to manage NTP servers. Currently only Windows is supported.

```
win_ntp:
  ntp.managed:
    - servers:
      - pool.ntp.org
      - us.pool.ntp.org
```

salt.states.ntp.**managed**(*name*, *servers=None*)
Manage NTP servers
**servers** A list of NTP servers

### 13.16.128 salt.states.openstack_config

Manage OpenStack configuration file settings.

**maintainer** Jeffrey C. Ollie <jeff@ocjtech.us>

**maturity** new

**depends**

**platform** linux

salt.states.openstack_config.**absent**(*name*, *filename*, *section*, *parameter=None*)
Ensure a value is not set in an OpenStack configuration file.
**filename** The full path to the configuration file
**section** The section in which the parameter will be set
**parameter (optional)** The parameter to change. If the parameter is not supplied, the name will be used as the parameter.

salt.states.openstack_config.**present**(*name*, *filename*, *section*, *value*, *parameter=None*)
Ensure a value is set in an OpenStack configuration file.
**filename** The full path to the configuration file
**section** The section in which the parameter will be set
**parameter (optional)** The parameter to change. If the parameter is not supplied, the name will be used as the parameter.
**value** The value to set

### 13.16.129 salt.states.openvswitch_bridge module

Management of Open vSwitch bridges.

salt.states.openvswitch_bridge.**absent**(*name*)
Ensures that the named bridge does not exist, eventually deletes it.
**Args**: name: The name of the bridge.

salt.states.openvswitch_bridge.**present**(*name*)
Ensures that the named bridge exists, eventually creates it.
**Args**: name: The name of the bridge.

### 13.16.130 salt.states.openvswitch_port module

Management of Open vSwitch ports.

salt.states.openvswitch_port.**absent**(*name*, *bridge=None*)
Ensures that the named port exists on bridge, eventually deletes it. If bridge is not set, port is removed from whatever bridge contains it.
**Args**: name: The name of the port. bridge: The name of the bridge.

salt.states.openvswitch_port.**present**(*name*, *bridge*, *type=None*, *id=None*, *remote=None*, *dst_port=None*)
Ensures that the named port exists on bridge, eventually creates it.

**Args:** name: The name of the port. bridge: The name of the bridge. type: Optional type of interface to create, currently supports: vlan, vxlan and gre. id: Optional tunnel's key. remote: Remote endpoint's IP address. dst_port: Port to use when creating tunnelport in the switch.

## 13.16.131 salt.states.pagerduty

### Create an Event in PagerDuty

New in version 2014.1.0.

This state is useful for creating events on the PagerDuty service during state runs.

```
server-warning-message:
  pagerduty.create_event:
    - name: 'This is a server warning message'
    - details: 'This is a much more detailed message'
    - service_key: 9abcd123456789efabcde362783cdbaf
    - profile: my-pagerduty-account
```

`salt.states.pagerduty.`**`create_event`**(*name*, *details*, *service_key*, *profile*)

Create an event on the PagerDuty service

```
server-warning-message:
  pagerduty.create_event:
    - name: 'This is a server warning message'
    - details: 'This is a much more detailed message'
    - service_key: 9abcd123456789efabcde362783cdbaf
    - profile: my-pagerduty-account
```

The following parameters are required:
**name** This is a short description of the event.
**details** This can be a more detailed description of the event.
**service_key** This key can be found by using pagerduty.list_services.
**profile** This refers to the configuration profile to use to connect to the PagerDuty service.

## 13.16.132 salt.states.pagerduty_escalation_policy

Manage PagerDuty escalation policies.

Schedules and users can be referenced by pagerduty ID, or by name, or by email address.

For example:

```
ensure test escalation policy:
    pagerduty_escalation_policy.present:
        - name: bruce test escalation policy
        - escalation_rules:
            - targets:
                - type: schedule
                  id: 'bruce test schedule level1'
                - type: user
                  id: 'Bruce Sherrod'
              escalation_delay_in_minutes: 15
            - targets:
                - type: schedule
                  id: 'bruce test schedule level2'
```

```
            escalation_delay_in_minutes: 15
          - targets:
              - type: user
                id: 'Bruce TestUser1'
              - type: user
                id: 'Bruce TestUser2'
              - type: user
                id: 'Bruce TestUser3'
              - type: user
                id:  'bruce+test4@lyft.com'
            escalation_delay_in_minutes: 15
```

salt.states.pagerduty_escalation_policy.**absent**(*profile='pagerduty'*, *subdomain=None*, *api_key=None*, ***kwargs*)

Ensure that a PagerDuty escalation policy does not exist. Accepts all the arguments that pagerduty_escalation_policy.present accepts; but ignores all arguments except the name.

Name can be the escalation policy id or the escalation policy name.

salt.states.pagerduty_escalation_policy.**present**(*profile='pagerduty'*, *subdomain=None*, *api_key=None*, ***kwargs*)

Ensure that a pagerduty escalation policy exists. Will create or update as needed.

This method accepts as args everything defined in https://developer.pagerduty.com/documentation/rest/escalation_policies/create. In addition, user and schedule id's will be translated from name (or email address) into PagerDuty unique ids. For example:

```
```

**pagerduty_escalation_policy.present**:

- name: bruce test escalation policy
- **escalation_rules**:
  - **targets**:
    - type: schedule id: `bruce test schedule level1'
    - type: user id: `Bruce Sherrod'

In this example, `Bruce Sherrod' will be looked up and replaced with the PagerDuty id (usually a 7 digit all-caps string, e.g. PX6GQL7)

### 13.16.133 salt.states.pagerduty_schedule

Manage PagerDuty schedules.

Example:

```
```

**ensure test schedule**:

**pagerduty_schedule.present**:

- name: `bruce test schedule level1'
- **schedule**: name: `bruce test schedule level1' time_zone: `Pacific Time (US & Canada)' schedule_layers:
  - name: `Schedule Layer 1' start: `2015-01-01T00:00:00' users:

* **user**: `id': `Bruce TestUser1'

  member_order: 1

* **user**: `id': `Bruce TestUser2'

  member_order: 2

* **user**: `id': `bruce+test3@lyft.com`

  member_order: 3

* **user**: `id': `bruce+test4@lyft.com`

  member_order: 4

rotation_virtual_start: `2015-01-01T00:00:00' priority: 1 rotation_turn_length_seconds: 604800

`salt.states.pagerduty_schedule.`**`absent`**(*profile='pagerduty'*, *subdomain=None*, *api_key=None*, ***kwargs*)

Ensure that a pagerduty schedule does not exist. Name can be pagerduty schedule id or pagerduty schedule name.

`salt.states.pagerduty_schedule.`**`present`**(*profile='pagerduty'*, *subdomain=None*, *api_key=None*, ***kwargs*)

Ensure that a pagerduty schedule exists. This method accepts as args everything defined in https://developer.pagerduty.com/documentation/rest/schedules/create. This means that most arguments are in a dict called ``schedule''.

User id's can be pagerduty id, or name, or email address.

### 13.16.134 salt.states.pagerduty_service

Manage PagerDuty services

Escalation policies can be referenced by pagerduty ID or by namea.

For example:

```
ensure test service
    pagerduty_service.present:
        - name: `my service'
        - escalation_policy_id: `my escalation policy'
        - type: nagios
    [etc]
```

`salt.states.pagerduty_service.`**`absent`**(*profile='pagerduty'*, *subdomain=None*, *api_key=None*, ***kwargs*)

Ensure a pagerduty service does not exist. Name can be the service name or pagerduty service id.

`salt.states.pagerduty_service.`**`present`**(*profile='pagerduty'*, *subdomain=None*, *api_key=None*, ***kwargs*)

Ensure pagerduty service exists. This method accepts as arguments everything defined in https://developer.pagerduty.com/documentation/rest/services/create

Note that many arguments are mutually exclusive, depending on the ``type'' argument.

Examples:

```
```

# create a PagerDuty email service at test-email@DOMAIN.pagerduty.com ensure generic email service exists:
**pagerduty_service.present**:

- name: my email service
- **service**: description: ``email service controlled by salt'' escalation_policy_id: ``my escalation policy'' type: ``generic_email'' service_key: ``test-email''

# create a pagerduty service using cloudwatch integration ensure my cloudwatch service exists:
**pagerduty_service.present**:

- name: my cloudwatch service
- **service**: escalation_policy_id: ``my escalation policy'' type: aws_cloudwatch description: ``my cloudwatch service controlled by salt''

TODO: aws_cloudwatch type should be integrated with boto_sns

### 13.16.135 salt.states.pagerduty_user

Manage PagerDuty users.

Example:

```
```

**ensure bruce test user 1**:

**pagerduty.user_present**:

- name: `Bruce TestUser1'
- email: bruce+test1@lyft.com
- requester_id: P1GV5NT

`salt.states.pagerduty_user.`**`absent`**(*profile='pagerduty'*, *subdomain=None*, *api_key=None*, ***kwargs*)

Ensure pagerduty user does not exist. Name can be pagerduty id, email address, or user name.

`salt.states.pagerduty_user.`**`present`**(*profile='pagerduty'*, *subdomain=None*, *api_key=None*, ***kwargs*)

Ensure pagerduty user exists. Arguments match those supported by https://developer.pagerduty.com/documentation/rest/users/create.

### 13.16.136 salt.states.pecl

#### Installation of PHP Extensions Using pecl

These states manage the installed pecl extensions. Note that php-pear must be installed for these states to be available, so pecl states should include a requisite to a pkg.installed state for the package which provides pecl (`php-pear` in most cases). Example:

```
php-pear:
  pkg.installed

mongo:
```

```
  pecl.installed:
    - require:
      - pkg: php-pear
```

salt.states.pecl.**installed**(*name*, *version=None*, *defaults=False*, *force=False*, *preferred_state='stable'*)

New in version 0.17.0.

Make sure that a pecl extension is installed.

**name** The pecl extension name to install

**version** The pecl extension version to install. This option may be ignored to install the latest stable version.

**defaults** Use default answers for extensions such as pecl_http which ask questions before installation. Without this option, the pecl.installed state will hang indefinitely when trying to install these extensions.

**force** Whether to force the installed version or not

**preferred_state** The pecl extension state to install

salt.states.pecl.**removed**(*name*)

Make sure that a pecl extension is not installed.

**name** The pecl extension name to uninstall

### 13.16.137 salt.states.pip_state

#### Installation of Python Packages Using pip

These states manage system installed python packages. Note that pip must be installed for these states to be available, so pip states should include a requisite to a pkg.installed state for the package which provides pip (`python-pip` in most cases). Example:

```
python-pip:
  pkg.installed

virtualenvwrapper:
  pip.installed:
    - require:
      - pkg: python-pip
```

salt.states.pip_state.**installed**(*name*, *pkgs=None*, *pip_bin=None*, *requirements=None*, *env=None*, *bin_env=None*, *use_wheel=False*, *no_use_wheel=False*, *log=None*, *proxy=None*, *timeout=None*, *repo=None*, *editable=None*, *find_links=None*, *index_url=None*, *extra_index_url=None*, *no_index=False*, *mirrors=None*, *build=None*, *target=None*, *download=None*, *download_cache=None*, *source=None*, *upgrade=False*, *force_reinstall=False*, *ignore_installed=False*, *exists_action=None*, *no_deps=False*, *no_install=False*, *no_download=False*, *install_options=None*, *global_options=None*, *user=None*, *no_chown=False*, *cwd=None*, *activate=False*, *pre_releases=False*, *cert=None*, *allow_all_external=False*, *allow_external=None*, *allow_unverified=None*, *process_dependency_links=False*, *env_vars=None*, *use_vt=False*, *trusted_host=None*)

Make sure the package is installed

**name** The name of the python package to install. You can also specify version numbers here using the standard operators `==,>=,<=`. If `requirements` is given, this parameter will be ignored.

Example:

```
django:
  pip.installed:
    - name: django >= 1.6, <= 1.7
    - require:
      - pkg: python-pip
```

This will install the latest Django version greater than 1.6 but less than 1.7.

**requirements** Path to a pip requirements file. If the path begins with salt:// the file will be transferred from the master file server.

**user** The user under which to run pip

**use_wheel** [False] Prefer wheel archives (requires pip>=1.4)

**no_use_wheel** [False] Force to not use wheel archives (requires pip>=1.4)

**log** Log file where a complete (maximum verbosity) record will be kept

**proxy** Specify a proxy in the form user:passwd@proxy.server:port. Note that the user:password@ is optional and required only if you are behind an authenticated proxy. If you provide user@proxy.server:port then you will be prompted for a password.

**timeout** Set the socket timeout (default 15 seconds)

**editable** install something editable (i.e. git+https://github.com/worldcompany/djangoembed.git#egg=djangoembed)

**find_links** URL to look for packages at

**index_url** Base URL of Python Package Index

**extra_index_url** Extra URLs of package indexes to use in addition to `index_url`

**no_index** Ignore package index

**mirrors** Specific mirror URL(s) to query (automatically adds --use-mirrors)

**build** Unpack packages into `build` dir

**target** Install packages into `target` dir

**download** Download packages into `download` instead of installing them

**download_cache** Cache downloaded packages in `download_cache` dir

**source** Check out `editable` packages into `source` dir

**upgrade** Upgrade all packages to the newest available version

**force_reinstall** When upgrading, reinstall all packages even if they are already up-to-date.

**ignore_installed** Ignore the installed packages (reinstalling instead)

**exists_action** Default action when a path already exists: (s)witch, (i)gnore, (w)ipe, (b)ackup

**no_deps** Ignore package dependencies

**no_install** Download and unpack all packages, but don't actually install them

**no_chown** When user is given, do not attempt to copy and chown a requirements file

**cwd** Current working directory to run pip from

**activate** Activates the virtual environment, if given via bin_env, before running install.

> Deprecated since version 2014.7.2: If *bin_env* is given, pip will already be sourced from that virtualenv, making *activate* effectively a noop.

**pre_releases** Include pre-releases in the available versions

**cert** Provide a path to an alternate CA bundle

**allow_all_external** Allow the installation of all externally hosted files

**allow_external** Allow the installation of externally hosted files (comma separated list)

**allow_unverified** Allow the installation of insecure and unverifiable files (comma separated list)

**process_dependency_links** Enable the processing of dependency links

**bin_env** [None] Absolute path to a virtual environment directory or absolute path to a pip executable. The example below assumes a virtual environment has been created at `/foo/.virtualenvs/bar`.

**env_vars** Add or modify environment variables. Useful for tweaking build steps, such as specifying INCLUDE or LIBRARY paths in Makefiles, build scripts or compiler calls. This must be in the form of a dictionary or a mapping.

> Example:

```
django:
  pip.installed:
    - name: django_app
    - env_vars:
        CUSTOM_PATH: /opt/django_app
        VERBOSE: True
```

**use_vt** Use VT terminal emulation (see output while installing)
**trusted_host** Mark this host as trusted, even though it does not have valid or any HTTPS.
Example:

```
django:
  pip.installed:
    - name: django >= 1.6, <= 1.7
    - bin_env: /foo/.virtualenvs/bar
    - require:
      - pkg: python-pip
```

Or

Example:

```
django:
  pip.installed:
    - name: django >= 1.6, <= 1.7
    - bin_env: /foo/.virtualenvs/bar/bin/pip
    - require:
      - pkg: python-pip
```

---

**Attention**

The following arguments are deprecated, do not use.

---

**pip_bin** [None] Deprecated, use `bin_env`
**env** [None] Deprecated, use `bin_env`

Changed in version 0.17.0: `use_wheel` option added.

install_options
Extra arguments to be supplied to the setup.py install command. If you are using an option with a directory path, be sure to use absolute path.

Example:

```
django:
  pip.installed:
    - name: django
    - install_options:
      - --prefix=/blah
    - require:
      - pkg: python-pip
```

**global_options** Extra global options to be supplied to the setup.py call before the install command.

New in version 2014.1.3.

---

**Attention**

As of Salt 0.17.0 the pip state **needs** an importable pip module. This usually means having the system's pip package installed or running Salt from an active virtualenv.

The reason for this requirement is because `pip` already does a pretty good job parsing its own requirements. It makes no sense for Salt to do `pip` requirements parsing and validation before passing them to the `pip` library. It's functionality duplication and it's more error prone.

**Attention**

Please set `reload_modules: True` to have the salt minion import this module after installation.

Example:

```
pyopenssl:
    pip.installed:
        - name: pyOpenSSL
        - reload_modules: True
        - exists_action: i
```

`salt.states.pip_state.`**`removed`**(*name*, *requirements=None*, *bin_env=None*, *log=None*, *proxy=None*, *timeout=None*, *user=None*, *cwd=None*, *use_vt=False*)

Make sure that a package is not installed.
**name** The name of the package to uninstall
**user** The user under which to run pip
**bin_env** [None] the pip executable or virtualenenv to use
**use_vt** Use VT terminal emulation (see output while installing)

`salt.states.pip_state.`**`uptodate`**(*name*, *bin_env=None*, *user=None*, *cwd=None*, *use_vt=False*)

New in version 2015.5.0.

Verify that the system is completely up to date.
**name** The name has no functional value and is only used as a tracking reference
**user** The user under which to run pip
**bin_env** the pip executable or virtualenenv to use
**use_vt** Use VT terminal emulation (see output while installing)

### 13.16.138 salt.states.pkg

#### Installation of packages using OS package managers such as yum or apt-get

**Note**: On minions running systemd>=205, as of version 2015.8.12, 2016.3.3, and Carbon, systemd-run(1) is now used to isolate commands which modify installed packages from the `salt-minion` daemon's control group. This is done to keep systemd from killing the package manager commands spawned by Salt, when Salt updates itself (see `KillMode` in the systemd.kill(5) manpage for more information). If desired, usage of systemd-run(1) can be suppressed by setting a *`config option`* called `systemd.use_scope`, with a value of `False` (no quotes).

Salt can manage software packages via the pkg state module, packages can be set up to be installed, latest, removed and purged. Package management declarations are typically rather simple:

```
vim:
  pkg.installed
```

A more involved example involves pulling from a custom repository.

```
base:
  pkgrepo.managed:
    - humanname: Logstash PPA
    - name: ppa:wolfnet/logstash
    - dist: precise
    - file: /etc/apt/sources.list.d/logstash.list
    - keyid: 28B04E4A
    - keyserver: keyserver.ubuntu.com

logstash:
  pkg.installed
    - fromrepo: ppa:wolfnet/logstash
```

Multiple packages can also be installed with the use of the pkgs state module

```
dotdeb.repo:
  pkgrepo.managed:
    - humanname: Dotdeb
    - name: deb http://packages.dotdeb.org wheezy-php55 all
    - dist: wheezy-php55
    - file: /etc/apt/sources.list.d/dotbeb.list
    - keyid: 89DF5277
    - keyserver: keys.gnupg.net
    - refresh_db: true

php.packages:
  pkg.installed:
    - fromrepo: wheezy-php55
    - pkgs:
      - php5-fpm
      - php5-cli
      - php5-curl
```

**Warning**: Package names are currently case-sensitive. If the minion is using a package manager which is not case-sensitive (such as *pkgng*), then this state will fail if the proper case is not used. This will be addressed in a future release of Salt.

`salt.states.pkg.`**`group_installed`**(*name*, *skip=None*, *include=None*, ***kwargs*)

New in version 2015.8.0.

Ensure that an entire package group is installed. This state is currently only supported for the *yum* package manager.

**skip** Packages that would normally be installed by the package group (``default'' packages), which should not be installed.

```
Load Balancer:
  pkg.group_installed:
    - skip:
      - piranha
```

**include** Packages which are included in a group, which would not normally be installed by a `yum groupinstall` (``optional'' packages). Note that this will not enforce group membership; if you include packages which are not members of the specified groups, they will still be installed.

```
Load Balancer:
  pkg.group_installed:
    - include:
      - haproxy
```

Changed in version 2016.3.0: This option can no longer be passed as a comma-separated list, it must now be passed as a list (as shown in the above example).

---

**Note**: Because this is essentially a wrapper around *pkg.install*, any argument which can be passed to pkg.install may also be included here, and it will be passed on to the call to *pkg.install*.

---

salt.states.pkg.**installed**(*name*, *version=None*, *refresh=None*, *fromrepo=None*, *skip_verify=False*, *skip_suggestions=False*, *pkgs=None*, *sources=None*, *allow_updates=False*, *pkg_verify=False*, *normalize=True*, *ignore_epoch=False*, *reinstall=False*, ***kwargs*)

Ensure that the package is installed, and that it is the correct version (if specified).

**Parameters**

- **name** (*str*) -- The name of the package to be installed. This parameter is ignored if either ``pkgs'' or ``sources'' is used. Additionally, please note that this option can only be used to install packages from a software repository. To install a package file manually, use the ``sources'' option detailed below.
- **version** (*str*) -- Install a specific version of a package. This option is ignored if ``sources'' is used. Currently, this option is supported for the following pkg providers: *apt*, *ebuild*, *pacman*, *win_pkg*, *yumpkg*, and *zypper*. The version number includes the release designation where applicable, to allow Salt to target a specific release of a given version. When in doubt, using the `pkg.latest_version` function for an uninstalled package will tell you the version available.

```
# salt myminion pkg.latest_version vim-enhanced
myminion:
    2:7.4.160-1.el7
```

---

**Important**: As of version 2015.8.7, for distros which use yum/dnf, packages which have a version with a nonzero epoch (that is, versions which start with a number followed by a colon like in the `pkg.latest_version` output above) must have the epoch included when specifying the version number. For example:

```
vim-enhanced:
  pkg.installed:
    - version: 2:7.4.160-1.el7
```

In version 2015.8.9, an **ignore_epoch** argument has been added to *pkg.installed*, *pkg.removed*, and *pkg.purged* states, which causes the epoch to be disregarded when the state checks to see if the desired version was installed.

---

Also, while this function is not yet implemented for all pkg frontends, *pkg.list_repo_pkgs* will show all versions available in the various repositories for a given package, irrespective of whether or not it is installed.

```
# salt myminion pkg.list_repo_pkgs httpd
myminion:
    ----------
```

```
    base:
        |_
          ----------
          httpd:
              2.2.15-29.el6.centos
    updates:
        |_
          ----------
          httpd:
              2.2.15-30.el6.centos
```

The version strings returned by either of these functions can be used as version specifiers in pkg states.

You can install a specific version when using the `pkgs` argument by including the version after the package:

```
common_packages:
  pkg.installed:
    - pkgs:
      - unzip
      - dos2unix
      - salt-minion: 2015.8.5-1.el6
```

If the version given is the string `latest`, the latest available package version will be installed à la `pkg.latest`.

- **`refresh`** (*`bool`*) -- This parameter controls whether or not the package repo database is updated prior to installing the requested package(s).

  If `True`, the package database will be refreshed (`apt-get update` or equivalent, depending on platform) before installing.

  If `False`, the package database will *not* be refreshed before installing.

  If unset, then Salt treats package database refreshes differently depending on whether or not a `pkg` state has been executed already during the current Salt run. Once a refresh has been performed in a `pkg` state, for the remainder of that Salt run no other refreshes will be performed for `pkg` states which do not explicitly set `refresh` to `True`. This prevents needless additional refreshes from slowing down the Salt run.

- **`fromrepo`** (*`str`*) -- Specify a repository from which to install

  **Note**: Distros which use APT (Debian, Ubuntu, etc.) do not have a concept of repositories, in the same way as YUM-based distros do. When a source is added, it is assigned to a given release. Consider the following source configuration:

  ```
  deb http://ppa.launchpad.net/saltstack/salt/ubuntu precise main
  ```

  The packages provided by this source would be made available via the `precise` release, therefore `fromrepo` would need to be set to `precise` for Salt to install the package from this source.

  Having multiple sources in the same release may result in the default install candidate being newer than what is desired. If this is the case, the desired version must be specified using the `version` parameter.

  If the `pkgs` parameter is being used to install multiple packages in the same state, then instead of using `version`, use the method of version specification described in

the **Multiple Package Installation Options** section below.

Running the shell command `apt-cache policy pkgname` on a minion can help elucidate the APT configuration and aid in properly configuring states:

```
root@saltmaster:~# salt ubuntu01 cmd.run 'apt-cache policy
 ↪ffmpeg'
ubuntu01:
    ffmpeg:
    Installed: (none)
    Candidate: 7:0.10.11-1~precise1
    Version table:
        7:0.10.11-1~precise1 0
            500 http://ppa.launchpad.net/jon-severinsson/ffmpeg/
 ↪ubuntu/ precise/main amd64 Packages
        4:0.8.10-0ubuntu0.12.04.1 0
            500 http://us.archive.ubuntu.com/ubuntu/ precise-
 ↪updates/main amd64 Packages
            500 http://security.ubuntu.com/ubuntu/ precise-
 ↪security/main amd64 Packages
        4:0.8.1-0ubuntu1 0
            500 http://us.archive.ubuntu.com/ubuntu/ precise/
 ↪main amd64 Packages
```

The release is located directly after the source's URL. The actual release name is the part before the slash, so to install version **4:0.8.10-0ubuntu0.12.04.1** either `precise-updates` or `precise-security` could be used for the `fromrepo` value.

- **`skip_verify`** (*`bool`*) -- Skip the GPG verification check for the package to be installed
- **`skip_suggestions`** (*`bool`*) -- Force strict package naming. Disables lookup of package alternatives.

  New in version 2014.1.1.
- **`allow_updates`** (*`bool`*) -- Allow the package to be updated outside Salt's control (e.g. auto updates on Windows). This means a package on the Minion can have a newer version than the latest available in the repository without enforcing a re-installation of the package.

  New in version 2014.7.0.

  Example:

```
httpd:
  pkg.installed:
    - fromrepo: mycustomrepo
    - skip_verify: True
    - skip_suggestions: True
    - version: 2.0.6~ubuntu3
    - refresh: True
    - allow_updates: True
    - hold: False
```

- **`pkg_verify`** (*`bool`*) -- New in version 2014.7.0.

  For requested packages that are already installed and would not be targeted for upgrade or downgrade, use pkg.verify to determine if any of the files installed by the package have been altered. If files have been altered, the reinstall option of pkg.install

is used to force a reinstall. Types to ignore can be passed to pkg.verify (see example below). Currently, this option is supported for the following pkg providers: *yumpkg*.

Examples:

```
httpd:
  pkg.installed:
    - version: 2.2.15-30.el6.centos
    - pkg_verify: True
```

```
mypkgs:
  pkg.installed:
    - pkgs:
      - foo
      - bar: 1.2.3-4
      - baz
    - pkg_verify:
      - ignore_types: [config,doc]
```

- **normalize** (*bool*) -- Normalize the package name by removing the architecture, if the architecture of the package is different from the architecture of the operating system. The ability to disable this behavior is useful for poorly-created packages which include the architecture as an actual part of the name, such as kernel modules which match a specific kernel version.

  New in version 2014.7.0.

  Example:

```
gpfs.gplbin-2.6.32-279.31.1.el6.x86_64:
  pkg.installed:
    - normalize: False
```

- **ignore_epoch** (*bool*) -- When a package version contains an non-zero epoch (e.g. `1:3.14.159-2.el7`, and a specific version of a package is desired, set this option to `True` to ignore the epoch when comparing versions. This allows for the following SLS to be used:

```
# Actual vim-enhanced version: 2:7.4.160-1.el7
vim-enhanced:
  pkg.installed:
    - version: 7.4.160-1.el7
    - ignore_epoch: True
```

  Without this option set to `True` in the above example, the package would be installed, but the state would report as failed because the actual installed version would be `2:7.4.160-1.el7`. Alternatively, this option can be left as `False` and the full version string (with epoch) can be specified in the SLS file:

```
vim-enhanced:
  pkg.installed:
    - version: 2:7.4.160-1.el7
```

  New in version 2015.8.9.

MULTIPLE PACKAGE INSTALLATION OPTIONS: (not supported in pkgng)

**Parameters**

- **pkgs** (*list*) -- A list of packages to install from a software repository. All packages listed under `pkgs` will be installed via a single command.

```
mypkgs:
  pkg.installed:
    - pkgs:
      - foo
      - bar
      - baz
    - hold: True
```

NOTE: For *apt*, *ebuild*, *pacman*, *yumpkg*, and *zypper*, version numbers can be specified in the `pkgs` argument. For example:

```
mypkgs:
  pkg.installed:
    - pkgs:
      - foo
      - bar: 1.2.3-4
      - baz
```

Additionally, *ebuild*, *pacman* and *zypper* support the <, <=, >=, and > operators for more control over what versions will be installed. For example:

```
mypkgs:
  pkg.installed:
    - pkgs:
      - foo
      - bar: '>=1.2.3-4'
      - baz
```

NOTE: When using comparison operators, the expression must be enclosed in quotes to avoid a YAML render error.

With *ebuild* is also possible to specify a use flag list and/or if the given packages should be in package.accept_keywords file and/or the overlay from which you want the package to be installed. For example:

```
mypkgs:
  pkg.installed:
    - pkgs:
      - foo: '~'
      - bar: '~>=1.2:slot::overlay[use,-otheruse]'
      - baz
```

- **sources** (*list*) -- A list of packages to install, along with the source URI or local path from which to install each package. In the example below, `foo`, `bar`, `baz`, etc. refer to the name of the package, as it would appear in the output of the `pkg.version` or `pkg.list_pkgs` salt CLI commands.

```
mypkgs:
  pkg.installed:
    - sources:
      - foo: salt://rpms/foo.rpm
      - bar: http://somesite.org/bar.rpm
```

```
      - baz: ftp://someothersite.org/baz.rpm
      - qux: /minion/path/to/qux.rpm
```

**PLATFORM-SPECIFIC ARGUMENTS**

These are specific to each OS. If it does not apply to the execution module for your OS, it is ignored.

**Parameters**

- **hold** (*bool*) -- Force the package to be held at the current installed version. Currently works with YUM & APT based systems.

  New in version 2014.7.0.

- **names** (*list*) -- A list of packages to install from a software repository. Each package will be installed individually by the package manager.

  **Warning**: Unlike `pkgs`, the `names` parameter cannot specify a version. In addition, it makes a separate call to the package management frontend to install each package, whereas `pkgs` makes just a single call. It is therefore recommended to use `pkgs` instead of `names` to install multiple packages, both for the additional features and the performance improvement that it brings.

- **install_recommends** (*bool*) -- Whether to install the packages marked as recommended. Default is `True`. Currently only works with APT-based systems.

  New in version 2015.5.0.

  ```
  httpd:
    pkg.installed:
      - install_recommends: False
  ```

- **only_upgrade** (*bool*) -- Only upgrade the packages, if they are already installed. Default is `False`. Currently only works with APT-based systems.

  New in version 2015.5.0.

  ```
  httpd:
    pkg.installed:
      - only_upgrade: True
  ```

  **Note**: If this parameter is set to True and the package is not already installed, the state will fail.

**Returns** A dictionary containing the state of the software installation

**Rtype dict**

**Note**: The `pkg.installed` state supports the usage of `reload_modules`. This functionality allows you to force Salt to reload all modules. In many cases, Salt is clever enough to transparently reload the modules. For example, if you install a package, Salt reloads modules because some other module or state might require the package which was installed. However, there are some edge cases where this may not be the case, which is what `reload_modules` is meant to resolve.

You should only use `reload_modules` if your `pkg.installed` does some sort of installation where if you do not reload the modules future items in your state which rely on the software being installed will fail. Please see the *Reloading Modules* documentation for more information.

salt.states.pkg.**latest**(*name*, *refresh=None*, *fromrepo=None*, *skip_verify=False*, *pkgs=None*, *watch_flags=True*, ***kwargs*)

Ensure that the named package is installed and the latest available package. If the package can be updated, this state function will update the package. Generally it is better for the *installed* function to be used, as *latest* will update the package whenever a new package is available.

**name** The name of the package to maintain at the latest available version. This parameter is ignored if ``pkgs'' is used.

**fromrepo** Specify a repository from which to install

**skip_verify** Skip the GPG verification check for the package to be installed

**refresh** This parameter controls whether or not the package repo database is updated prior to checking for the latest available version of the requested packages.

If `True`, the package database will be refreshed (`apt-get update` or equivalent, depending on platform) before checking for the latest available version of the requested packages.

If `False`, the package database will *not* be refreshed before checking.

If unset, then Salt treats package database refreshes differently depending on whether or not a `pkg` state has been executed already during the current Salt run. Once a refresh has been performed in a `pkg` state, for the remainder of that Salt run no other refreshes will be performed for `pkg` states which do not explicitly set `refresh` to `True`. This prevents needless additional refreshes from slowing down the Salt run.

Multiple Package Installation Options:

(Not yet supported for: FreeBSD, OpenBSD, MacOS, and Solaris pkgutil)

**pkgs** A list of packages to maintain at the latest available version.

```
mypkgs:
  pkg.latest:
    - pkgs:
      - foo
      - bar
      - baz
```

**install_recommends** Whether to install the packages marked as recommended. Default is `True`. Currently only works with APT-based systems.

New in version 2015.5.0.

```
httpd:
  pkg.latest:
    - install_recommends: False
```

**only_upgrade** Only upgrade the packages, if they are already installed. Default is `False`. Currently only works with APT-based systems.

New in version 2015.5.0.

```
httpd:
  pkg.latest:
    - only_upgrade: True
```

**Note**: If this parameter is set to True and the package is not already installed, the state will fail.

salt.states.pkg.**mod_aggregate**(*low*, *chunks*, *running*)

The mod_aggregate function which looks up all packages in the available low chunks and merges them into a single pkgs ref in the present low data

salt.states.pkg.**mod_watch**(*name*, ***kwargs*)

Install/reinstall a package based on a watch requisite

salt.states.pkg.**purged**(*name*, *version=None*, *pkgs=None*, *normalize=True*, *ignore_epoch=False*, ***kwargs*)

Verify that a package is not installed, calling `pkg.purge` if necessary to purge the package. All configuration files are also removed.

**name** The name of the package to be purged.

**version** The version of the package that should be removed. Don't do anything if the package is installed with an unmatching version.

---

**Important**: As of version 2015.8.7, for distros which use yum/dnf, packages which have a version with a nonzero epoch (that is, versions which start with a number followed by a colon like in the example above) must have the epoch included when specifying the version number. For example:

```
vim-enhanced:
  pkg.installed:
    - version: 2:7.4.160-1.el7
```

In version 2015.8.9, an **ignore_epoch** argument has been added to *pkg.installed*, *pkg.removed*, and *pkg.purged* states, which causes the epoch to be disregarded when the state checks to see if the desired version was installed. If **ignore_epoch** was not set to `True`, and instead of `2:7.4.160-1.el7` a version of `7.4.160-1.el7` were used, this state would report success since the actual installed version includes the epoch, and the specified version would not match.

---

**normalize** [True] Normalize the package name by removing the architecture, if the architecture of the package is different from the architecture of the operating system. The ability to disable this behavior is useful for poorly-created packages which include the architecture as an actual part of the name, such as kernel modules which match a specific kernel version.

New in version 2015.8.0.

**ignore_epoch** [False] When a package version contains an non-zero epoch (e.g. `1:3.14.159-2.el7`, and a specific version of a package is desired, set this option to `True` to ignore the epoch when comparing versions. This allows for the following SLS to be used:

```
# Actual vim-enhanced version: 2:7.4.160-1.el7
vim-enhanced:
  pkg.purged:
    - version: 7.4.160-1.el7
    - ignore_epoch: True
```

Without this option set to `True` in the above example, the state would falsely report success since the actual installed version is `2:7.4.160-1.el7`. Alternatively, this option can be left as `False` and the full version string (with epoch) can be specified in the SLS file:

```
vim-enhanced:
  pkg.purged:
    - version: 2:7.4.160-1.el7
```

New in version 2015.8.9.

Multiple Package Options:

**pkgs** A list of packages to purge. Must be passed as a python list. The `name` parameter will be ignored if this option is passed. It accepts version numbers as well.

New in version 0.16.0.

salt.states.pkg.**removed**(*name*, *version=None*, *pkgs=None*, *normalize=True*, *ignore_epoch=False*, ***kwargs*)

Verify that a package is not installed, calling `pkg.remove` if necessary to remove the package.

**name** The name of the package to be removed.

**version** The version of the package that should be removed. Don't do anything if the package is installed with an unmatching version.

---

**Important**: As of version 2015.8.7, for distros which use yum/dnf, packages which have a version with a nonzero epoch (that is, versions which start with a number followed by a colon like in the example above) must have the epoch included when specifying the version number. For example:

```
vim-enhanced:
  pkg.installed:
    - version: 2:7.4.160-1.el7
```

In version 2015.8.9, an **ignore_epoch** argument has been added to *pkg.installed*, *pkg.removed*, and *pkg.purged* states, which causes the epoch to be disregarded when the state checks to see if the desired version was installed. If **ignore_epoch** was not set to `True`, and instead of `2:7.4.160-1.el7` a version of `7.4.160-1.el7` were used, this state would report success since the actual installed version includes the epoch, and the specified version would not match.

---

**normalize** [True] Normalize the package name by removing the architecture, if the architecture of the package is different from the architecture of the operating system. The ability to disable this behavior is useful for poorly-created packages which include the architecture as an actual part of the name, such as kernel modules which match a specific kernel version.

New in version 2015.8.0.

**ignore_epoch** [False] When a package version contains an non-zero epoch (e.g. `1:3.14.159-2.el7`, and a specific version of a package is desired, set this option to `True` to ignore the epoch when comparing versions. This allows for the following SLS to be used:

```
# Actual vim-enhanced version: 2:7.4.160-1.el7
vim-enhanced:
  pkg.removed:
    - version: 7.4.160-1.el7
    - ignore_epoch: True
```

Without this option set to `True` in the above example, the state would falsely report success since the actual installed version is `2:7.4.160-1.el7`. Alternatively, this option can be left as `False` and the full version string (with epoch) can be specified in the SLS file:

```
vim-enhanced:
  pkg.removed:
    - version: 2:7.4.160-1.el7
```

New in version 2015.8.9.

Multiple Package Options:

**pkgs** A list of packages to remove. Must be passed as a python list. The `name` parameter will be ignored if this option is passed. It accepts version numbers as well.

New in version 0.16.0.

`salt.states.pkg.`**`uptodate`**(*name*, *refresh=False*, ***kwargs*)

New in version 2014.7.0.

Verify that the system is completely up to date.

**name** The name has no functional value and is only used as a tracking reference

**refresh** refresh the package database before checking for new upgrades

**kwargs** Any keyword arguments to pass through to `pkg.upgrade`.

New in version 2015.5.0.

### 13.16.139 salt.states.pkgbuild

The pkgbuild state is the front of Salt package building backend. It automatically builds DEB and RPM packages from specified sources

New in version 2015.8.0.

```
salt_2015.5.2:
  pkgbuild.built:
    - runas: thatch
    - results:
      - salt-2015.5.2-2.el7.centos.noarch.rpm
      - salt-api-2015.5.2-2.el7.centos.noarch.rpm
      - salt-cloud-2015.5.2-2.el7.centos.noarch.rpm
      - salt-master-2015.5.2-2.el7.centos.noarch.rpm
      - salt-minion-2015.5.2-2.el7.centos.noarch.rpm
      - salt-ssh-2015.5.2-2.el7.centos.noarch.rpm
      - salt-syndic-2015.5.2-2.el7.centos.noarch.rpm
    - dest_dir: /tmp/pkg
    - spec: salt://pkg/salt/spec/salt.spec
    - template: jinja
    - deps:
      - salt://pkg/salt/sources/required_dependency.rpm
    - tgt: epel-7-x86_64
    - sources:
      - salt://pkg/salt/sources/logrotate.salt
      - salt://pkg/salt/sources/README.fedora
      - salt://pkg/salt/sources/salt-2015.5.2.tar.gz
      - salt://pkg/salt/sources/salt-2015.5.2-tests.patch
      - salt://pkg/salt/sources/salt-api
      - salt://pkg/salt/sources/salt-api.service
      - salt://pkg/salt/sources/salt-master
      - salt://pkg/salt/sources/salt-master.service
      - salt://pkg/salt/sources/salt-minion
      - salt://pkg/salt/sources/salt-minion.service
      - salt://pkg/salt/sources/saltpkg.sls
      - salt://pkg/salt/sources/salt-syndic
      - salt://pkg/salt/sources/salt-syndic.service
      - salt://pkg/salt/sources/SaltTesting-2015.5.8.tar.gz
/tmp/pkg:
  pkgbuild.repo
```

salt.states.pkgbuild.**built**(*name*, *runas*, *dest_dir*, *spec*, *sources*, *tgt*, *template=None*, *deps=None*, *env=None*, *results=None*, *force=False*, *always=None*, *saltenv='base'*, *log_dir='/var/log/salt/pkgbuild'*)

Ensure that the named package is built and exists in the named directory

**name** The name to track the build, the name value is otherwise unused

**runas** The user to run the build process as

**dest_dir** The directory on the minion to place the built package(s)

**spec** The location of the spec file (used for rpms)

**sources** The list of package sources

**tgt** The target platform to run the build on

**template** Run the spec file through a templating engine

Changed in version 2015.8.2: This argument is now optional, allowing for no templating engine to be

used if none is desired.

**deps** Packages required to ensure that the named package is built can be hosted on either the salt master server or on an HTTP or FTP server. Both HTTPS and HTTP are supported as well as downloading directly from Amazon S3 compatible URLs with both pre-configured and automatic IAM credentials

**env** A dictionary of environment variables to be set prior to execution. Example:

```
- env:
    DEB_BUILD_OPTIONS: 'nocheck'
```

> **Warning:** The above illustrates a common PyYAML pitfall, that **yes**, **no**, **on**, **off**, **true**, and **false** are all loaded as boolean `True` and `False` values, and must be enclosed in quotes to be used as strings. More info on this (and other) PyYAML idiosyncrasies can be found *here*.

**results** The names of the expected rpms that will be built

**force** [False] If `True`, packages will be built even if they already exist in the `dest_dir`. This is useful when building a package for continuous or nightly package builds.

New in version 2015.8.2.

**always** If `True`, packages will be built even if they already exist in the `dest_dir`. This is useful when building a package for continuous or nightly package builds.

Deprecated since version 2015.8.2: Use `force` instead.

**saltenv** The saltenv to use for files downloaded from the salt filesever

**log_dir** [/var/log/salt/rpmbuild] Root directory for log files created from the build. Logs will be organized by package name, version, OS release, and CPU architecture under this directory.

New in version 2015.8.2.

`salt.states.pkgbuild.`**`repo`**(*name*, *keyid=None*, *env=None*, *use_passphrase=False*, *gnupghome='/etc/salt/gpgkeys'*, *runas='builder'*, *timeout=15.0*)

Make a package repository and optionally sign it and packages present

The name is directory to turn into a repo. This state is best used with onchanges linked to your package building states.

**name** The directory to find packages that will be in the repository

**keyid** Changed in version 2016.3.0.

Optional Key ID to use in signing packages and repository. Utilizes Public and Private keys associated with keyid which have been loaded into the minion's Pillar data.

For example, contents from a Pillar data file with named Public and Private keys as follows:

```
gpg_pkg_priv_key: |
  -----BEGIN PGP PRIVATE KEY BLOCK-----
  Version: GnuPG v1

  lQO+BFciIfQBCADAPCtzx7I5Rl32escCMZsPzaEKWe7bIX1em4KCKkBoX47IG54b
  w82PCE8Y1jF/9Uk2m3RKVWp3YcLlc7Ap3gj6VO4ysvVz28UbnhPxsIkOlf2cq8qc
  .
  .
  Ebe+8JCQTwqSXPRTzXmy/b5WXDeM79CkLWvuGpXFor76D+ECMRPv/rawukEcNptn
  R5OmgHqvydEnO4pWbn8JzQO9YX/Us0SMHBVzLC8eIi5ZIopzalvX
  =JvW8
  -----END PGP PRIVATE KEY BLOCK-----

gpg_pkg_priv_keyname: gpg_pkg_key.pem

gpg_pkg_pub_key: |
```

```
  -----BEGIN PGP PUBLIC KEY BLOCK-----
  Version: GnuPG v1

  mQENBFciIfQBCADAPCtzx7I5Rl32escCMZsPzaEKWe7bIX1em4KCKkBoX47IG54b
  w82PCE8Y1jF/9Uk2m3RKVWp3YcLlc7Ap3gj6VO4ysvVz28UbnhPxsIkOlf2cq8qc
  .
  .
  bYP7t5iwJmQzRMyFInYRt77wkJBPCpJc9FPNebL9vlZcN4zv0KQta+4alcWivvoP
  4QIxE+/+trC6QRw2m2dHk6aAeq/J0Sc7ilZufwnNA71hf9SzRIwcFXMsLx4iLlki
  inNqW9c=
  =s1CX
  -----END PGP PUBLIC KEY BLOCK-----

gpg_pkg_pub_keyname: gpg_pkg_key.pub
```

**env** Changed in version 2016.3.0.

A dictionary of environment variables to be utilized in creating the repository. Example:

```
- env:
    OPTIONS: 'ask-passphrase'
```

> **Warning:** The above illustrates a common `PyYAML` pitfall, that **yes**, **no**, **on**, **off**, **true**, and **false** are all loaded as boolean `True` and `False` values, and must be enclosed in quotes to be used as strings. More info on this (and other) `PyYAML` idiosyncrasies can be found *here*.
>
> Use of `OPTIONS` on some platforms, for example: `ask-passphrase`, will require `gpg-agent` or similar to cache passphrases.

---

**Note:** This parameter is not used for making `yum` repositories.

---

**use_passphrase** [False] New in version 2016.3.0.

Use a passphrase with the signing key presented in `keyid`. Passphrase is received from Pillar data which could be passed on the command line with `pillar` parameter. For example:

```
pillar='{ "gpg_passphrase" : "my_passphrase" }'
```

**gnupghome** [/etc/salt/gpgkeys] New in version 2016.3.0.

Location where GPG related files are stored, used with `keyid'

**runas** [builder] New in version 2016.3.0.

User to create the repository as, and optionally sign packages.

---

**Note:** Ensure the user has correct permissions to any files and directories which are to be utilized.

---

**timeout** [15.0] New in version 2016.3.4.

Timeout in seconds to wait for the prompt for inputting the passphrase.

### 13.16.140 salt.states.pkgng

#### Manage package remote repo using FreeBSD pkgng

Salt can manage the URL pkgng pulls packages from. ATM the state and module are small so use cases are typically rather simple:

```
pkgng_clients:
  pkgng.update_packaging_site:
    - name: "http://192.168.0.2"
```

salt.states.pkgng.**update_packaging_site**(*name*)

### 13.16.141 salt.states.pkgrepo

#### Management of APT/YUM package repos

Package repositories for APT-based and YUM-based distros can be managed with these states. Here is some example SLS:

```
base:
  pkgrepo.managed:
    - humanname: CentOS-$releasever - Base
    - mirrorlist: http://mirrorlist.centos.org/?release=$releasever&arch=$basearch&
 ↪repo=os
    - comments:
        - 'http://mirror.centos.org/centos/$releasever/os/$basearch/'
    - gpgcheck: 1
    - gpgkey: file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-6
```

```
base:
  pkgrepo.managed:
    - humanname: Logstash PPA
    - name: deb http://ppa.launchpad.net/wolfnet/logstash/ubuntu precise main
    - dist: precise
    - file: /etc/apt/sources.list.d/logstash.list
    - keyid: 28B04E4A
    - keyserver: keyserver.ubuntu.com
    - require_in:
      - pkg: logstash

  pkg.latest:
    - name: logstash
    - refresh: True
```

```
base:
  pkgrepo.managed:
    - humanname: deb-multimedia
    - name: deb http://www.deb-multimedia.org stable main
    - file: /etc/apt/sources.list.d/deb-multimedia.list
    - key_url: salt://deb-multimedia/files/marillat.pub
```

```
base:
  pkgrepo.managed:
    - humanname: Google Chrome
```

```
    - name: deb http://dl.google.com/linux/chrome/deb/ stable main
    - dist: stable
    - file: /etc/apt/sources.list.d/chrome-browser.list
    - require_in:
      - pkg: google-chrome-stable
    - gpgcheck: 1
    - key_url: https://dl-ssl.google.com/linux/linux_signing_key.pub
```

```
base:
  pkgrepo.managed:
    - ppa: wolfnet/logstash
  pkg.latest:
    - name: logstash
    - refresh: True
```

---

**Note**: On Ubuntu systems, the `python-software-properties` package should be installed for better support of PPA repositories. To check if this package is installed, run `dpkg -l python-software-properties`.

Also, some Ubuntu releases have a bug in their `python-software-properties` package, a missing dependency on pycurl, so `python-pycurl` will need to be manually installed if it is not present once `python-software-properties` is installed.

On Ubuntu & Debian systems, the `` `python-apt `` package is required to be installed. To check if this package is installed, run `dpkg -l python-software-properties`. `python-apt` will need to be manually installed if it is not present.

---

`salt.states.pkgrepo.`**`absent`**(*name*, ***kwargs*)

This function deletes the specified repo on the system, if it exists. It is essentially a wrapper around pkg.del_repo.

**name** The name of the package repo, as it would be referred to when running the regular package manager commands.

**UBUNTU-SPECIFIC OPTIONS**

**ppa** On Ubuntu, you can take advantage of Personal Package Archives on Launchpad simply by specifying the user and archive name.

```
logstash-ppa:
  pkgrepo.absent:
    - ppa: wolfnet/logstash
```

**ppa_auth** For Ubuntu PPAs there can be private PPAs that require authentication to access. For these PPAs the username/password can be specified. This is required for matching if the name format uses the `ppa:` specifier and is private (requires username/password to access, which is encoded in the URI).

```
logstash-ppa:
  pkgrepo.absent:
    - ppa: wolfnet/logstash
    - ppa_auth: username:password
```

**keyid** If passed, then the GPG key corresponding to the passed KeyID will also be removed.

**keyid_ppa** [False] If set to `True`, the GPG key's ID will be looked up from ppa.launchpad.net and removed, and the `keyid` argument will be ignored.

---

**Note**: This option will be disregarded unless the `ppa` argument is present.

---

`salt.states.pkgrepo.`**`managed`**(*name*, *ppa=None*, ***kwargs*)

This state manages software package repositories. Currently, *yum*, *apt*, and *zypper* repositories are supported.

YUM/DNF/ZYPPER-BASED SYSTEMS

---

**Note**: One of `baseurl` or `mirrorlist` below is required. Additionally, note that this state is not presently capable of managing more than one repo in a single repo file, so each instance of this state will manage a single repo file containing the configuration for a single repo.

---

**name** This value will be used in two ways: Firstly, it will be the repo ID, as seen in the entry in square brackets (e.g. `[foo]`) for a given repo. Secondly, it will be the name of the file as stored in /etc/yum.repos.d (e.g. `/etc/yum.repos.d/foo.conf`).

**enabled** [True] Whether or not the repo is enabled. Can be specified as True/False or 1/0.

**disabled** [False] Included to reduce confusion due to APT's use of the `disabled` argument. If this is passed for a yum/dnf/zypper-based distro, then the reverse will be passed as `enabled`. For example passing `disabled=True` will assume `enabled=False`.

**humanname** This is used as the ``name'' value in the repo file in `/etc/yum.repos.d/` (or `/etc/zypp/repos.d` for Suse distros).

**baseurl** The URL to a yum repository

**mirrorlist** A URL which points to a file containing a collection of baseurls

**comments** Sometimes you want to supply additional information, but not as enabled configuration. Anything supplied for this list will be saved in the repo configuration with a comment marker (#) in front.

Additional configuration values seen in yum repo files, such as `gpgkey` or `gpgcheck`, will be used directly as key-value pairs. For example:

```
foo:
  pkgrepo.managed:
    - humanname: Personal repo for foo
    - baseurl: https://mydomain.tld/repo/foo/$releasever/$basearch
    - gpgkey: file:///etc/pki/rpm-gpg/foo-signing-key
    - gpgcheck: 1
```

APT-BASED SYSTEMS

**ppa** On Ubuntu, you can take advantage of Personal Package Archives on Launchpad simply by specifying the user and archive name. The keyid will be queried from launchpad and everything else is set automatically. You can override any of the below settings by simply setting them as you would normally. For example:

```
logstash-ppa:
  pkgrepo.managed:
    - ppa: wolfnet/logstash
```

**ppa_auth** For Ubuntu PPAs there can be private PPAs that require authentication to access. For these PPAs the username/password can be passed as an HTTP Basic style username/password combination.

```
logstash-ppa:
  pkgrepo.managed:
    - ppa: wolfnet/logstash
    - ppa_auth: username:password
```

**name** On apt-based systems this must be the complete entry as it would be seen in the sources.list file. This can have a limited subset of components (i.e. `main') which can be added/modified with the `comps` option.

```
precise-repo:
  pkgrepo.managed:
```

```
    - name: deb http://us.archive.ubuntu.com/ubuntu precise main
```

**Note**: The above example is intended as a more readable way of configuring the SLS, it is equivalent to the following:

```
'deb http://us.archive.ubuntu.com/ubuntu precise main':
  pkgrepo.managed
```

**disabled** [False] Toggles whether or not the repo is used for resolving dependencies and/or installing packages.

**enabled** [True] Included to reduce confusion due to yum/dnf/zypper's use of the `enabled` argument. If this is passed for an APT-based distro, then the reverse will be passed as `disabled`. For example, passing `enabled=False` will assume `disabled=False`.

**comps** On apt-based systems, comps dictate the types of packages to be installed from the repository (e.g. main, nonfree, ...). For purposes of this, comps should be a comma-separated list.

**file** The filename for the .list that the repository is configured in. It is important to include the full-path AND make sure it is in a directory that APT will look in when handling packages

**dist** This dictates the release of the distro the packages should be built for. (e.g. unstable). This option is rarely needed.

**keyid** The KeyID of the GPG key to install. This option also requires the `keyserver` option to be set.

**keyserver** This is the name of the keyserver to retrieve gpg keys from. The `keyid` option must also be set for this option to work.

**key_url** URL to retrieve a GPG key from. Allows the usage of `http://`, `https://` as well as `salt://`.

**Note**: Use either `keyid`/`keyserver` or `key_url`, but not both.

**consolidate** If set to true, this will consolidate all sources definitions to the sources.list file, cleanup the now unused files, consolidate components (e.g. main) for the same URI, type, and architecture to a single line, and finally remove comments from the sources.list file. The consolidate will run every time the state is processed. The option only needs to be set on one repo managed by salt to take effect.

**clean_file** If set to true, empty file before config repo, dangerous if use multiple sources in one file.

New in version 2015.8.0.

**refresh_db** If set to false this will skip refreshing the apt package database on debian based systems.

**require_in** Set this to a list of pkg.installed or pkg.latest to trigger the running of apt-get update prior to attempting to install these packages. Setting a require in the pkg will not work for this.

### 13.16.142 salt.states.portage_config

#### Management of Portage package configuration on Gentoo

A state module to manage Portage configuration on Gentoo

```
salt:
    portage_config.flags:
        - use:
            - openssl
```

`salt.states.portage_config.`**`flags`**(*name*, *use=None*, *accept_keywords=None*, *env=None*, *license=None*, *properties=None*, *unmask=False*, *mask=False*)

Enforce the given flags on the given package or `DEPEND` atom.

> **Warning:** In most cases, the affected package(s) need to be rebuilt in order to apply the changes.

**name** The name of the package or its DEPEND atom
**use** A list of USE flags
**accept_keywords** A list of keywords to accept. ~ARCH means current host arch, and will be translated into a line without keywords
**env** A list of environment files
**license** A list of accepted licenses
**properties** A list of additional properties
**unmask** A boolean to unmask the package
**mask** A boolean to mask the package

### 13.16.143 salt.states.ports

Manage software from FreeBSD ports

New in version 2014.1.0.

---

**Note:** It may be helpful to use a higher timeout when running a *ports.installed* state, since compiling the port may exceed Salt's timeout.

```
salt -t 1200 '*' state.highstate
```

---

salt.states.ports.**installed**(*name*, *options=None*)

Verify that the desired port is installed, and that it was compiled with the desired options.

**options** Make sure that the desired non-default options are set

> **Warning:** Any build options not passed here assume the default values for the port, and are not just differences from the existing cached options from a previous `make config`.

Example usage:

```
security/nmap:
  ports.installed:
    - options:
      - IPV6: off
```

### 13.16.144 salt.states.postgres_cluster module

#### Management of PostgreSQL clusters

The postgres_cluster state module is used to manage PostgreSQL clusters. Clusters can be set as either absent or present

```
create cluster 9.3 main:
  postgres_cluster.present:
      - name: 'main'
      - version: '9.3'
```

salt.states.postgres_cluster.**absent**(*version*, *name*)

Ensure that the named cluster is absent

**version** Version of the postgresql server of the cluster to remove

**name** The name of the cluster to remove

New in version 2015.XX.

salt.states.postgres_cluster.**present**(*version*, *name*, *port=None*, *encoding=None*, *locale=None*, *datadir=None*)

Ensure that the named cluster is present with the specified properties. For more information about all of these options see man pg_createcluster(1)

**version** Version of the postgresql cluster

**name** The name of the cluster

**port** Cluster port

**encoding** The character encoding scheme to be used in this database

**locale** Locale with which to create cluster

**datadir** Where the cluster is stored

New in version 2015.XX.

### 13.16.145 salt.states.postgres_database

#### Management of PostgreSQL databases

The postgres_database module is used to create and manage Postgres databases. Databases can be set as either absent or present

```
frank:
  postgres_database.present
```

salt.states.postgres_database.**absent**(*name*, *user=None*, *maintenance_db=None*, *db_password=None*, *db_host=None*, *db_port=None*, *db_user=None*)

Ensure that the named database is absent

**name** The name of the database to remove

**db_user** database username if different from config or default

**db_password** user password if any password for a specified user

**db_host** Database host if different from config or default

**db_port** Database port if different from config or default

**user** System user all operations should be performed on behalf of

New in version 0.17.0.

salt.states.postgres_database.**present**(*name*, *tablespace=None*, *encoding=None*, *lc_collate=None*, *lc_ctype=None*, *owner=None*, *owner_recurse=False*, *template=None*, *user=None*, *maintenance_db=None*, *db_password=None*, *db_host=None*, *db_port=None*, *db_user=None*)

Ensure that the named database is present with the specified properties. For more information about all of these options see man createdb(1)

**name** The name of the database to manage

**tablespace** Default tablespace for the database

**encoding** The character encoding scheme to be used in this database

**lc_collate** The LC_COLLATE setting to be used in this database

**lc_ctype** The LC_CTYPE setting to be used in this database

**owner** The username of the database owner

**owner_recurse** Recurse owner change to all relations in the database
**template** The template database from which to build this database
**user** System user all operations should be performed on behalf of
**db_user** database username if different from config or default
**db_password** user password if any password for a specified user
**db_host** Database host if different from config or default
**db_port** Database port if different from config or default

New in version 0.17.0.

### 13.16.146 salt.states.postgres_extension

#### Management of PostgreSQL extensions

A module used to install and manage PostgreSQL extensions.

```
adminpack:
  postgres_extension.present
```

New in version 2014.7.0.

`salt.states.postgres_extension.`**`absent`**(*name*, *if_exists=None*, *restrict=None*, *cascade=None*, *user=None*, *maintenance_db=None*, *db_user=None*, *db_password=None*, *db_host=None*, *db_port=None*)

Ensure that the named extension is absent.
**name** Extension name of the extension to remove
**if_exists** Add if exist slug
**restrict** Add restrict slug
**cascade** Drop on cascade
**user** System user all operations should be performed on behalf of
**maintenance_db** Database to act on
**db_user** Database username if different from config or default
**db_password** User password if any password for a specified user
**db_host** Database host if different from config or default
**db_port** Database port if different from config or default

`salt.states.postgres_extension.`**`present`**(*name*, *if_not_exists=None*, *schema=None*, *ext_version=None*, *from_version=None*, *user=None*, *maintenance_db=None*, *db_user=None*, *db_password=None*, *db_host=None*, *db_port=None*)

Ensure that the named extension is present.

---

**Note:** Before you can use the state to load an extension into a database, the extension's supporting files must be already installed.

---

For more information about all of these options see `CREATE EXTENSION` SQL command reference in the PostgreSQL documentation.
**name** The name of the extension to be installed
**if_not_exists** Add an `IF NOT EXISTS` parameter to the DDL statement
**schema** Schema to install the extension into
**ext_version** Version to install
**from_version** Old extension version if already installed
**user** System user all operations should be performed on behalf of
**maintenance_db** Database to act on

**db_user** Database username if different from config or default
**db_password** User password if any password for a specified user
**db_host** Database host if different from config or default
**db_port** Database port if different from config or default

### 13.16.147 salt.states.postgres_group

#### Management of PostgreSQL groups (roles)

The postgres_group module is used to create and manage Postgres groups.

```
frank:
  postgres_group.present
```

salt.states.postgres_group.**absent**(*name*, *user=None*, *maintenance_db=None*, *db_password=None*, *db_host=None*, *db_port=None*, *db_user=None*)

Ensure that the named group is absent
**name** The groupname of the group to remove
**user** System user all operations should be performed on behalf of

New in version 0.17.0.

**db_user** database username if different from config or defaul
**db_password** user password if any password for a specified user
**db_host** Database host if different from config or default
**db_port** Database port if different from config or default

salt.states.postgres_group.**present**(*name*, *createdb=None*, *createroles=None*, *createuser=None*, *encrypted=None*, *superuser=None*, *inherit=None*, *login=None*, *replication=None*, *password=None*, *refresh_password=None*, *groups=None*, *user=None*, *maintenance_db=None*, *db_password=None*, *db_host=None*, *db_port=None*, *db_user=None*)

Ensure that the named group is present with the specified privileges Please note that the user/group notion in postgresql is just abstract, we have roles, where users can be seen as roles with the `LOGIN` privilege and groups the others.
**name** The name of the group to manage
**createdb** Is the group allowed to create databases?
**createroles** Is the group allowed to create other roles/users
**createuser** Alias to create roles, and history problem, in pgsql normally createuser == superuser
**encrypted** Should the password be encrypted in the system catalog?
**login** Should the group have login perm
**inherit** Should the group inherit permissions
**superuser** Should the new group be a ``superuser''
**replication** Should the new group be allowed to initiate streaming replication
**password** The group's password It can be either a plain string or a md5 postgresql hashed password:

```
'md5{MD5OF({password}{role}}'
```

If encrypted is `None` or `True`, the password will be automatically encrypted to the previous format if it is not already done.
**refresh_password** Password refresh flag

Boolean attribute to specify whether to password comparison check should be performed.

If refresh_password is `True`, the password will be automatically updated without extra password change check.

This behaviour makes it possible to execute in environments without superuser access available, e.g. Amazon RDS for PostgreSQL

**groups** A string of comma separated groups the group should be in
**user** System user all operations should be performed on behalf of

New in version 0.17.0.

**db_user** database username if different from config or default
**db_password** user password if any password for a specified user
**db_host** Database host if different from config or default
**db_port** Database port if different from config or default

### 13.16.148 salt.states.postgres_initdb

#### Initialization of PostgreSQL data directory

The postgres_initdb module is used to initialize the postgresql data directory.

New in version 2016.3.0.

```
pgsql-data-dir:
  postgres_initdb.present:
    - name: /var/lib/pgsql/data
    - auth: password
    - user: postgres
    - password: strong_password
    - encoding: UTF8
    - locale: C
    - runas: postgres
```

salt.states.postgres_initdb.**present**(*name*, *user=None*, *password=None*, *auth='password'*, *encoding='UTF8'*, *locale=None*, *runas=None*)

Initialize the PostgreSQL data directory
**name** The name of the directory to initialize
**user** The database superuser name
**password** The password to set for the postgres user
**auth** The default authentication method for local connections
**encoding** The default encoding for new databases
**locale** The default locale for new databases
**runas** The system user the operation should be performed on behalf of

### 13.16.149 salt.states.postgres_language

#### Management of PostgreSQL languages

The postgres_language module is used to create and manage Postgres languages. Languages can be set as either absent or present

New in version 2016.3.0.

```
plpgsql:
  postgres_language.present:
    - maintenance_db: testdb
```

```
plpgsql:
  postgres_language.absent:
    - maintenance_db: testdb
```

salt.states.postgres_language.**absent**(*name*, *maintenance_db*, *user=None*, *db_password=None*, *db_host=None*, *db_port=None*, *db_user=None*)

Ensure that a named language is absent in the specified database.

**name** The name of the language to remove

**maintenance_db** The name of the database in which the language is to be installed

**user** System user all operations should be performed on behalf of

**db_user** database username if different from config or default

**db_password** user password if any password for a specified user

**db_host** Database host if different from config or default

**db_port** Database port if different from config or default

salt.states.postgres_language.**present**(*name*, *maintenance_db*, *user=None*, *db_password=None*, *db_host=None*, *db_port=None*, *db_user=None*)

Ensure that a named language is present in the specified database.

**name** The name of the language to install

**maintenance_db** The name of the database in which the language is to be installed

**user** System user all operations should be performed on behalf of

**db_user** database username if different from config or default

**db_password** user password if any password for a specified user

**db_host** Database host if different from config or default

**db_port** Database port if different from config or default

### 13.16.150 salt.states.postgres_privileges

#### Management of PostgreSQL Privileges

The postgres_privileges module is used to manage Postgres privileges. Privileges can be set as either absent or present.

Privileges can be set on the following database object types:

- database
- schema
- tablespace
- table
- sequence
- language
- group

Setting the grant option is supported as well.

New in version 2016.3.0.

```
baruwa:
  postgres_privileges.present:
    - object_name: awl
    - object_type: table
    - privileges:
```

```
      - SELECT
      - INSERT
      - DELETE
    - grant_option: False
    - prepend: public
    - maintenance_db: testdb
```

```
andrew:
  postgres_privileges.present:
    - object_name: admins
    - object_type: group
    - grant_option: False
    - maintenance_db: testdb
```

```
baruwa:
  postgres_privileges.absent:
    - object_name: awl
    - object_type: table
    - privileges:
      - SELECT
      - INSERT
      - DELETE
    - prepend: public
    - maintenance_db: testdb
```

```
andrew:
  postgres_privileges.absent:
    - object_name: admins
    - object_type: group
    - maintenance_db: testdb
```

salt.states.postgres_privileges.**absent**(*name*, *object_name*, *object_type*, *privileges=None*, *prepend='public'*, *maintenance_db=None*, *user=None*, *db_password=None*, *db_host=None*, *db_port=None*, *db_user=None*)

Revoke the requested privilege(s) on the specificed object(s)

**name** Name of the role whose privileges should be revoked

**object_name** Name of the object on which the revoke is to be performed

**object_type** The object type, which can be one of the following:

- table
- sequence
- schema
- tablespace
- language
- database
- group

**privileges** Comma separated list of privileges to revoke, from the list below:

- INSERT
- CREATE
- TRUNCATE
- CONNECT
- TRIGGER
- SELECT
- USAGE
- TEMPORARY

- UPDATE
- EXECUTE
- REFERENCES
- DELETE
- ALL

**note** privileges should not be set when revoking group membership

**prepend** Table and Sequence object types live under a schema so this should be provided if the object is not under the default *public* schema

**maintenance_db** The name of the database in which the language is to be installed

**user** System user all operations should be performed on behalf of

**db_user** database username if different from config or default

**db_password** user password if any password for a specified user

**db_host** Database host if different from config or default

**db_port** Database port if different from config or default

salt.states.postgres_privileges.**present**(*name*, *object_name*, *object_type*, *privileges=None*, *grant_option=None*, *prepend='public'*, *maintenance_db=None*, *user=None*, *db_password=None*, *db_host=None*, *db_port=None*, *db_user=None*)

Grant the requested privilege(s) on the specified object to a role

**name** Name of the role to which privileges should be granted

**object_name** Name of the object on which the grant is to be performed. `ALL' may be used for objects of type `table' or `sequence'.

**object_type** The object type, which can be one of the following:

- table
- sequence
- schema
- tablespace
- language
- database
- group

**privileges** List of privileges to grant, from the list below:

- INSERT
- CREATE
- TRUNCATE
- CONNECT
- TRIGGER
- SELECT
- USAGE
- TEMPORARY
- UPDATE
- EXECUTE
- REFERENCES
- DELETE
- ALL

**note** privileges should not be set when granting group membership

**grant_option** If grant_option is set to True, the recipient of the privilege can in turn grant it to others

**prepend** Table and Sequence object types live under a schema so this should be provided if the object is not under the default *public* schema

**maintenance_db** The name of the database in which the language is to be installed

**user** System user all operations should be performed on behalf of

**db_user** database username if different from config or default

**db_password** user password if any password for a specified user

**db_host** Database host if different from config or default
**db_port** Database port if different from config or default

### 13.16.151 salt.states.postgres_schema

#### Management of PostgreSQL schemas

The postgres_schemas module is used to create and manage Postgres schemas.

```
public:
  postgres_schema.present 'dbname' 'name'
```

salt.states.postgres_schema.**absent**(*dbname*, *name*, *db_user=None*, *db_password=None*, *db_host=None*, *db_port=None*)

Ensure that the named schema is absent.
**dbname** The database's name will work on
**name** The name of the schema to remove
**db_user** database username if different from config or default
**db_password** user password if any password for a specified user
**db_host** Database host if different from config or default
**db_port** Database port if different from config or default

salt.states.postgres_schema.**present**(*dbname*, *name*, *owner=None*, *db_user=None*, *db_password=None*, *db_host=None*, *db_port=None*)

Ensure that the named schema is present in the database.
**dbname** The database's name will work on
**name** The name of the schema to manage
**owner** The database user that will be the owner of the schema
**db_user** database username if different from config or default
**db_password** user password if any password for a specified user
**db_host** Database host if different from config or default
**db_port** Database port if different from config or default

### 13.16.152 salt.states.postgres_tablespace

#### Management of PostgreSQL tablespace

A module used to create and manage PostgreSQL tablespaces.

```
ssd-tablespace:
  postgres_tablespace.present:
    - name: indexes
    - directory: /mnt/ssd-data
```

New in version 2015.8.0.

salt.states.postgres_tablespace.**absent**(*name*, *user=None*, *maintenance_db=None*, *db_user=None*, *db_password=None*, *db_host=None*, *db_port=None*)

Ensure that the named tablespace is absent.
**name** The name of the tablespace to remove
**user** System user all operations should be performed on behalf of
**maintenance_db** Database to act on
**db_user** Database username if different from config or defaul

**db_password** User password if any password for a specified user
**db_host** Database host if different from config or default
**db_port** Database port if different from config or default

salt.states.postgres_tablespace.**present**(*name*, *directory*, *options=None*, *owner=None*, *user=None*, *maintenance_db=None*, *db_password=None*, *db_host=None*, *db_port=None*, *db_user=None*)

Ensure that the named tablespace is present with the specified properties. For more information about all of these options see man ``create_tablespace``(7).
**name** The name of the tablespace to create/manage.
**directory** The directory where the tablespace will be located, must already exist
**options** A dictionary of options to specify for the tablespace. Currently, the only tablespace options supported are `seq_page_cost` and `random_page_cost`. Default values are shown in the example below:

```
my_space:
  postgres_tablespace.present:
    - directory: /srv/my_tablespace
    - options:
        seq_page_cost: 1.0
        random_page_cost: 4.0
```

**owner** The database user that will be the owner of the tablespace. Defaults to the user executing the command (i.e. the *user* option)
**user** System user all operations should be performed on behalf of
**maintenance_db** Database to act on
**db_user** Database username if different from config or default
**db_password** User password if any password for a specified user
**db_host** Database host if different from config or default
**db_port** Database port if different from config or default

### 13.16.153 salt.states.postgres_user

#### Management of PostgreSQL users (roles)

The postgres_users module is used to create and manage Postgres users.

```
frank:
  postgres_user.present
```

salt.states.postgres_user.**absent**(*name*, *user=None*, *maintenance_db=None*, *db_password=None*, *db_host=None*, *db_port=None*, *db_user=None*)

Ensure that the named user is absent
**name** The username of the user to remove
**user** System user all operations should be performed on behalf of

New in version 0.17.0.

**db_user** database username if different from config or default
**db_password** user password if any password for a specified user
**db_host** Database host if different from config or default
**db_port** Database port if different from config or default

salt.states.postgres_user.**present**(*name*, *createdb=None*, *createroles=None*, *createuser=None*, *encrypted=None*, *superuser=None*, *replication=None*, *inherit=None*, *login=None*, *password=None*, *default_password=None*, *refresh_password=None*, *groups=None*, *user=None*, *maintenance_db=None*, *db_password=None*, *db_host=None*, *db_port=None*, *db_user=None*)

Ensure that the named user is present with the specified privileges Please note that the user/group notion in postgresql is just abstract, we have roles, where users can be seens as roles with the LOGIN privilege and groups the others.

**name** The name of the system user to manage.

**createdb** Is the user allowed to create databases?

**createroles** Is the user allowed to create other users?

**createuser** Alias to create roles

**encrypted** Should the password be encrypted in the system catalog?

**login** Should the group have login perm

**inherit** Should the group inherit permissions

**superuser** Should the new user be a ``superuser''

**replication** Should the new user be allowed to initiate streaming replication

**password** The system user's password. It can be either a plain string or a md5 postgresql hashed password:

```
'md5{MD5OF({password}{role}}'
```

If encrypted is None or True, the password will be automatically encrypted to the previous format if it is not already done.

**default_passwoord** The password used only when creating the user, unless password is set.

New in version 2016.3.0.

**refresh_password** Password refresh flag

Boolean attribute to specify whether to password comparison check should be performed.

If refresh_password is `True`, the password will be automatically updated without extra password change check.

This behaviour makes it possible to execute in environments without superuser access available, e.g. Amazon RDS for PostgreSQL

**groups** A string of comma separated groups the user should be in

**user** System user all operations should be performed on behalf of

New in version 0.17.0.

**db_user** Postres database username, if different from config or default.

**db_password** Postgres user's password, if any password, for a specified db_user.

**db_host** Postgres database host, if different from config or default.

**db_port** Postgres database port, if different from config or default.

## 13.16.154 salt.states.powerpath

### Powerpath configuration support

Allows configuration of EMC Powerpath. Currently only addition/deletion of licenses is supported.

```
key:
  powerpath.license_present: []
```

salt.states.powerpath.**license_absent**(*name*)
Ensures that the specified PowerPath license key is absent on the host.
**name** The license key to ensure is absent

salt.states.powerpath.**license_present**(*name*)
Ensures that the specified PowerPath license key is present on the host.
**name** The license key to ensure is present

### 13.16.155 salt.states.process

#### Process Management

Ensure a process matching a given pattern is absent.

```
httpd-absent:
  process.absent:
    - name: apache2
```

salt.states.process.**absent**(*name*, *user=None*, *signal=None*)
Ensures that the named command is not running.
**name** The pattern to match.
**user** The user process belongs
**signal** Signal to send to the process(es).

### 13.16.156 salt.states.pushover

#### Send a message to PushOver

This state is useful for sending messages to PushOver during state runs.

New in version 2015.5.0.

```
pushover-message:
  pushover.post_message:
    - user: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
    - token: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
    - title: Salt Returner
    - device: phone
    - priority: -1
    - expire: 3600
    - retry: 5
    - message: 'This state was executed successfully.'
```

The api key can be specified in the master or minion configuration like below: .. code-block:: yaml

**pushover**: token: peWcBiMOS9HrZG15peWcBiMOS9HrZG15

salt.states.pushover.**post_message**(*name*, *user=None*, *device=None*, *message=None*, *title=None*, *priority=None*, *expire=None*, *retry=None*, *sound=None*, *api_version=1*, *token=None*)
Send a message to a PushOver channel.

```
pushover-message:
  pushover.post_message:
    - user: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
    - token: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
```

```
    - title: Salt Returner
    - device: phone
    - priority: -1
    - expire: 3600
    - retry: 5
```

The following parameters are required:
**name** The unique name for this event.
**user** The user or group of users to send the message to. Must be ID of user, not name or email address.
**message** The message that is to be sent to the PushOver channel.
The following parameters are optional:
**title** The title to use for the message.
**device** The device for the user to send the message to.
**priority** The priority for the message.
**expire** The message should expire after specified amount of seconds.
**retry** The message should be resent this many times.
**token** The token for PushOver to use for authentication, if not specified in the configuration options of master or minion.

### 13.16.157 salt.states.pyenv

#### Managing python installations with pyenv

This module is used to install and manage python installations with pyenv. Different versions of python can be installed, and uninstalled. pyenv will be installed automatically the first time it is needed and can be updated later. This module will *not* automatically install packages which pyenv will need to compile the versions of python.

If pyenv is run as the root user then it will be installed to /usr/local/pyenv, otherwise it will be installed to the users ~/.pyenv directory. To make pyenv available in the shell you may need to add the pyenv/shims and pyenv/bin directories to the users PATH. If you are installing as root and want other users to be able to access pyenv then you will need to add pyenv_ROOT to their environment.

This is how a state configuration could look like:

```
pyenv-deps:
  pkg.installed:
    - pkgs:
      - make
      - build-essential
      - libssl-dev
      - zlib1g-dev
      - libbz2-dev
      - libreadline-dev
      - libsqlite3-dev
      - wget
      - curl
      - llvm
python-2.6:
  pyenv.absent:
    - require:
      - pkg: pyenv-deps

python-2.7.6:
  pyenv.installed:
    - default: True
```

```
    - require:
      - pkg: pyenv-deps
```

salt.states.pyenv.**absent**(*name*, *user=None*)

Verify that the specified python is not installed with pyenv. pyenv is installed if necessary.

**name** The version of python to uninstall

**user**: **None** The user to run pyenv as.

New in version 0.17.0.

New in version 0.16.0.

salt.states.pyenv.**install_pyenv**(*name*, *user=None*)

Install pyenv if not installed. Allows you to require pyenv be installed prior to installing the plugins. Useful if you want to install pyenv plugins via the git or file modules and need them installed before installing any rubies.

Use the pyenv.root configuration option to set the path for pyenv if you want a system wide install that is not in a user home dir.

**user**: **None** The user to run pyenv as.

salt.states.pyenv.**installed**(*name*, *default=False*, *user=None*)

Verify that the specified python is installed with pyenv. pyenv is installed if necessary.

**name** The version of python to install

**default** [False] Whether to make this python the default.

**user**: **None** The user to run pyenv as.

New in version 0.17.0.

New in version 0.16.0.

### 13.16.158 salt.states.pyrax_queues

#### Manage Rackspace Queues

New in version 2015.5.0.

Create and destroy Rackspace queues. Be aware that this interacts with Rackspace's services, and so may incur charges.

This module uses `pyrax`, which can be installed via package, or pip. This module is greatly inspired by boto_* modules from SaltStack code source.

```
myqueue:
    pyrax_queues.present:
        - provider: my-pyrax

myqueue:
    pyrax_queues.absent:
        - provider: my-pyrax
```

salt.states.pyrax_queues.**absent**(*name*, *provider*)

Ensure the named Rackspace queue is deleted.

**name** Name of the Rackspace queue.

**provider** Salt Cloud provider

salt.states.pyrax_queues.**present**(*name*, *provider*)

Ensure the RackSpace queue exists.

**name** Name of the Rackspace queue.

**provider** Salt Cloud Provider

### 13.16.159 salt.states.quota

#### Management of POSIX Quotas

The quota can be managed for the system:

```
/:
  quota.mode:
    mode: off
    quotatype: user
```

`salt.states.quota.`**`mode`**(*name*, *mode*, *quotatype*)

Set the quota for the system

**name** The filesystem to set the quota mode on

**mode** Whether the quota system is on or off

**quotatype** Must be `user` or `group`

### 13.16.160 salt.states.rabbitmq_cluster

#### Manage RabbitMQ Clusters

Example:

```
rabbit@rabbit.example.com:
  rabbitmq_cluster.join:
    - user: rabbit
    - host: rabbit.example.com
```

`salt.states.rabbitmq_cluster.`**`join`**(*name*, *host*, *user='rabbit'*, *ram_node=None*, *runas='root'*)

This function is an alias of `joined`.

Ensure the current node joined to a cluster with node user@host

**name** Irrelevant, not used (recommended: user@host)

**user** The user of node to join to (default: rabbit)

**host** The host of node to join to

**ram_node** Join node as a RAM node

**runas** The user to run the rabbitmq command as

`salt.states.rabbitmq_cluster.`**`joined`**(*name*, *host*, *user='rabbit'*, *ram_node=None*, *runas='root'*)

Ensure the current node joined to a cluster with node user@host

**name** Irrelevant, not used (recommended: user@host)

**user** The user of node to join to (default: rabbit)

**host** The host of node to join to

**ram_node** Join node as a RAM node

**runas** The user to run the rabbitmq command as

### 13.16.161 salt.states.rabbitmq_plugin

#### Manage RabbitMQ Plugins

New in version 2014.1.0.

Example:

```
some_plugin:
  rabbitmq_plugin.enabled: []
```

salt.states.rabbitmq_plugin.**disabled**(*name*, *runas=None*)

Ensure the RabbitMQ plugin is disabled.

**name** The name of the plugin

**runas** The user to run the rabbitmq-plugin command as

salt.states.rabbitmq_plugin.**enabled**(*name*, *runas=None*)

Ensure the RabbitMQ plugin is enabled.

**name** The name of the plugin

**runas** The user to run the rabbitmq-plugin command as

### 13.16.162 salt.states.rabbitmq_policy

#### Manage RabbitMQ Policies

**maintainer** Benn Eichhorn <benn@getlocalmeasure.com>

**maturity** new

**platform** all

Example:

```
rabbit_policy:
  rabbitmq_policy.present:
    - name: HA
    - pattern: '.*'
    - definition: '{"ha-mode": "all"}'
```

salt.states.rabbitmq_policy.**absent**(*name*, *vhost='/'*, *runas=None*)

Ensure the named policy is absent

Reference: http://www.rabbitmq.com/ha.html

**name** The name of the policy to remove

**runas** Name of the user to run the command as

salt.states.rabbitmq_policy.**present**(*name*, *pattern*, *definition*, *priority=0*, *vhost='/'*, *runas=None*)

Ensure the RabbitMQ policy exists.

Reference: http://www.rabbitmq.com/ha.html

**name** Policy name

**pattern** A regex of queues to apply the policy to

**definition** A json dict describing the policy

**priority** Priority (defaults to 0)

**vhost** Virtual host to apply to (defaults to `/')

**runas** Name of the user to run the command as

### 13.16.163 salt.states.rabbitmq_user

#### Manage RabbitMQ Users

Example:

```
rabbit_user:
  rabbitmq_user.present:
    - password: password
    - force: True
    - tags:
      - monitoring
      - user
    - perms:
      - '/':
        - '.*'
        - '.*'
        - '.*'
    - runas: rabbitmq
```

salt.states.rabbitmq_user.**absent**(*name*, *runas=None*)

Ensure the named user is absent

**name** The name of the user to remove

**runas** User to run the command

salt.states.rabbitmq_user.**present**(*name*, *password=None*, *force=False*, *tags=None*, *perms=()*, *runas=None*)

Ensure the RabbitMQ user exists.

**name** User name

**password** User's password, if one needs to be set

**force** If user exists, forcibly change the password

**tags** Optional list of tags for the user

**perms** A list of dicts with vhost keys and 3-tuple values

**runas** Name of the user to run the command

### 13.16.164 salt.states.rabbitmq_vhost

#### Manage RabbitMQ Virtual Hosts

Example:

```
virtual_host:
  rabbitmq_vhost.present:
    - user: rabbit_user
    - conf: .*
    - write: .*
    - read: .*
```

salt.states.rabbitmq_vhost.**absent**(*name*)

Ensure the RabbitMQ Virtual Host is absent

**name** Name of the Virtual Host to remove

**runas** User to run the command

Deprecated since version 2015.8.0.

salt.states.rabbitmq_vhost.**present**(*name*)

Ensure the RabbitMQ VHost exists.

**name** VHost name

**user** Initial user permission to set on the VHost, if present

Deprecated since version 2015.8.0.

**owner** Initial owner permission to set on the VHost, if present

Deprecated since version 2015.8.0.

**conf** Initial conf string to apply to the VHost and user. Defaults to .*

Deprecated since version 2015.8.0.

**write** Initial write permissions to apply to the VHost and user. Defaults to .*

Deprecated since version 2015.8.0.

**read** Initial read permissions to apply to the VHost and user. Defaults to .*

Deprecated since version 2015.8.0.

**runas** Name of the user to run the command

Deprecated since version 2015.8.0.

### 13.16.165 salt.states.rbenv

#### Managing Ruby installations with rbenv

This module is used to install and manage ruby installations with rbenv and the ruby-build plugin. Different versions of ruby can be installed, and uninstalled. Rbenv will be installed automatically the first time it is needed and can be updated later. This module will *not* automatically install packages which rbenv will need to compile the versions of ruby. If your version of ruby fails to install, refer to the ruby-build documentation to verify you are not missing any dependencies: https://github.com/sstephenson/ruby-build/wiki

If rbenv is run as the root user then it will be installed to /usr/local/rbenv, otherwise it will be installed to the users ~/.rbenv directory. To make rbenv available in the shell you may need to add the rbenv/shims and rbenv/bin directories to the users PATH. If you are installing as root and want other users to be able to access rbenv then you will need to add RBENV_ROOT to their environment.

The following state configuration demonstrates how to install Ruby 1.9.x and 2.x using rbenv on Ubuntu/Debian:

```
rbenv-deps:
  pkg.installed:
    - names:
      - bash
      - git
      - openssl
      - libssl-dev
      - make
      - curl
      - autoconf
      - bison
      - build-essential
      - libffi-dev
      - libyaml-dev
      - libreadline6-dev
      - zlib1g-dev
      - libncurses5-dev

ruby-1.9.3-p429:
  rbenv.absent:
    - require:
      - pkg: rbenv-deps

ruby-2.0.0-p598:
  rbenv.installed:
    - default: True
```

```
    - require:
      - pkg: rbenv-deps
```

salt.states.rbenv.**absent**(*name*, *user=None*)

Verify that the specified ruby is not installed with rbenv. Rbenv is installed if necessary.

**name** The version of ruby to uninstall

**user**: **None** The user to run rbenv as.

New in version 0.17.0.

New in version 0.16.0.

salt.states.rbenv.**install_rbenv**(*name*, *user=None*)

Install rbenv if not installed. Allows you to require rbenv be installed prior to installing the plugins. Useful if you want to install rbenv plugins via the git or file modules and need them installed before installing any rubies.

Use the rbenv.root configuration option to set the path for rbenv if you want a system wide install that is not in a user home dir.

**user**: **None** The user to run rbenv as.

salt.states.rbenv.**installed**(*name*, *default=False*, *user=None*)

Verify that the specified ruby is installed with rbenv. Rbenv is installed if necessary.

**name** The version of ruby to install

**default** [False] Whether to make this ruby the default.

**user**: **None** The user to run rbenv as.

New in version 0.17.0.

New in version 0.16.0.

### 13.16.166 salt.states.rdp

Manage RDP Service on Windows servers

salt.states.rdp.**disabled**(*name*)

Disable the RDP service

salt.states.rdp.**enabled**(*name*)

Enable the RDP service and make sure access to the RDP port is allowed in the firewall configuration

### 13.16.167 salt.states.redismod

#### Management of Redis server

New in version 2014.7.0.

**depends**

- redis Python module

**configuration** See `salt.modules.redis` for setup instructions.

```
key_in_redis:
  redis.string:
    - value: string data
```

The redis server information specified in the minion config file can be overridden in states using the following arguments: `host`, `post`, `db`, `password`.

```
key_in_redis:
  redis.string:
    - value: string data
    - host: localhost
    - port: 6379
    - db: 0
    - password: somuchkittycat
```

salt.states.redismod.**absent**(*name*, *keys=None*, ***connection_args*)

Ensure key absent from redis

**name** Key to ensure absent from redis

**keys** list of keys to ensure absent, name will be ignored if this is used

salt.states.redismod.**slaveof**(*name*, *sentinel_host=None*, *sentinel_port=None*, *sentinel_password=None*, ***connection_args*)

Set this redis instance as a slave.

**name** Master to make this a slave of

**sentinel_host** Ip of the sentinel to check for the master

**sentinel_port** Port of the sentinel to check for the master

salt.states.redismod.**string**(*name*, *value*, *expire=None*, *expireat=None*, ***connection_args*)

Ensure that the key exists in redis with the value specified

**name** Redis key to manage

**value** Data to persist in key

**expire** Sets time to live for key in seconds

**expireat** Sets expiration time for key via UNIX timestamp, overrides *expire*

### 13.16.168 salt.states.reg

#### Manage the Windows registry

Many python developers think of registry keys as if they were python keys in a dictionary which is not the case. The windows registry is broken down into the following components:

#### Hives

This is the top level of the registry. They all begin with HKEY. - HKEY_CLASSES_ROOT (HKCR) - HKEY_CURRENT_USER(HKCU) - HKEY_LOCAL MACHINE (HKLM) - HKEY_USER (HKU) - HKEY_CURRENT_CONFIG

#### Keys

Hives contain keys. These are basically the folders beneath the hives. They can contain any number of subkeys.

#### Values or Entries

Values or Entries are the name/data pairs beneath the keys and subkeys. All keys have a default name/data pair. It is usually ``(Default)''="(value not set)''. The actual value for the name and the date is Null. The registry editor will display ``(Default)'' and ``(value not set)''.

### Example

The following example is taken from the windows startup portion of the registry: ` [HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Run] "RTHDVCPL"="\"C:\\Program Files\\Realtek\\Audio\\HDA\\RtkNGUI64.exe\" -s" "NvBackend"="\"C:\\Program Files (x86)\\NVIDIA Corporation\\Update Core\\NvBackend.exe\"" "BTMTrayAgent"="rundll32.exe \"C:\\Program Files (x86)\\Intel\\Bluetooth\\btmshellex.dll\",TrayApp" ` In this example these are the values for each:

Hive: *HKEY_LOCAL_MACHINE*

Key and subkeys: *SOFTWAREMicrosoftWindowsCurrentVersionRun*

**Value**:

- There are 3 value names: *RTHDVCPL*, *NvBackend*, and *BTMTrayAgent*
- Each value name has a corresponding value

`salt.states.reg.`**`absent`**(*name*, *vname=None*, *use_32bit_registry=False*)

Ensure a registry value is removed. To remove a key use key_absent.

**Parameters** **`name`** (*str*) -- A string value representing the full path of the key to include the HIVE, Key, and all Subkeys. For example:

`HKEY_LOCAL_MACHINE\SOFTWARE\Salt`

Valid hive values include:
•HKEY_CURRENT_USER or HKCU
•HKEY_LOCAL_MACHINE or HKLM
•HKEY_USERS or HKU

**Parameters** **`vname`** (*str*) -- The name of the value you'd like to create beneath the Key. If this parameter is not passed it will assume you want to set the (Default) value

**Parameters** **`use_32bit_registry`** (*bool*) -- Use the 32bit portion of the registry. Applies only to 64bit windows. 32bit Windows will ignore this parameter. Default if False.

**Returns** Returns a dictionary showing the results of the registry operation.

**Return type** dict

CLI Example:

```
'HKEY_CURRENT_USER\SOFTWARE\Salt\version':
  reg.absent
```

In the above example the path is interpreted as follows:
•`HKEY_CURRENT_USER` is the hive
•`SOFTWARE\Salt` is the key
•`version` is the value name
So the value `version` will be deleted from the `SOFTWARE\Salt` key in the `HKEY_CURRENT_USER` hive.

`salt.states.reg.`**`key_absent`**(*name*, *force=False*, *use_32bit_registry=False*)

New in version 2015.5.4.

Ensure a registry key is removed. This will remove a key and all value entries it contains. It will fail if the key contains subkeys.

**Parameters** **`name`** (*str*) -- A string representing the full path to the key to be removed to include the hive and the keypath. The hive can be any of the following:
•HKEY_LOCAL_MACHINE or HKLM
•HKEY_CURRENT_USER or HKCU
•HKEY_USER or HKU

**Parameters** **force** (*bool*) -- A boolean value indicating that all subkeys should be deleted with the key. If force=False and subkeys exists beneath the key you want to delete, key_absent will fail. Use with caution. The default is False.

**Returns** Returns a dictionary showing the results of the registry operation.

**Return type** dict

The following example will delete the SOFTWARE\Salt key and all subkeys under the HKEY_CURRENT_USER hive.

Example:

```
'HKEY_CURRENT_USER\SOFTWARE\Salt':
  reg.key_absent:
    - force: True
```

In the above example the path is interpreted as follows:

- HKEY_CURRENT_USER is the hive
- SOFTWARE\Salt is the key

salt.states.reg.**present**(*name*, *value=None*, *vname=None*, *vdata=None*, *vtype='REG_SZ'*, *reflection=True*, *use_32bit_registry=False*)

Ensure a registry key or value is present.

**Parameters** **name** (*str*) -- A string value representing the full path of the key to include the HIVE, Key, and all Subkeys. For example:

HKEY_LOCAL_MACHINE\SOFTWARE\Salt

Valid hive values include: - HKEY_CURRENT_USER or HKCU - HKEY_LOCAL_MACHINE or HKLM - HKEY_USERS or HKU

**Parameters** **value** (*str*) -- Deprecated. Use vname and vdata instead. Included here for backwards compatibility.

**Parameters** **vname** (*str*) -- The name of the value you'd like to create beneath the Key. If this parameter is not passed it will assume you want to set the (Default) value

**Parameters** **vdata** (*str*) -- The value you'd like to set for the Key. If a value name (vname) is passed, this will be the data for that value name. If not, this will be the (Default) value for the key.

The type for the (Default) value is always REG_SZ and cannot be changed. This parameter is optional. If not passed, the Key will be created with no associated item/value pairs.

**Parameters** **vtype** (*str*) -- The value type for the data you wish to store in the registry. Valid values are:

- REG_BINARY
- REG_DWORD
- REG_EXPAND_SZ
- REG_MULTI_SZ
- REG_SZ (Default)

**Parameters** **reflection** (*bool*) -- On 64 bit machines a duplicate value will be created in the Wow6432Node for 32bit programs. This only applies to the SOFTWARE key. This option is ignored on 32bit operating systems. This value defaults to True. Set it to False to disable reflection.

Deprecated since version 2015.8.2: Use *use_32bit_registry* instead. The parameter seems to have no effect since Windows 7 / Windows 2008R2 removed support for reflection. The parameter will be removed in Carbon.

**Parameters** **use_32bit_registry** (*bool*) -- Use the 32bit portion of the registry. Applies only to 64bit windows. 32bit Windows will ignore this parameter. Default if False.

**Returns** Returns a dictionary showing the results of the registry operation.

**Return type** dict

The following example will set the (Default) value for the SOFTWARE\Salt key in the HKEY_CURRENT_USER hive to 0.15.3. The value will not be reflected in Wow6432Node:

Example:

```
HKEY_CURRENT_USER\SOFTWARE\Salt:
  reg.present:
    - vdata: 0.15.3
    - reflection: False
```

The following example will set the value for the `version` entry under the `SOFTWARE\Salt` key in the `HKEY_CURRENT_USER` hive to `0.15.3`. The value will be reflected in `Wow6432Node`:

Example:

```
HKEY_CURRENT_USER\SOFTWARE\Salt:
  reg.present:
    - vname: version
    - vdata: 0.15.3
```

In the above example the path is interpreted as follows: - `HKEY_CURRENT_USER` is the hive - `SOFTWARE\Salt` is the key - `vname` is the value name (`version') that will be created under the key - `vdata` is the data that will be assigned to `version'

### 13.16.169 salt.states.rsync

State to synchronize files and directories with rsync.

New in version 2016.3.0.

```
/opt/user-backups:
  rsync.synchronized:
    - source: /home
    - force: True
```

salt.states.rsync.**synchronized**(*name*, *source*, *delete=False*, *force=False*, *update=False*, *passwordfile=None*, *exclude=None*, *excludefrom=None*, *prepare=False*, *dryrun=False*)

Guarantees that the source directory is always copied to the target.

**name** Name of the target directory.
**source** Source directory.
**prepare** Create destination directory if it does not exists.
**delete** Delete extraneous files from the destination dirs (True or False)
**force** Force deletion of dirs even if not empty
**update** Skip files that are newer on the receiver (True or False)
**passwordfile** Read daemon-access password from the file (path)
**exclude** Exclude files, that matches pattern.
**excludefrom** Read exclude patterns from the file (path)
**dryrun** Perform a trial run with no changes made. Is the same as doing test=True

New in version 2016.3.1.

### 13.16.170 salt.states.rvm

#### Managing Ruby installations and gemsets with Ruby Version Manager (RVM)

This module is used to install and manage ruby installations and gemsets with RVM, the Ruby Version Manager. Different versions of ruby can be installed and gemsets created. RVM itself will be installed automatically if it's not

present. This module will not automatically install packages that RVM depends on or ones that are needed to build ruby. If you want to run RVM as an unprivileged user (recommended) you will have to create this user yourself. This is how a state configuration could look like:

```
rvm:
  group.present: []
  user.present:
    - gid: rvm
    - home: /home/rvm
    - require:
      - group: rvm

rvm-deps:
  pkg.installed:
    - pkgs:
      - bash
      - coreutils
      - gzip
      - bzip2
      - gawk
      - sed
      - curl
      - git-core
      - subversion

mri-deps:
  pkg.installed:
    - pkgs:
      - build-essential
      - openssl
      - libreadline6
      - libreadline6-dev
      - curl
      - git-core
      - zlib1g
      - zlib1g-dev
      - libssl-dev
      - libyaml-dev
      - libsqlite3-0
      - libsqlite3-dev
      - sqlite3
      - libxml2-dev
      - libxslt1-dev
      - autoconf
      - libc6-dev
      - libncurses5-dev
      - automake
      - libtool
      - bison
      - subversion
      - ruby

jruby-deps:
  pkg.installed:
    - pkgs:
      - curl
      - g++
      - openjdk-6-jre-headless
```

```
ruby-1.9.2:
  rvm.installed:
    - default: True
    - user: rvm
    - require:
      - pkg: rvm-deps
      - pkg: mri-deps
      - user: rvm

jruby:
  rvm.installed:
    - user: rvm
    - require:
      - pkg: rvm-deps
      - pkg: jruby-deps
      - user: rvm

jgemset:
  rvm.gemset_present:
    - ruby: jruby
    - user: rvm
    - require:
      - rvm: jruby

mygemset:
  rvm.gemset_present:
    - ruby: ruby-1.9.2
    - user: rvm
    - require:
      - rvm: ruby-1.9.2
```

salt.states.rvm.**gemset_present**(*name*, *ruby='default'*, *user=None*)

Verify that the gemset is present.

**name** The name of the gemset.

**ruby**: **default** The ruby version this gemset belongs to.

**user**: **None** The user to run rvm as.

New in version 0.17.0.

salt.states.rvm.**installed**(*name*, *default=False*, *user=None*)

Verify that the specified ruby is installed with RVM. RVM is installed when necessary.

**name** The version of ruby to install

**default** [False] Whether to make this ruby the default.

**user**: **None** The user to run rvm as.

New in version 0.17.0.

### 13.16.171 salt.states.salt_proxy module

Salt proxy state

New in version 2015.8.2.

State to deploy and run salt-proxy processes on a minion.

Set up pillar data for your proxies per the documentation.

Run the state as below

..code-block:: yaml

**salt-proxy-configure**:

**salt_proxy.configure_proxy**:

- proxyname: p8000
- start: True

This state will configure the salt proxy settings within /etc/salt/proxy (if /etc/salt/proxy doesn't exists) and start the salt-proxy process (default true), if it isn't already running.

`salt.states.salt_proxy.`**`configure_proxy`**(*name*, *proxyname='p8000'*, *start=True*)

Create the salt proxy file and start the proxy process if required

**Parameters**:

**name**: The name of this state

**proxyname**: Name to be used for this proxy (should match entries in pillar)

**start**: Boolean indicating if the process should be started

Example:

..code-block:: yaml

**salt-proxy-configure**:

**salt_proxy.configure_proxy**:

- proxyname: p8000
- start: True

### 13.16.172 salt.states.saltmod

#### Control the Salt command interface

This state is intended for use from the Salt Master. It provides access to sending commands down to minions as well as access to executing master-side modules. These state functions wrap Salt's *Python API*.

**See also**:

More Orchestrate documentation

- *Full Orchestrate Tutorial*
- *The Orchestrate runner*

`salt.states.saltmod.`**`function`**(*name*, *tgt*, *ssh=False*, *tgt_type=None*, *expr_form=None*, *ret='`*, *expect_minions=False*, *fail_minions=None*, *fail_function=None*, *arg=None*, *kwarg=None*, *timeout=None*, *batch=None*)

Execute a single module function on a remote minion via salt or salt-ssh

**name** The name of the function to run, aka cmd.run or pkg.install

**tgt** The target specification, aka `*' for all minions

**tgt_type | expr_form** The target type, defaults to glob

**arg** The list of arguments to pass into the function

**kwarg** The dict (not a list) of keyword arguments to pass into the function

**ret** Optionally set a single or a list of returners to use

**expect_minions** An optional boolean for failing if some minions do not respond

**fail_minions** An optional list of targeted minions where failure is an option

**fail_function** An optional string that points to a salt module that returns True or False based on the returned data dict for individual minions

**ssh** Set to *True* to use the ssh client instead of the standard salt client

salt.states.saltmod.**runner**(*name*, ***kwargs*)

Execute a runner module on the master

New in version 2014.7.0.

**name** The name of the function to run

**kwargs** Any keyword arguments to pass to the runner function

```
run-manage-up:
 salt.runner:
   - name: manage.up
```

salt.states.saltmod.**state**(*name*, *tgt*, *ssh=False*, *tgt_type=None*, *expr_form=None*, *ret=''*, *highstate=None*, *sls=None*, *top=None*, *env=None*, *test=False*, *pillar=None*, *expect_minions=False*, *fail_minions=None*, *allow_fail=0*, *concurrent=False*, *timeout=None*, *batch=None*, *queue=False*)

Invoke a state run on a given target

**name** An arbitrary name used to track the state execution

**tgt** The target specification for the state run.

**tgt_type** | **expr_form** The target type to resolve, defaults to glob

**ret** Optionally set a single or a list of returners to use

**highstate** Defaults to None, if set to True the target systems will ignore any sls references specified in the sls option and call state.highstate on the targeted minions

**top** Should be the name of a top file. If set state.top is called with this top file instead of state.sls.

**sls** A group of sls files to execute. This can be defined as a single string containing a single sls file, or a list of sls files

**test** Pass `test=true` through to the state function

**pillar** Pass the `pillar` kwarg through to the state function

**saltenv** The default salt environment to pull sls files from

**ssh** Set to *True* to use the ssh client instead of the standard salt client

**roster** In the event of using salt-ssh, a roster system can be set

**expect_minions** An optional boolean for failing if some minions do not respond

**fail_minions** An optional list of targeted minions where failure is an option

**allow_fail** Pass in the number of minions to allow for failure before setting the result of the execution to False

**concurrent** Allow multiple state runs to occur at once.

WARNING: This flag is potentially dangerous. It is designed for use when multiple state runs can safely be run at the same Do not use this flag for performance optimization.

**queue** Pass `queue=true` through to the state function

**batch** Execute the command *in batches*. E.g.: `10%`.

New in version 2016.3.0.

Examples:

Run a list of sls files via `state.sls` on target minions:

```
webservers:
  salt.state:
    - tgt: 'web*'
    - sls:
      - apache
      - django
      - core
    - saltenv: prod
```

Run a full `state.highstate` on target mininons.

```
databases:
  salt.state:
```

```
    - tgt: role:database
    - tgt_type: grain
    - highstate: True
```

salt.states.saltmod.**wait_for_event**(*name*, *id_list*, *event_id='id'*, *timeout=300*, *node='master'*)

Watch Salt's event bus and block until a condition is met

New in version 2014.7.0.

**name** An event tag to watch for; supports Reactor-style globbing.

**id_list** A list of event identifiers to watch for -- usually the minion ID. Each time an event tag is matched the event data is inspected for `event_id`, if found it is removed from `id_list`. When `id_list` is empty this function returns success.

**event_id** [id] The name of a key in the event data. Default is `id` for the minion ID, another common value is `name` for use with orchestrating salt-cloud events.

**timeout** [300] The maximum time in seconds to wait before failing.

The following example blocks until all the listed minions complete a restart and reconnect to the Salt master:

```
reboot_all_minions:
  salt.function:
    - name: system.reboot
    - tgt: '*'

wait_for_reboots:
  salt.wait_for_event:
    - name: salt/minion/*/start
    - id_list:
      - jerry
      - stuart
      - dave
      - phil
      - kevin
      - mike
    - require:
      - salt: reboot_all_minions
```

salt.states.saltmod.**wheel**(*name*, ***kwargs*)

Execute a wheel module on the master

New in version 2014.7.0.

**name** The name of the function to run

**kwargs** Any keyword arguments to pass to the wheel function

```
accept_minion_key:
  salt.wheel:
    - name: key.accept
    - match: frank
```

### 13.16.173 salt.states.schedule

#### Management of the Salt scheduler

```
job3:
  schedule.present:
    - function: test.ping
    - seconds: 3600
```

```
    - splay: 10

This will schedule the command: test.ping every 3600 seconds
(every hour) splaying the time between 0 and 10 seconds

job2:
  schedule.present:
    - function: test.ping
    - seconds: 15
    - splay:
        start: 10
        end: 20

This will schedule the command: test.ping every 15 seconds
splaying the time between 10 and 20 seconds

job1:
  schedule.present:
    - function: state.sls
    - job_args:
      - httpd
    - job_kwargs:
        test: True
    - when:
        - Monday 5:00pm
        - Tuesday 3:00pm
        - Wednesday 5:00pm
        - Thursday 3:00pm
        - Friday 5:00pm

This will schedule the command: state.sls httpd test=True at 5pm on Monday,
Wednesday and Friday, and 3pm on Tuesday and Thursday.  Requires that
python-dateutil is installed on the minion.

job1:
  schedule.present:
    - function: state.sls
    - job_args:
      - httpd
    - job_kwargs:
        test: True
    - cron: '*/5 * * * *'

Scheduled jobs can also be specified using the format used by cron.  This will
schedule the command: state.sls httpd test=True to run every 5 minutes.  Requires
that python-croniter is installed on the minion.

job1:
  schedule.present:
    - function: state.sls
    - job_args:
      - httpd
    - job_kwargs:
        test: True
    - when:
        - Monday 5:00pm
        - Tuesday 3:00pm
        - Wednesday 5:00pm
```

```
        - Thursday 3:00pm
        - Friday 5:00pm
    - returner: xmpp
    - return_config: xmpp_state_run
    - return_kwargs:
        recipient: user@domain.com

This will schedule the command: state.sls httpd test=True at 5pm on Monday,
Wednesday and Friday, and 3pm on Tuesday and Thursday.  Using the xmpp returner
to return the results of the scheduled job, with the alternative configuration
options found in the xmpp_state_run section.
```

salt.states.schedule.**absent**(*name*, ***kwargs*)

Ensure a job is absent from the schedule

**name** The unique name that is given to the scheduled job.

**persist** Whether the job should persist between minion restarts, defaults to True.

salt.states.schedule.**disabled**(*name*, ***kwargs*)

Ensure a job is disabled in the schedule

**name** The unique name that is given to the scheduled job.

**persist** Whether the job should persist between minion restarts, defaults to True.

salt.states.schedule.**enabled**(*name*, ***kwargs*)

Ensure a job is enabled in the schedule

**name** The unique name that is given to the scheduled job.

**persist** Whether the job should persist between minion restarts, defaults to True.

salt.states.schedule.**present**(*name*, ***kwargs*)

Ensure a job is present in the schedule

**name** The unique name that is given to the scheduled job.

**seconds** The scheduled job will be executed after the specified number of seconds have passed.

**minutes** The scheduled job will be executed after the specified number of minutes have passed.

**hours** The scheduled job will be executed after the specified number of hours have passed.

**days** The scheduled job will be executed after the specified number of days have passed.

**when** This will schedule the job at the specified time(s). The when parameter must be a single value or a dictionary with the date string(s) using the dateutil format. Requires python-dateutil.

**cron** This will schedule the job at the specified time(s) using the crontab format. Requires python-croniter.

**run_on_start** Whether the job will run when Salt minion start. Value should be a boolean.

**function** The function that should be executed by the scheduled job.

**job_args** The arguments that will be used by the scheduled job.

**job_kwargs** The keyword arguments that will be used by the scheduled job.

**maxrunning** Ensure that there are no more than N copies of a particular job running.

**jid_include** Include the job into the job cache.

**splay** The amount of time in seconds to splay a scheduled job. Can be specified as a single value in seconds or as a dictionary range with `start' and `end' values.

**range** This will schedule the command within the range specified. The range parameter must be a dictionary with the date strings using the dateutil format. Requires python-dateutil.

**once** This will schedule a job to run once on the specified date.

**once_fmt** The default date format is ISO 8601 but can be overridden by also specifying the `once_fmt` option.

**enabled** Whether the job should be enabled or disabled. Value should be a boolean.

**return_job** Whether to return information to the Salt master upon job completion.

**metadata** Using the metadata parameter special values can be associated with a scheduled job. These values are not used in the execution of the job, but can be used to search for specific jobs later if combined with the return_job parameter. The metadata parameter must be specified as a dictionary, othewise it will be ignored.

**returner** The returner to use to return the results of the scheduled job.

**return_config** The alternative configuration to use for returner configuration options.
**return_kwargs** Any individual returner configuration items to override. Should be passed as a dictionary.
**persist** Whether the job should persist between minion restarts, defaults to True.

### 13.16.174 salt.states.selinux

#### Management of SELinux rules

If SELinux is available for the running system, the mode can be managed and booleans can be set.

```
enforcing:
    selinux.mode

samba_create_home_dirs:
    selinux.boolean:
      - value: True
      - persist: True

nginx:
    selinux.module:
      - enabled: False
```

**Note**: Use of these states require that the `selinux` execution module is available.

`salt.states.selinux.`**`boolean`**(*name*, *value*, *persist=False*)
Set up an SELinux boolean
**name** The name of the boolean to set
**value** The value to set on the boolean
**persist** Defaults to False, set persist to true to make the boolean apply on a reboot

`salt.states.selinux.`**`mode`**(*name*)
Verifies the mode SELinux is running in, can be set to enforcing or permissive
**name** The mode to run SELinux in, permissive or enforcing

`salt.states.selinux.`**`module`**(*name*, *module_state='Enabled'*, *version='any'*)
Enable/Disable and optionally force a specific version for an SELinux module
**name** The name of the module to control
**module_state** Should the module be enabled or disabled?
**version** Defaults to no preference, set to a specified value if required. Currently can only alert if the version is incorrect.
New in version 2016.3.0.

### 13.16.175 salt.states.serverdensity_device

#### Monitor Server with Server Density

New in version 2014.7.0.

Server Density Is a hosted monitoring service.

**Warning**: This state module is beta. It might be changed later to include more or less automation.

**Note:** This state module requires a pillar for authentication with Server Density To install a v1 agent:

```
serverdensity:
  api_token: "b97da80a41c4f61bff05975ee51eb1aa"
  account_url: "https://your-account.serverdensity.io"
```

To install a v2 agent:

```
serverdensity:
  api_token: "b97da80a41c4f61bff05975ee51eb1aa"
  account_name: "your-account"
```

**Note:** Although Server Density allows duplicate device names in its database, this module will raise an exception if you try monitoring devices with the same name.

Example:

```
'server_name':
  serverdensity_device.monitored
```

salt.states.serverdensity_device.**monitored**(*name*, *group=None*, *salt_name=True*, *salt_params=True*, *agent_version=1*, ***params*)

Device is monitored with Server Density.

**name** Device name in Server Density.

**salt_name** If `True` (default), takes the name from the `id` grain. If `False`, the provided name is used.

**group** Group name under with device will appear in Server Density dashboard. Default - *None*.

**agent_version** The agent version you want to use. Valid values are 1 or 2. Default - 1.

**salt_params** If `True` (default), needed config parameters will be sourced from grains and from *`status.all_status`*.

**params** Add parameters that you want to appear in the Server Density dashboard. Will overwrite the *salt_params* parameters. For more info, see the API docs.

Usage example:

```
'server_name':
  serverdensity_device.monitored
```

```
'server_name':
  serverdensity_device.monitored:
    - group: web-servers
```

```
'my_special_server':
  serverdensity_device.monitored:
    - salt_name: False
    - group: web-servers
    - cpuCores: 2
    - os: '{"code": "linux", "name": "Linux"}'
```

### 13.16.176 salt.states.service

#### Starting or restarting of services and daemons

Services are defined as system daemons typically started with system init or rc scripts. The service state uses whichever service module that is loaded on the minion with the virtualname of `service`. Services can be defined as running or dead.

If you need to know if your init system is supported, see the list of supported `service modules` for your desired init system (systemd, sysvinit, launchctl, etc.).

Note that Salt's service execution module, and therefore this service state, uses OS grains to ascertain which service module should be loaded and used to execute service functions. As existing distributions change init systems or new distributions are created, OS detection can sometimes be incomplete. If your service states are running into trouble with init system detection, please see the *Overriding Virtual Module Providers* section of Salt's module documentation to work around possible errors.

---

**Note**: The current status of a service is determined by the return code of the init/rc script status command. A status return code of 0 it is considered running. Any other return code is considered dead.

---

```
httpd:
  service.running: []
```

The service can also be set to be started at runtime via the enable option:

```
openvpn:
  service.running:
    - enable: True
```

By default if a service is triggered to refresh due to a watch statement the service is by default restarted. If the desired behavior is to reload the service, then set the reload value to True:

```
redis:
  service.running:
    - enable: True
    - reload: True
    - watch:
      - pkg: redis
```

---

**Note**: More details regarding `watch` can be found in the *Requisites* documentation.

---

`salt.states.service.`**`dead`**(*name*, *enable=None*, *sig=None*, ***kwargs*)

Ensure that the named service is dead by stopping the service if it is running

**name** The name of the init or rc script used to manage the service

**enable** Set the service to be enabled at boot time, `True` sets the service to be enabled, `False` sets the named service to be disabled. The default is `None`, which does not enable or disable anything.

**sig** The string to search for when looking for the service process with ps

`salt.states.service.`**`disabled`**(*name*, ***kwargs*)

Ensure that the service is disabled on boot, only use this state if you don't want to manage the running process, remember that if you want to disable a service to use the enable: False option for the running or dead function.

**name** The name of the init or rc script used to manage the service

salt.states.service.**enabled**(*name*, ***kwargs*)

Ensure that the service is enabled on boot, only use this state if you don't want to manage the running process, remember that if you want to enable a running service to use the enable: True option for the running or dead function.

**name** The name of the init or rc script used to manage the service

salt.states.service.**mod_watch**(*name*, *sfun=None*, *sig=None*, *reload=False*, *full_restart=False*, *init_delay=None*, *force=False*, ***kwargs*)

The service watcher, called to invoke the watch command.

**name** The name of the init or rc script used to manage the service

**sfun** The original function which triggered the mod_watch call (*service.running*, for example).

**sig** The string to search for when looking for the service process with ps

**reload** Use reload instead of the default restart (exclusive option with full_restart, defaults to reload if both are used)

**full_restart** Use service.full_restart instead of restart (exclusive option with reload)

**force** Use service.force_reload instead of reload (needs reload to be set to True)

**init_delay** Add a sleep command (in seconds) before the service is restarted/reloaded

salt.states.service.**running**(*name*, *enable=None*, *sig=None*, *init_delay=None*, ***kwargs*)

Ensure that the service is running

**name** The name of the init or rc script used to manage the service

**enable** Set the service to be enabled at boot time, True sets the service to be enabled, False sets the named service to be disabled. The default is None, which does not enable or disable anything.

**sig** The string to search for when looking for the service process with ps

**init_delay** Some services may not be truly available for a short period after their startup script indicates to the system that they are. Provide an `init_delay' to specify that this state should wait an additional given number of seconds after a service has started before returning. Useful for requisite states wherein a dependent state might assume a service has started but is not yet fully initialized.

---

**Note**:

**watch can be used with service.running to restart a service when** another state changes ( example: a file.managed state that creates the service's config file ). More details regarding `watch` can be found in the *Requisites* documentation.

---

## 13.16.177 salt.states.slack

### Send a message to Slack

This state is useful for sending messages to Slack during state runs.

New in version 2015.5.0.

```
slack-message:
  slack.post_message:
    - channel: '#general'
    - from_name: SuperAdmin
    - message: 'This state was executed successfully.'
    - api_key: peWcBiMOS9HrZG15peWcBiMOS9HrZG15
```

The api key can be specified in the master or minion configuration like below:

```
slack:
  api_key: peWcBiMOS9HrZG15peWcBiMOS9HrZG15
```

salt.states.slack.**post_message**(*name*, *channel*, *from_name*, *message*, *api_key=None*, *icon=None*)

Send a message to a Slack channel.

```
slack-message:
  slack.post_message:
    - channel: '#general'
    - from_name: SuperAdmin
    - message: 'This state was executed successfully.'
    - api_key: peWcBiMOS9HrZG15peWcBiMOS9HrZG15
```

The following parameters are required:

**name** The unique name for this event.

**channel** The channel to send the message to. Can either be the ID or the name.

**from_name** The name of that is to be shown in the ``from'' field.

**message** The message that is to be sent to the Slack channel.

The following parameters are optional:

**api_key** The api key for Slack to use for authentication, if not specified in the configuration options of master or minion.

**icon** URL to an image to use as the icon for this message

### 13.16.178 salt.states.smartos

Management of SmartOS Standalone Compute Nodes

**maintainer** Jorge Schrauwen <sjorge@blackdot.be>

**maturity** new

**depends** vmadm, imgadm

**platform** smartos

New in version 2016.3.0.

```
vmtest.example.org:
  smartos.vm_present:
    - config:
        reprovision: true
    - vmconfig:
        image_uuid: c02a2044-c1bd-11e4-bd8c-dfc1db8b0182
        brand: joyent
        alias: vmtest
        quota: 5
        max_physical_memory: 512
        tags:
          label: 'test vm'
          owner: 'sjorge'
        nics:
          "82:1b:8e:49:e9:12"
            nic_tag: trunk
            mtu: 1500
            ips:
              - 172.16.1.123/16
              - 192.168.2.123/24
            vlan_id: 10
          "82:1b:8e:49:e9:13"
            nic_tag: trunk
            mtu: 1500
```

```
            ips:
              - dhcp
            vlan_id: 30
        filesystems:
          "/bigdata":
            source: "/bulk/data"
            type: lofs
            options:
              - ro
              - nodevices

kvmtest.example.org:
  smartos.vm_present:
    - vmconfig:
        brand: kvm
        alias: kvmtest
        cpu_type: host
        ram: 512
        vnc_port: 9
        tags:
          label: 'test kvm'
          owner: 'sjorge'
        disks:
          disk0
            size: 2048
            model: virtio
            compression: lz4
            boot: true
        nics:
          "82:1b:8e:49:e9:15"
            nic_tag: trunk
            mtu: 1500
            ips:
              - dhcp
            vlan_id: 30

cleanup_images:
  smartos.image_vacuum
```

**Note**: Keep in mind that when removing properties from vmconfig they will not get removed from the vm's current configuration, except for nics, disk, tags, ... they get removed via add_*, set_*, update_*, and remove_*. Properties must be manually reset to their default value. The same behavior as when using `vmadm update'.

salt.states.smartos.**config_absent**(*name*)
Ensure configuration property is absent in /usbkey/config
**name** [string] name of property

salt.states.smartos.**config_present**(*name*, *value*)
Ensure configuration property is set to value in /usbkey/config
**name** [string] name of property
**value** [string] value of property

salt.states.smartos.**image_absent**(*name*)
Ensure image is absent on the computenode
**name** [string] uuid of image

**Note:** computenode.image_absent will only remove the image if it is not used by a vm.

salt.states.smartos.**image_present**(*name*)
Ensure image is present on the computenode
**name** [string] uuid of image

salt.states.smartos.**image_vacuum**(*name*)
Delete images not in use or installed via image_present

salt.states.smartos.**vm_absent**(*name*, *archive=False*)
Ensure vm is absent on the computenode
**name** [string] hostname of vm
**archive** [boolean] toggle archiving of vm on removal

**Note:** State ID is used as hostname. Hostnames must be unique.

salt.states.smartos.**vm_present**(*name*, *vmconfig*, *config=None*)
Ensure vm is present on the computenode
**name** [string] hostname of vm
**vmconfig** [dict] options to set for the vm
**config** [dict] fine grain control over vm_present

**Note:**
**The following configuration properties can be toggled in the config parameter.**
- kvm_reboot (true) - reboots of kvm zones if needed for a config update
- auto_import (false) - automatic importing of missing images
- reprovision (false) - reprovision on image_uuid changes

**Note:** State ID is used as hostname. Hostnames must be unique.

**Note:** If hostname is provided in vmconfig this will take president over the State ID. This allows multiple states to be applied to the same vm.

**Note:**
**The following instances should have a unique ID.**
- nic : mac
- filesystem: target
- disk : path or diskN for zvols

e.g. disk0 will be the first disk added, disk1 the 2nd,...

salt.states.smartos.**vm_running**(*name*)
Ensure vm is in the running state on the computenode
**name** [string] hostname of vm

**Note:** State ID is used as hostname. Hostnames must be unique.

salt.states.smartos.**vm_stopped**(*name*)

Ensure vm is in the stopped state on the computenode
**name** [string] hostname of vm

**Note:** State ID is used as hostname. Hostnames must be unique.

## 13.16.179 salt.states.smtp

### Sending Messages via SMTP

New in version 2014.7.0.

This state is useful for firing messages during state runs, using the SMTP protocol

```
server-warning-message:
  smtp.send_msg:
    - name: 'This is a server warning message'
    - profile: my-smtp-account
    - recipient: admins@example.com
```

`salt.states.smtp.`**`send_msg`**(*name*, *recipient*, *subject*, *sender*, *profile*, *use_ssl='True'*)
Send a message via SMTP

```
server-warning-message:
  smtp.send_msg:
    - name: 'This is a server warning message'
    - profile: my-smtp-account
    - subject: 'Message from Salt'
    - recipient: admin@example.com
    - sender: admin@example.com
    - use_ssl: True
```

**name** The message to send via SMTP

## 13.16.180 salt.states.splunk

Splunk User State Module

New in version 2016.3.0..

This state is used to ensure presence of users in splunk.

```
ensure example test user 1:
    splunk.present:
        - name: 'Example TestUser1'
        - email: example@domain.com
```

`salt.states.splunk.`**`absent`**(*email*, *profile='splunk'*, ***kwargs*)
Ensure a splunk user is absent

```
ensure example test user 1:
    splunk.absent:
        - email: 'example@domain.com'
        - name: 'exampleuser'
```

The following parameters are required:

**email** This is the email of the user in splunk
**name** This is the splunk username used to identify the user.

salt.states.splunk.**present**(*email*, *profile='splunk'*, ***kwargs*)
Ensure a user is present

```
ensure example test user 1:
    splunk.user_present:
        - realname: 'Example TestUser1'
        - name: 'exampleuser'
        - email: 'example@domain.com'
        - roles: ['user']
```

The following parameters are required:
**email** This is the email of the user in splunk

### 13.16.181 salt.states.splunk_search

Splunk Search State Module

New in version 2015.5.0.

This state is used to ensure presence of splunk searches.

```
server-warning-message:
  splunk_search.present:
    - name: This is the splunk search name
    - search: index=main sourcetype=
```

salt.states.splunk_search.**absent**(*name*, *profile='splunk'*)
Ensure a search is absent

```
API Error Search:
  splunk_search.absent
```

The following parameters are required:
**name** This is the name of the search in splunk

salt.states.splunk_search.**present**(*name*, *profile='splunk'*, ***kwargs*)
Ensure a search is present

```
API Error Search:
  splunk_search.present:
    search: index=main sourcetype=blah
    template: alert_5min
```

The following parameters are required:
**name** This is the name of the search in splunk

### 13.16.182 salt.states.sqlite3

#### Management of SQLite3 databases

**depends**

- SQLite3 Python Module

**configuration** See *salt.modules.sqlite3* for setup instructions

New in version 2016.3.0.

The sqlite3 module is used to create and manage sqlite3 databases and execute queries

Here is an example of creating a table using sql statements:

```
users:
  sqlite3.table_present:
    - db: /var/www/data/app.sqlite
    - schema: CREATE TABLE `users` (`username` TEXT COLLATE NOCASE UNIQUE NOT
↪NULL, `password` BLOB NOT NULL, `salt` BLOB NOT NULL, `last_login` INT)
```

Here is an example of creating a table using yaml/jinja instead of sql:

```
users:
  sqlite3.table_present:
    - db: /var/www/app.sqlite
    - schema:
      - email TEXT COLLATE NOCASE UNIQUE NOT NULL
      - firstname TEXT NOT NULL
      - lastname TEXT NOT NULL
      - company TEXT NOT NULL
      - password BLOB NOT NULL
      - salt BLOB NOT NULL
```

Here is an example of making sure a table is absent:

```
badservers:
  sqlite3.table_absent:
    - db: /var/www/data/users.sqlite
```

Sometimes you would to have specific data in tables to be used by other services Here is an example of making sure rows with specific data exist:

```
user_john_doe_xyz:
  sqlite3.row_present:
    - db: /var/www/app.sqlite
    - table: users
    - where_sql: email='john.doe@companyxyz.com'
    - data:
        email: john.doe@companyxyz.com
        lastname: doe
        firstname: john
        company: companyxyz.com
        password: abcdef012934125
        salt: abcdef012934125
    - require:
      - sqlite3: users
```

Here is an example of removing a row from a table:

```
user_john_doe_abc:
  sqlite3.row_absent:
    - db: /var/www/app.sqlite
    - table: users
    - where_sql: email="john.doe@companyabc.com"
    - require:
      - sqlite3: users
```

salt.states.sqlite3.**row_absent**(*name*, *db*, *table*, *where_sql*, *where_args=None*)

Makes sure the specified row is absent in db. If multiple rows match where_sql, then the state will fail.

**name** Only used as the unique ID

**db** The database file name

**table** The table name to check

**where_sql** The sql to select the row to check

**where_args** The list parameters to substitute in where_sql

salt.states.sqlite3.**row_present**(*name*, *db*, *table*, *data*, *where_sql*, *where_args=None*, *update=False*)

Checks to make sure the given row exists. If row exists and update is True then row will be updated with data. Otherwise it will leave existing row unmodified and check it against data. If the existing data doesn't match data_check the state will fail. If the row doesn't exist then it will insert data into the table. If more than one row matches, then the state will fail.

**name** Only used as the unique ID

**db** The database file name

**table** The table name to check the data

**data** The dictionary of key/value pairs to check against if row exists, insert into the table if it doesn't

**where_sql** The sql to select the row to check

**where_args** The list parameters to substitute in where_sql

**update** True will replace the existing row with data When False and the row exists and data does not equal the row data then the state will fail

salt.states.sqlite3.**table_absent**(*name*, *db*)

Make sure the specified table does not exist

**name** The name of the table

**db** The name of the database file

salt.states.sqlite3.**table_present**(*name*, *db*, *schema*, *force=False*)

Make sure the specified table exists with the specified schema

**name** The name of the table

**db** The name of the database file

**schema** The dictionary containing the schema information

**force** If the name of the table exists and force is set to False, the state will fail. If force is set to True, the existing table will be replaced with the new table

### 13.16.183 salt.states.ssh_auth

#### Control of entries in SSH authorized_key files

The information stored in a user's SSH authorized key file can be easily controlled via the ssh_auth state. Defaults can be set by the enc, options, and comment keys. These defaults can be overridden by including them in the name.

Since the YAML specification limits the length of simple keys to 1024 characters, and since SSH keys are often longer than that, you may have to use a YAML `explicit key', as demonstrated in the second example below.

```
AAAAB3NzaC1kc3MAAACBAL0sQ9fJ5bYTEyY==:
  ssh_auth.present:
    - user: root
    - enc: ssh-dss

? AAAAB3NzaC1kc3MAAACBAL0sQ9fJ5bYTEyY==...
:
  ssh_auth.present:
```

```
    - user: root
    - enc: ssh-dss

thatch:
  ssh_auth.present:
    - user: root
    - source: salt://ssh_keys/thatch.id_rsa.pub
    - config: '%h/.ssh/authorized_keys'

sshkeys:
  ssh_auth.present:
    - user: root
    - enc: ssh-rsa
    - options:
      - option1="value1"
      - option2="value2 flag2"
    - comment: myuser
    - names:
      - AAAAB3NzaC1kc3MAAACBAL0sQ9fJ5bYTEyY==
      - ssh-dss AAAAB3NzaCL0sQ9fJ5bYTEyY== user@domain
      - option3="value3" ssh-dss AAAAB3NzaC1kcQ9J5bYTEyY== other@testdomain
      - AAAAB3NzaC1kcQ9fJFF435bYTEyY== newcomment
```

salt.states.ssh_auth.**absent**(*name*, *user*, *enc='ssh-rsa'*, *comment=''*, *source=''*, *options=None*, *config='.ssh/authorized_keys'*)

Verifies that the specified SSH key is absent

**name** The SSH key to manage

**user** The user who owns the SSH authorized keys file to modify

**enc** Defines what type of key is being used; can be ed25519, ecdsa, ssh-rsa or ssh-dss

**comment** The comment to be placed with the SSH public key

**options** The options passed to the key, pass a list object

**source** The source file for the key(s). Can contain any number of public keys, in standard ``authorized_keys'' format. If this is set, comment, enc and options will be ignored.

New in version 2015.8.0.

**config** The location of the authorized keys file relative to the user's home directory, defaults to ".ssh/authorized_keys". Token expansion %u and %h for username and home path supported.

salt.states.ssh_auth.**present**(*name*, *user*, *enc='ssh-rsa'*, *comment=''*, *source=''*, *options=None*, *config='.ssh/authorized_keys'*, ***kwargs*)

Verifies that the specified SSH key is present for the specified user

**name** The SSH key to manage

**user** The user who owns the SSH authorized keys file to modify

**enc** Defines what type of key is being used; can be ed25519, ecdsa, ssh-rsa or ssh-dss

**comment** The comment to be placed with the SSH public key

**source** The source file for the key(s). Can contain any number of public keys, in standard ``authorized_keys'' format. If this is set, comment and enc will be ignored.

---

**Note**: The source file must contain keys in the format `<enc> <key> <comment>`. If you have generated a keypair using PuTTYgen, then you will need to do the following to retrieve an OpenSSH-compatible public key.

1. In PuTTYgen, click `Load`, and select the *private* key file (not the public key), and click `Open`.
2. Copy the public key from the box labeled `Public key for pasting into OpenSSH authorized_keys file`.
3. Paste it into a new file.

---

**options** The options passed to the key, pass a list object

**config** The location of the authorized keys file relative to the user's home directory, defaults to ".ssh/authorized_keys". Token expansion %u and %h for username and home path supported.

### 13.16.184 salt.states.ssh_known_hosts

#### Control of SSH known_hosts entries

Manage the information stored in the known_hosts files.

```
github.com:
  ssh_known_hosts:
    - present
    - user: root
    - fingerprint: 16:27:ac:a5:76:28:2d:36:63:1b:56:4d:eb:df:a6:48

example.com:
  ssh_known_hosts:
    - absent
    - user: root
```

salt.states.ssh_known_hosts.**absent**(*name*, *user=None*, *config=None*)

Verifies that the specified host is not known by the given user

**name** The host name

**user** The user who owns the ssh authorized keys file to modify

**config** The location of the authorized keys file relative to the user's home directory, defaults to ".ssh/known_hosts". If no user is specified, defaults to ``/etc/ssh/ssh_known_hosts". If present, must be an absolute path when a user is not specified.

salt.states.ssh_known_hosts.**present**(*name*, *user=None*, *fingerprint=None*, *key=None*, *port=None*, *enc=None*, *config=None*, *hash_hostname=True*, *hash_known_hosts=True*, *timeout=5*)

Verifies that the specified host is known by the specified user

On many systems, specifically those running with openssh 4 or older, the `enc` option must be set, only openssh 5 and above can detect the key type.

**name** The name of the remote host (e.g. ``github.com")

**user** The user who owns the ssh authorized keys file to modify

**fingerprint** The fingerprint of the key which must be present in the known_hosts file (optional if key specified)

**key** The public key which must be present in the known_hosts file (optional if fingerprint specified)

**port** optional parameter, port which will be used to when requesting the public key from the remote host, defaults to port 22.

**enc** Defines what type of key is being used, can be ed25519, ecdsa ssh-rsa or ssh-dss

**config** The location of the authorized keys file relative to the user's home directory, defaults to ".ssh/known_hosts". If no user is specified, defaults to ``/etc/ssh/ssh_known_hosts". If present, must be an absolute path when a user is not specified.

**hash_hostname** [True] Hash all hostnames and addresses in the known hosts file.

Deprecated since version Carbon: Please use hash_known_hosts instead.

**hash_known_hosts** [True] Hash all hostnames and addresses in the known hosts file.

**timeout** [int] Set the timeout for connection attempts. If `timeout` seconds have elapsed since a connection was initiated to a host or since the last time anything was read from that host, then the connection is closed and the host in question considered unavailable. Default is 5 seconds.

New in version 2016.3.0.

### 13.16.185 salt.states.stateconf

#### Stateconf System

The stateconf system is intended for use only with the stateconf renderer. This State module presents the set function. This function does not execute any functionality, but is used to interact with the stateconf renderer.

`salt.states.stateconf.`**`context`**(*name*, ***kwargs*)
No-op state to support state config via the stateconf renderer.

`salt.states.stateconf.`**`set`**(*name*, ***kwargs*)
No-op state to support state config via the stateconf renderer.

### 13.16.186 salt.states.status

Minion status monitoring

Maps to the *status* execution module.

`salt.states.status.`**`loadavg`**(*name*, *maximum=None*, *minimum=None*)
Return the current load average for the specified minion. Available values for name are *1-min*, *5-min* and *15-min*. *minimum* and *maximum* values should be passed in as strings.

`salt.states.status.`**`process`**(*name*)
Return whether the specified signature is found in the process tree. This differs slightly from the services states, in that it may refer to a process that is not managed via the init system.

### 13.16.187 salt.states.stormpath_account

Support for Stormpath.

New in version 2015.8.0.

`salt.states.stormpath_account.`**`absent`**(*name*, *directory_id=None*)
Ensure that an account associated with the given email address is absent. Will search all directories for the account, unless a directory_id is specified.
**name** The email address of the account to delete.
**directory_id** Optional. The ID of the directory that the account is expected to belong to. If not specified, then a list of directories will be retrieved, and each will be scanned for the account. Specifying a directory_id will therefore cut down on the number of requests to Stormpath, and increase performance of this state.

`salt.states.stormpath_account.`**`present`**(*name*, ***kwargs*)
Ensure that an account is present and properly configured
**name** The email address associated with the Stormpath account
**directory_id** The ID of a directory which the account belongs to. Required.
**password** Required when creating a new account. If specified, it is advisable to reference the password in another database using an `sdb://` URL. Will NOT update the password if an account already exists.
**givenName** Required when creating a new account.
**surname** Required when creating a new account.
**username** Optional. Must be unique across the owning directory. If not specified, the username will default to the email field.
**middleName** Optional.
**status** `enabled` accounts are able to login to their assigned applications, `disabled` accounts may not login to applications, `unverified` accounts are disabled and have not verified their email address.
**customData**. Optional. Must be specified as a dict.

### 13.16.188 salt.states.supervisord

#### Interaction with the Supervisor daemon

```
wsgi_server:
  supervisord.running:
    - require:
      - pkg: supervisor
    - watch:
      - file: /etc/nginx/sites-enabled/wsgi_server.conf
```

salt.states.supervisord.**dead**(*name*, *user=None*, *conf_file=None*, *bin_env=None*, ***kwargs*)

Ensure the named service is dead (not running).

**name** Service name as defined in the supervisor configuration file

**user** Name of the user to run the supervisorctl command

New in version 0.17.0.

**conf_file** path to supervisorctl config file

**bin_env** path to supervisorctl bin or path to virtualenv with supervisor installed

salt.states.supervisord.**mod_watch**(*name*, *restart=True*, *update=False*, *user=None*, *conf_file=None*, *bin_env=None*, ***kwargs*)

salt.states.supervisord.**running**(*name*, *restart=False*, *update=False*, *user=None*, *conf_file=None*, *bin_env=None*, ***kwargs*)

Ensure the named service is running.

**name** Service name as defined in the supervisor configuration file

**restart** Whether to force a restart

**update** Whether to update the supervisor configuration.

**user** Name of the user to run the supervisorctl command

New in version 0.17.0.

**conf_file** path to supervisorctl config file

**bin_env** path to supervisorctl bin or path to virtualenv with supervisor installed

### 13.16.189 salt.states.svn

#### Manage SVN repositories

Manage repository checkouts via the svn vcs system. Note that subversion must be installed for these states to be available, so svn states should include a requisite to a pkg.installed state for the package which provides subversion (`subversion` in most cases). Example:

```
subversion:
  pkg.installed

http://unladen-swallow.googlecode.com/svn/trunk/:
  svn.latest:
    - target: /tmp/swallow
```

salt.states.svn.**dirty**(*name*, *target*, *user=None*, *username=None*, *password=None*, *ignore_unversioned=False*)

Determine if the working directory has been changed.

salt.states.svn.**export**(*name*, *target=None*, *rev=None*, *user=None*, *username=None*, *password=None*, *force=False*, *overwrite=False*, *externals=True*, *trust=False*)

Export a file or directory from an SVN repository

**name** Address and path to the file or directory to be exported.
**target** Name of the target directory where the checkout will put the working directory
**rev** [None] The name revision number to checkout. Enable ``force'' if the directory already exists.
**user** [None] Name of the user performing repository management operations
**username** [None] The user to access the name repository with. The svn default is the current user
**password** Connect to the Subversion server with this password

New in version 0.17.0.

**force** [False] Continue if conflicts are encountered
**overwrite** [False] Overwrite existing target
**externals** [True] Change to False to not checkout or update externals
**trust** [False] Automatically trust the remote server. SVN's --trust-server-cert

`salt.states.svn.`**`latest`**(*name*, *target=None*, *rev=None*, *user=None*, *username=None*, *password=None*, *force=False*, *externals=True*, *trust=False*)

Checkout or update the working directory to the latest revision from the remote repository.
**name** Address of the name repository as passed to ``svn checkout''
**target** Name of the target directory where the checkout will put the working directory
**rev** [None] The name revision number to checkout. Enable ``force'' if the directory already exists.
**user** [None] Name of the user performing repository management operations
**username** [None] The user to access the name repository with. The svn default is the current user
**password** Connect to the Subversion server with this password

New in version 0.17.0.

**force** [False] Continue if conflicts are encountered
**externals** [True] Change to False to not checkout or update externals
**trust** [False] Automatically trust the remote server. SVN's --trust-server-cert

## 13.16.190 salt.states.sysctl

### Configuration of the Linux kernel using sysctl

Control the kernel sysctl system.

```
vm.swappiness:
  sysctl.present:
    - value: 20
```

`salt.states.sysctl.`**`present`**(*name*, *value*, *config=None*)

Ensure that the named sysctl value is set in memory and persisted to the named configuration file. The default sysctl configuration file is /etc/sysctl.conf
**name** The name of the sysctl value to edit
**value** The sysctl value to apply
**config** The location of the sysctl configuration file. If not specified, the proper location will be detected based on platform.

## 13.16.191 salt.states.syslog_ng

### State module for syslog_ng

**maintainer** Tibor Benke <btibi@sch.bme.hu>

**maturity** new

**depends** cmd, ps, syslog_ng

**platform** all

**Users can generate syslog-ng configuration files from YAML format or use** plain ones and reload, start, or stop their syslog-ng by using this module.

### Details

The service module is not available on all system, so this module includes `syslog_ng.reloaded`, `syslog_ng.stopped`, and `syslog_ng.started` functions. If the service module is available on the computers, users should use that.

Users can generate syslog-ng configuration with `syslog_ng.config` function. For more information see syslog-ng state usage.

### Syslog-ng configuration file format

The syntax of a configuration snippet in syslog-ng.conf:

```
object_type object_id {<options>};
```

These constructions are also called statements. There are options inside of them:

```
option(parameter1, parameter2); option2(parameter1, parameter2);
```

You can find more information about syslog-ng's configuration syntax in the Syslog-ng Admin guide: http://www.balabit.com/sites/default/files/documents/syslog-ng-ose-3.5-guides/en/syslog-ng-ose-v3.5-guide-admin/html-single/index.html#syslog-ng.conf.5

`salt.states.syslog_ng.`**`config`**(*name*, *config*, *write=True*)
Builds syslog-ng configuration.

name : the id of the Salt document config : the parsed YAML code write : if True, it writes the config into the configuration file, otherwise just returns it

`salt.states.syslog_ng.`**`reloaded`**(*name*)
Reloads syslog-ng.

`salt.states.syslog_ng.`**`started`**(*name=None*, *user=None*, *group=None*, *chroot=None*, *caps=None*, *no_caps=False*, *pidfile=None*, *enable_core=False*, *fd_limit=None*, *verbose=False*, *debug=False*, *trace=False*, *yydebug=False*, *persist_file=None*, *control=None*, *worker_threads=None*, **args*, ***kwargs*)
Ensures, that syslog-ng is started via the given parameters.

Users shouldn't use this function, if the service module is available on their system.

`salt.states.syslog_ng.`**`stopped`**(*name=None*)
Kills syslog-ng.

## 13.16.192 salt.states.sysrc

`salt.states.sysrc.`**`absent`**(*name*, ***kwargs*)
Ensure a sysrc variable is absent.
**name** The variable name to set
**file** (optional) The rc file to add the variable to.
**jail** (option) the name or JID of the jail to set the value in.

salt.states.sysrc.**managed**(*name*, *value*, ***kwargs*)

Ensure a sysrc variable is set to a specific value.

**name** The variable name to set

**value** Value to set the variable to

**file** (optional) The rc file to add the variable to.

**jail** (option) the name or JID of the jail to set the value in.

Example:

```
syslogd:
  sysrc.managed:
    - name: syslogd_flags
    - value: -ss
```

### 13.16.193 salt.states.telemetry_alert

New in version 2016.3.0..

#### Manage Telemetry alert configurations

Create, Update and destroy Mongo Telemetry alert configurations.

This module uses requests, which can be installed via package, or pip.

This module accepts explicit credential (telemetry api key) or can also read api key credentials from a pillar. Example:

```
ensure telemetry alert X is defined on deployment Y:
    telemetry_alert.present:
        - deployment_id: "rs-XXXXXX"
        - metric_name: "testMetric"
        - alert_config:
           max: 1
           filter:  SERVER_ROLE_MONGOD_PRIMARY
           escalate_to: "example@pagerduty.com"
        - name: "**MANAGED BY ORCA DO NOT EDIT BY HAND** manages alarm on testMetric"
```

salt.states.telemetry_alert.**absent**(*name*, *deployment_id*, *metric_name*, *api_key=None*, *profile='telemetry'*)

Ensure the telemetry alert config is deleted

**name** An optional description of the alarms (not currently supported by telemetry API)

**deployment_id** Specifies the ID of the root deployment resource (replica set cluster or sharded cluster) to which this alert definition is attached

**metric_name** Specifies the unique ID of the metric to whose values these thresholds will be applied

**api_key** Telemetry api key for the user

**profile** A dict with telemetry config data. If present, will be used instead of api_key.

salt.states.telemetry_alert.**present**(*name*, *deployment_id*, *metric_name*, *alert_config*, *api_key=None*, *profile='telemetry'*)

Ensure the telemetry alert exists.

**name** An optional description of the alarm (not currently supported by telemetry API)

**deployment_id** Specifies the ID of the root deployment resource (replica set cluster or sharded cluster) to which this alert definition is attached

**metric_name** Specifies the unique ID of the metric to whose values these thresholds will be applied

**alert_config: Is a list of dictionaries where each dict contains the following fields:**

**filter** By default the alert will apply to the deployment and all its constituent resources. If the alert only applies to a subset of those resources, a filter may be specified to narrow this scope.

**min** the smallest ``ok'' value the metric may take on; if missing or null, no minimum is enforced.
**max** the largest ``ok'' value the metric may take on; if missing or null, no maximum is enforced.
**notify_all** Used to indicate if you want to alert both onCallEngineer and apiNotifications
**api_key** Telemetry api key for the user
**profile** A dict of telemetry config information. If present, will be used instead of api_key.

### 13.16.194 salt.states.test

#### Test States

**Provide test case states that enable easy testing of things to do with** state calls, e.g. running, calling, logging, output filtering etc.

```
always-passes-with-any-kwarg:
  test.nop:
    - name: foo
    - something: else
    - foo: bar

always-passes:
  test.succeed_without_changes:
    - name: foo

always-fails:
  test.fail_without_changes:
    - name: foo

always-changes-and-succeeds:
  test.succeed_with_changes:
    - name: foo

always-changes-and-fails:
  test.fail_with_changes:
    - name: foo

my-custom-combo:
  test.configurable_test_state:
    - name: foo
    - changes: True
    - result: False
    - comment: bar.baz

is-pillar-foo-present-and-bar-is-int:
  test.check_pillar:
    - present:
        - foo
    - integer:
        - bar
```

salt.states.test.**check_pillar**(*name*, *present=None*, *boolean=None*, *integer=None*, *string=None*, *listing=None*, *dictionary=None*, *verbose=False*)

Checks the presence and, optionally, the type of given keys in Pillar. Supported kwargs for types are: - boolean (bool) - integer (int) - string (str) - listing (list) - dictionary (dict)

Checking for None type pillars is not implemented yet.

```
is-pillar-foo-present-and-bar-is-int:
  test.check_pillar:
    - present:
        - foo
    - integer:
        - bar
```

salt.states.test.**configurable_test_state**(*name*, *changes=True*, *result=True*, *comment=''*)
A configurable test state which determines its output based on the inputs.

New in version 2014.7.0.
**name**: A unique string.
**changes**: Do we return anything in the changes field? Accepts True, False, and `Random' Default is True
**result**: Do we return successfully or not? Accepts True, False, and `Random' Default is True If test is True and changes is True, this will be None. If test is True and and changes is False, this will be True.
**comment**: String to fill the comment field with. Default is `'

salt.states.test.**fail_with_changes**(*name*)
Returns failure and changes is not empty.

New in version 2014.7.0.
**name**: A unique string.

salt.states.test.**fail_without_changes**(*name*)
Returns failure.

New in version 2014.7.0.
**name**: A unique string.

salt.states.test.**mod_watch**(*name*, *sfun=None*, ***kwargs*)
Call this function via a watch statement

New in version 2014.7.0.

Any parameters in the state return dictionary can be customized by adding the keywords `result`, `comment`, and `changes`.

```
this_state_will_return_changes:
  test.succeed_with_changes

this_state_will_NOT_return_changes:
  test.succeed_without_changes

this_state_is_watching_another_state:
  test.succeed_without_changes:
    - comment: 'This is a custom comment'
    - watch:
      - test: this_state_will_return_changes
      - test: this_state_will_NOT_return_changes

this_state_is_also_watching_another_state:
  test.succeed_without_changes:
    - watch:
      - test: this_state_will_NOT_return_changes
```

salt.states.test.**nop**(*name*, ***kwargs*)
A no-op state that does nothing. Useful in conjunction with the *use* requisite, or in templates which could otherwise be empty due to jinja rendering

New in version 2015.8.1.

salt.states.test.**show_notification**(*name*, *text=None*, ***kwargs*)
Simple notification using text argument.

New in version 2015.8.0.
**name** A unique string.
**text** Text to return in the comment.

salt.states.test.**succeed_with_changes**(*name*)
Returns successful and changes is not empty

New in version 2014.7.0.
**name**: A unique string.

salt.states.test.**succeed_without_changes**(*name*)
Returns successful.

New in version 2014.7.0.
**name** A unique string.

### 13.16.195 salt.states.timezone

#### Management of timezones

The timezone can be managed for the system:

```
America/Denver:
  timezone.system
```

The system and the hardware clock are not necessarily set to the same time. By default, the hardware clock is set to localtime, meaning it is set to the same time as the system clock. If *utc* is set to True, then the hardware clock will be set to UTC, and the system clock will be an offset of that.

```
America/Denver:
  timezone.system:
    - utc: True
```

The Ubuntu community documentation contains an explanation of this setting, as it applies to systems that dual-boot with Windows. This is explained in greater detail here.

salt.states.timezone.**system**(*name*, *utc=True*)
Set the timezone for the system.
**name** The name of the timezone to use (e.g.: America/Denver)
**utc** Whether or not to set the hardware clock to UTC (default is True)

### 13.16.196 salt.states.tls

#### Enforce state for SSL/TLS

salt.states.tls.**valid_certificate**(*name*, *weeks=0*, *days=0*, *hours=0*, *minutes=0*, *seconds=0*)
Verify that a TLS certificate is valid now and (optionally) will be valid for the time specified through weeks, days, hours, minutes, and seconds.

### 13.16.197 salt.states.tomcat

This state uses the manager webapp to manage Apache tomcat webapps This state requires the manager webapp to be enabled

The following grains/pillar should be set:

```
tomcat-manager:user: admin user name
tomcat-manager:passwd: password
```

and also configure a user in the conf/tomcat-users.xml file:

```
<?xml version='1.0' encoding='utf-8'?>
<tomcat-users>
    <role rolename="manager-script"/>
    <user username="tomcat" password="tomcat" roles="manager-script"/>
</tomcat-users>
```

Notes:

- Not supported multiple version on the same context path
- **More information about tomcat manager**: http://tomcat.apache.org/tomcat-7.0-doc/manager-howto.html
- **if you use only this module for deployments you might want to restrict** access to the manager so its only accessible via localhost for more info: http://tomcat.apache.org/tomcat-7.0-doc/manager-howto.html#Configuring_Manager_Application_Access
- Tested on:

  **JVM Vendor**: Sun Microsystems Inc.

  **JVM Version**: 1.6.0_43-b01

  **OS Architecture**: amd64

  **OS Name**: Linux

  **OS Version**: 2.6.32-358.el6.x86_64

  **Tomcat Version**: Apache Tomcat/7.0.37

`salt.states.tomcat.`**`mod_watch`**(*name*, *url='http://localhost:8080/manager'*, *timeout=180*)
The tomcat watcher function. When called it will reload the webapp in question

`salt.states.tomcat.`**`undeployed`**(*name*, *url='http://localhost:8080/manager'*, *timeout=180*)
Enforce that the WAR will be un-deployed from the server
**name** the context path to deploy
**url** [http://localhost:8080/manager] the URL of the server manager webapp
**timeout** [180] timeout for HTTP request to the tomcat manager
Example:

```
jenkins:
  tomcat.undeployed:
    - name: /ran
    - require:
      - service: application-service
```

`salt.states.tomcat.`**`wait`**(*name*, *url='http://localhost:8080/manager'*, *timeout=180*)
Wait for the tomcat manager to load

Notice that if tomcat is not running we won't wait for it start and the state will fail. This state can be required in the tomcat.war_deployed state to make sure tomcat is running and that the manager is running as well and ready for deployment
**url** [http://localhost:8080/manager] the URL of the server manager webapp
**timeout** [180] timeout for HTTP request to the tomcat manager
Example:

```
tomcat-service:
  service.running:
    - name: tomcat
    - enable: True

wait-for-tomcatmanager:
  tomcat.wait:
    - timeout: 300
    - require:
      - service: tomcat-service

jenkins:
  tomcat.war_deployed:
    - name: /ran
    - war: salt://jenkins-1.2.4.war
    - require:
      - tomcat: wait-for-tomcatmanager
```

salt.states.tomcat.**war_deployed**(*name*, *war*, *force=False*, *url='http://localhost:8080/manager'*, *timeout=180*, *temp_war_location=None*, *version=''*)

Enforce that the WAR will be deployed and started in the context path it will make use of WAR versions
**for more info**: http://tomcat.apache.org/tomcat-7.0-doc/config/context.html#Naming
**name** the context path to deploy
**war** absolute path to WAR file (should be accessible by the user running tomcat) or a path supported by the salt.modules.cp.get_url function
**force** force deploy even if version strings are the same, False by default.
**url** [http://localhost:8080/manager] the URL of the server manager webapp
**timeout** [180] timeout for HTTP request to the tomcat manager
**temp_war_location** [None] use another location to temporarily copy to war file by default the system's temp directory is used
**version** [``] Specify the war version. If this argument is provided, it overrides the version encoded in the war file name, if one is present.

New in version 2015.8.6.

Example:

```
jenkins:
  tomcat.war_deployed:
    - name: /ran
    - war: salt://jenkins-1.2.4.war
    - require:
      - service: application-service
```

### 13.16.198 salt.states.trafficserver

#### Control Apache Traffic Server

New in version 2015.8.0.

salt.states.trafficserver.**bounce_cluster**(*name*)

Bounce all Traffic Server nodes in the cluster. Bouncing Traffic Server shuts down and immediately restarts Traffic Server, node-by-node.

```
bounce_ats_cluster:
  trafficserver.bounce_cluster
```

salt.states.trafficserver.**bounce_local**(*name*, *drain=False*)

Bounce Traffic Server on the local node. Bouncing Traffic Server shuts down and immediately restarts the Traffic Server node.

This option modifies the behavior of traffic_line -b and traffic_line -L such that traffic_server is not shut down until the number of active client connections drops to the number given by the proxy.config.restart.active_client_threshold configuration variable.

```
bounce_ats_local:
  trafficserver.bounce_local

bounce_ats_local:
  trafficserver.bounce_local
    - drain: True
```

salt.states.trafficserver.**clear_cluster**(*name*)

Clears accumulated statistics on all nodes in the cluster.

```
clear_ats_cluster:
  trafficserver.clear_cluster
```

salt.states.trafficserver.**clear_node**(*name*)

Clears accumulated statistics on the local node.

```
clear_ats_node:
  trafficserver.clear_node
```

salt.states.trafficserver.**offline**(*name*, *path*)

Mark a cache storage device as offline. The storage is identified by a path which must match exactly a path specified in storage.config. This removes the storage from the cache and redirects requests that would have used this storage to other storage. This has exactly the same effect as a disk failure for that storage. This does not persist across restarts of the traffic_server process.

```
offline_ats_path:
  trafficserver.offline:
    - path: /path/to/cache
```

salt.states.trafficserver.**refresh**(*name*)

Initiate a Traffic Server configuration file reread. Use this command to update the running configuration after any configuration file modification.

The timestamp of the last reconfiguration event (in seconds since epoch) is published in the proxy.node.config.reconfigure_time metric.

```
refresh_ats:
  trafficserver.refresh
```

salt.states.trafficserver.**restart_cluster**(*name*)

Restart the traffic_manager process and the traffic_server process on all the nodes in a cluster.

```
restart_ats_cluster:
  trafficserver.restart_cluster
```

salt.states.trafficserver.**restart_local**(*name*, *drain=False*)

Restart the traffic_manager and traffic_server processes on the local node.

This option modifies the behavior of traffic_line -b and traffic_line -L such that traffic_server is not shut down until the number of active client connections drops to the number given by the proxy.config.restart.active_client_threshold configuration variable.

```
restart_ats_local:
  trafficserver.restart_local

restart_ats_local_drain:
  trafficserver.restart_local
    - drain: True
```

salt.states.trafficserver.**set_var**(*name*, *value*)

Set Traffic Server variable values

```
proxy.config.proxy_name:
  trafficserver.set_var:
    - value: cdn.site.domain.tld

OR

traffic_server_setting:
  trafficserver.set_var:
    - name: proxy.config.proxy_name
    - value: cdn.site.domain.tld
```

salt.states.trafficserver.**shutdown**(*name*)

Shut down Traffic Server on the local node.

```
shutdown_ats:
  trafficserver.shutdown
```

salt.states.trafficserver.**startup**(*name*)

Start Traffic Server on the local node.

```
startup_ats:
  trafficserver.startup
```

salt.states.trafficserver.**zero_cluster**(*name*)

Reset performance statistics to zero across the cluster.

```
zero_ats_cluster:
  trafficserver.zero_cluster
```

salt.states.trafficserver.**zero_node**(*name*)

Reset performance statistics to zero on the local node.

```
zero_ats_node:
  trafficserver.zero_node
```

### 13.16.199 salt.states.tuned

Interface to Red Hat tuned-adm module

**maintainer** Syed Ali <alicsyed@gmail.com>

**maturity** new

**depends** cmd.run

**platform** Linux

`salt.states.tuned.`**`off`**(*name=None*)

Turns `tuned' off. Example tuned.sls file for turning tuned off:
**tuned**: tuned.off: []
**To see a valid list of states call execution module**: `tuned.list`

`salt.states.tuned.`**`profile`**(*name*)

This state module allows you to modify system tuned parameters

Example tuned.sls file to set profile to virtual-guest
**tuned**:
**tuned**:

- profile
- name: virtual-guest

**name** tuned profile name to set the system to
**To see a valid list of states call execution module**: `tuned.list`

### 13.16.200 salt.states.uptime

#### Monitor Web Server with Uptime

Uptime is an open source remote monitoring application using Node.js, MongoDB, and Twitter Bootstrap.

**Warning**: This state module is beta. It might be changed later to include more or less automation.

**Note**: This state module requires a pillar to specify the location of your uptime install

```
uptime:
  application_url: "http://uptime-url.example.org"
```

Example:

```
url:
  uptime.monitored
url/sitemap.xml:
  uptime.monitored:
    - polling: 600 # every hour
```

`salt.states.uptime.`**`monitored`**(*name*, ***params*)

Makes sure an URL is monitored by uptime. Checks if URL is already monitored, and if not, adds it.

### 13.16.201 salt.states.user

#### Management of user accounts

The user module is used to create and manage user settings, users can be set as either absent or present

```
fred:
  user.present:
    - fullname: Fred Jones
    - shell: /bin/zsh
    - home: /home/fred
    - uid: 4000
    - gid: 4000
    - groups:
      - wheel
      - storage
      - games

testuser:
  user.absent
```

salt.states.user.**absent**(*name*, *purge=False*, *force=False*)

Ensure that the named user is absent

**name** The name of the user to remove

**purge** Set purge to True to delete all of the user's files as well as the user, Default is `False`.

**force** If the user is logged in, the absent state will fail. Set the force option to True to remove the user even if they are logged in. Not supported in FreeBSD and Solaris, Default is `False`.

salt.states.user.**present**(*name*, *uid=None*, *gid=None*, *gid_from_name=False*, *groups=None*, *optional_groups=None*, *remove_groups=True*, *home=None*, *createhome=True*, *password=None*, *enforce_password=True*, *empty_password=False*, *shell=None*, *unique=True*, *system=False*, *fullname=None*, *roomnumber=None*, *workphone=None*, *homephone=None*, *loginclass=None*, *date=None*, *mindays=None*, *maxdays=None*, *inactdays=None*, *warndays=None*, *expire=None*, *win_homedrive=None*, *win_profile=None*, *win_logonscript=None*, *win_description=None*)

Ensure that the named user is present with the specified properties

**name** The name of the user to manage

**uid** The user id to assign, if left empty then the next available user id will be assigned

**gid** The default group id. Also accepts group name.

**gid_from_name** If True, the default group id will be set to the id of the group with the same name as the user, Default is `False`.

**groups** A list of groups to assign the user to, pass a list object. If a group specified here does not exist on the minion, the state will fail. If set to the empty list, the user will be removed from all groups except the default group. If unset, salt will assume current groups are still wanted (see issue #28706).

**optional_groups** A list of groups to assign the user to, pass a list object. If a group specified here does not exist on the minion, the state will silently ignore it.

NOTE: If the same group is specified in both ``groups'' and ``optional_groups'', then it will be assumed to be required and not optional.

**remove_groups** Remove groups that the user is a member of that weren't specified in the state, Default is `True`.

**home** The custom login directory of user. Uses default value of underlying system if not set. Notice that this directory does not have to exist. This also the location of the home directory to create if createhome is set to True.

**createhome** [True] If set to `False`, the home directory will not be created if it doesn't already exist.

> **Warning:** Not supported on Windows or Mac OS.
>
> Additionally, parent directories will *not* be created. The parent directory for `home` must already exist.

**password** A password hash to set for the user. This field is only supported on Linux, FreeBSD, NetBSD, OpenBSD, and Solaris. If the `empty_password` argument is set to `True` then `password` is ignored. For Windows this is the plain text password. For Linux, the hash can be generated with `openssl passwd -1`.

Changed in version 0.16.0: BSD support added.

**enforce_password** Set to False to keep the password from being changed if it has already been set and the password hash differs from what is specified in the ``password'' field. This option will be ignored if ``password'' is not specified, Default is `True`.

**empty_password** Set to True to enable password-less login for user, Default is `False`.

**shell** The login shell, defaults to the system default shell

**unique** Require a unique UID, Default is `True`.

**system** Choose UID in the range of FIRST_SYSTEM_UID and LAST_SYSTEM_UID, Default is `False`.

**loginclass** The login class, defaults to empty (BSD only)

User comment field (GECOS) support (currently Linux, BSD, and MacOS only):

The below values should be specified as strings to avoid ambiguities when the values are loaded. (Especially the phone and room number fields which are likely to contain numeric data)

**fullname** The user's full name

**roomnumber** The user's room number (not supported in MacOS)

**workphone** The user's work phone number (not supported in MacOS)

**homephone** The user's home phone number (not supported in MacOS)

Changed in version 2014.7.0: Shadow attribute support added.

Shadow attributes support (currently Linux only):

The below values should be specified as integers.

**date** Date of last change of password, represented in days since epoch (January 1, 1970).

**mindays** The minimum number of days between password changes.

**maxdays** The maximum number of days between password changes.

**inactdays** The number of days after a password expires before an account is locked.

**warndays** Number of days prior to maxdays to warn users.

**expire** Date that account expires, represented in days since epoch (January 1, 1970).

The below parameters apply to windows only:

**win_homedrive (Windows Only)** The drive letter to use for the home directory. If not specified the home directory will be a unc path. Otherwise the home directory will be mapped to the specified drive. Must be a letter followed by a colon. Because of the colon, the value must be surrounded by single quotes. ie: - win_homedrive: `U:

Changed in version 2015.8.0.

**win_profile (Windows Only)** The custom profile directory of the user. Uses default value of underlying system if not set.

Changed in version 2015.8.0.

**win_logonscript (Windows Only)** The full path to the logon script to run when the user logs in.

Changed in version 2015.8.0.

**win_description (Windows Only)** A brief description of the purpose of the users account.

Changed in version 2015.8.0.

### 13.16.202 salt.states.vbox_guest

VirtualBox Guest Additions installer state

salt.states.vbox_guest.**additions_installed**(*name*, *reboot=False*, *upgrade_os=False*)
Ensure that the VirtualBox Guest Additions are installed. Uses the CD, connected by VirtualBox.
**name** The name has no functional value and is only used as a tracking reference.
**reboot** [False] Restart OS to complete installation.
**upgrade_os** [False] Upgrade OS (to ensure the latests version of kernel and developer tools installed).

salt.states.vbox_guest.**additions_removed**(*name*, *force=False*)
Ensure that the VirtualBox Guest Additions are removed. Uses the CD, connected by VirtualBox.

To connect VirtualBox Guest Additions via VirtualBox graphical interface press `Host+D' (`Host' is usually `Right Ctrl').
**name** The name has no functional value and is only used as a tracking reference.
**force** Force VirtualBox Guest Additions removing.

salt.states.vbox_guest.**grant_access_to_shared_folders_to**(*name*, *users=None*)
Grant access to auto-mounted shared folders to the users.

User is specified by it's name. To grant access for several users use argument *users*.
**name** Name of the user to grant access to auto-mounted shared folders to.
**users** List of names of users to grant access to auto-mounted shared folders to. If specified, *name* will not be taken into account.

### 13.16.203 salt.states.victorops

#### Create an Event in VictorOps

New in version 2015.8.0.

This state is useful for creating events on the VictorOps service during state runs.

```
webserver-warning-message:
  victorops.create_event:
    - message_type: 'CRITICAL'
    - entity_id: 'webserver/diskspace'
    - state_message: 'Webserver diskspace is low.'
```

salt.states.victorops.**create_event**(*name*, *message_type*, *routing_key='everyone'*, ***kwargs*)
Create an event on the VictorOps service

```
webserver-warning-message:
  victorops.create_event:
    - message_type: 'CRITICAL'
    - entity_id: 'webserver/diskspace'
    - state_message: 'Webserver diskspace is low.'

database-server-warning-message:
  victorops.create_event:
    - message_type: 'WARNING'
    - entity_id: 'db_server/load'
    - state_message: 'Database Server load is high.'
    - entity_is_host: True
    - entity_display_name: 'dbdserver.example.com'
```

The following parameters are required:

**name** This is a short description of the event.
**message_type** One of the following values: INFO, WARNING, ACKNOWLEDGEMENT, CRITICAL, RECOVERY.
The following parameters are optional:
**routing_key** The key for where messages should be routed. By default, sent to `everyone' route.
**entity_id** The name of alerting entity. If not provided, a random name will be assigned.
**timestamp** Timestamp of the alert in seconds since epoch. Defaults to the time the alert is received at VictorOps.
**timestamp_fmt** The date format for the timestamp parameter. Defaults to `'%Y-%m-%dT%H:%M:%S'.
**state_start_time** The time this entity entered its current state (seconds since epoch). Defaults to the time alert is received.
**state_start_time_fmt** The date format for the timestamp parameter. Defaults to `%Y-%m-%dT%H:%M:%S'.
**state_message** Any additional status information from the alert item.
**entity_is_host** Used within VictorOps to select the appropriate display format for the incident.
**entity_display_name** Used within VictorOps to display a human-readable name for the entity.
**ack_message** A user entered comment for the acknowledgment.
**ack_author** The user that acknowledged the incident.

### 13.16.204 salt.states.virt module

#### Manage virt

For the key certificate this state uses the external pillar in the master to call for the generation and signing of certificates for systems running libvirt:

```
libvirt_keys:
  virt.keys
```

salt.states.virt.**keys**(*name*, *basepath='/etc/pki'*)
Manage libvirt keys.
**name** The name variable used to track the execution
**basepath** Defaults to `/etc/pki`, this is the root location used for libvirt keys on the hypervisor

salt.states.virt.**powered_off**(*name*)
Stops a VM by power off.

New in version 2016.3.0.

```
domain_name:
  virt.stopped
```

salt.states.virt.**rebooted**(*name*)
Reboots VMs

New in version 2016.3.0.
**Parameters** **name** --
**Returns**

salt.states.virt.**reverted**(*name*, *snapshot=None*, *cleanup=False*)
Deprecated since version 2016.3.0.

Reverts to the particular snapshot.

New in version 2016.3.0.

```
domain_name:
  virt.reverted:
    - cleanup: True

domain_name_1:
  virt.reverted:
    - snapshot: snapshot_name
    - cleanup: False
```

salt.states.virt.**running**(*name*, ***kwargs*)

Starts an existing guest, or defines and starts a new VM with specified arguments.

New in version 2016.3.0.

```
domain_name:
  virt.running
```

```
domain_name:
  virt.running:
    - cpu: 2
    - mem: 2048
    - eth0_mac: 00:00:6a:53:00:e3
```

salt.states.virt.**saved**(*name*, *suffix=None*)

Deprecated since version 2016.3.0: Use *snapshot()* instead.

Takes a snapshot of a particular VM or by a UNIX-style wildcard.

New in version 2016.3.0.

```
domain_name:
  virt.saved:
    - suffix: periodic

domain*:
  virt.saved:
    - suffix: periodic
```

salt.states.virt.**snapshot**(*name*, *suffix=None*)

Takes a snapshot of a particular VM or by a UNIX-style wildcard.

New in version 2016.3.0.

```
domain_name:
  virt.snapshot:
    - suffix: periodic

domain*:
  virt.snapshot:
    - suffix: periodic
```

salt.states.virt.**stopped**(*name*)

Stops a VM by shutting it down nicely.

New in version 2016.3.0.

```
domain_name:
  virt.stopped
```

salt.states.virt.**unpowered**(*name*)

Deprecated since version 2016.3.0: Use `powered_off()` instead.

Stops a VM by power off.

New in version 2016.3.0.

```
domain_name:
  virt.stopped
```

### 13.16.205 salt.states.virtualenv

Setup of Python virtualenv sandboxes.

New in version 0.17.0.

salt.states.virtualenv_mod.**managed**(*name*, *venv_bin=None*, *requirements=None*, *system_site_packages=False*, *distribute=False*, *use_wheel=False*, *clear=False*, *python=None*, *extra_search_dir=None*, *never_download=None*, *prompt=None*, *user=None*, *no_chown=False*, *cwd=None*, *index_url=None*, *extra_index_url=None*, *pre_releases=False*, *no_deps=False*, *pip_download=None*, *pip_download_cache=None*, *pip_exists_action=None*, *pip_ignore_installed=False*, *proxy=None*, *use_vt=False*, *env_vars=None*, *no_use_wheel=False*, *pip_upgrade=False*, *pip_pkgs=None*)

Create a virtualenv and optionally manage it with pip

**name** Path to the virtualenv.

**requirements**: **None** Path to a pip requirements file. If the path begins with `salt://` the file will be transferred from the master file server.

**use_wheel**: **False** Prefer wheel archives (requires pip >= 1.4).

**python** [None] Python executable used to build the virtualenv

**user**: **None** The user under which to run virtualenv and pip.

**no_chown**: **False** When user is given, do not attempt to copy and chown a requirements file (needed if the requirements file refers to other files via relative paths, as the copy-and-chown procedure does not account for such files)

**cwd**: **None** Path to the working directory where *pip install* is executed.

**no_deps**: **False** Pass *--no-deps* to *pip install*.

**pip_exists_action**: **None** Default action of pip when a path already exists: (s)witch, (i)gnore, (w)ipe, (b)ackup.

**proxy**: **None** Proxy address which is passed to *pip install*.

**env_vars**: **None** Set environment variables that some builds will depend on. For example, a Python C-module may have a Makefile that needs INCLUDE_PATH set to pick up a header file while compiling.

**no_use_wheel**: **False** Force to not use wheel archives (requires pip>=1.4)

**pip_upgrade**: **False** Pass *--upgrade* to *pip install*.

**pip_pkgs**: **None** As an alternative to *requirements*, pass a list of pip packages that should be installed.

Also accepts any kwargs that the virtualenv module will. However, some kwargs, such as the `pip` option, require `-distribute: True`.

```
/var/www/myvirtualenv.com:
  virtualenv.managed:
    - system_site_packages: False
    - requirements: salt://REQUIREMENTS.txt
```

## 13.16.206 salt.states.win_certutil module

### Installing of certificates to the Windows Certificate Manager

Install certificates to the Windows Certificate Manager

```
salt://certs/cert.cer:
  certutil.add_store:
    - store: TrustedPublisher
```

salt.states.win_certutil.**add_store**(*name*, *store*, *saltenv='base'*)

Store a certificate to the given store

**name** The certificate to store, this can use local paths or salt:// paths

**store** The store to add the certificate to

**saltenv** The salt environment to use, this is ignored if a local path is specified

salt.states.win_certutil.**del_store**(*name*, *store*, *saltenv='base'*)

Remove a certificate in the given store

**name** The certificate to remove, this can use local paths or salt:// paths

**store** The store to remove the certificate from

**saltenv** The salt environment to use, this is ignored if a local path is specified

## 13.16.207 salt.states.win_dacl

Windows Object Access Control Lists

**Ensure an ACL is present**

**parameters**: name - the path of the object objectType - Registry/File/Directory user - user account for the ace permission - permission for the ace (see module win_acl for available permissions for each objectType) acetype - Allow/Deny propagation - how the ACL should apply to child objects (see module win_acl for available propagation types)

```
addAcl:
  win_dacl.present:
    - name: HKEY_LOCAL_MACHINE\SOFTWARE\mykey
    - objectType: Registry
    - user: FakeUser
    - permission: FullControl
    - acetype: ALLOW
    - propagation: KEY&SUBKEYS
```

**Ensure an ACL does not exist**

**parameters**: name - the path of the object objectType - Registry/File/Directory user - user account for the ace permission - permission for the ace (see module win_acl for available permissions for each objectType) acetype - Allow/Deny propagation - how the ACL should apply to child objects (see module win_acl for available propagation types)

```

```

**removeAcl**:

**win_dacl.absent**:

- name: HKEY_LOCAL_MACHINESOFTWAREmykey
- objectType: Registry

- user: FakeUser
- permission: FulLControl
- acetype: ALLOW
- propagation: KEY&SUBKEYS

**Ensure an object is inheriting permissions**

**parameters**: name - the path of the object objectType - Registry/File/Directory clear_existing_acl - True/False - when inheritance is enabled, should the existing ACL be kept or cleared out

```
```

**eInherit**:

**win_dacl.enableinheritance**:

- name: HKEY_LOCAL_MACHINESOFTWAREmykey
- objectType: Registry
- clear_existing_acl: True

**Ensure an object is not inheriting permissions**

**parameters**: name - the path of the object objectType - Registry/File/Directory copy_inherited_acl - True/False - if inheritance is enabled, should the inherited permissions be copied to the ACL when inheritance is disabled

```
```

**dInherit**:

**win_dacl.disableinheritance**:

- name: HKEY_LOCAL_MACHINESOFTWAREmykey
- objectType: Registry
- copy_inherited_acl: False

`salt.states.win_dacl.`**`absent`**(*name*, *objectType*, *user*, *permission*, *acetype*, *propagation*)
Ensure a Linux ACL does not exist

`salt.states.win_dacl.`**`disinherit`**(*name*, *objectType*, *copy_inherited_acl=True*)
Ensure an object is not inheriting ACLs from its parent

`salt.states.win_dacl.`**`inherit`**(*name*, *objectType*, *clear_existing_acl=False*)
Ensure an object is inheriting ACLs from its parent

`salt.states.win_dacl.`**`present`**(*name*, *objectType*, *user*, *permission*, *acetype*, *propagation*)
Ensure an ACE is present

### 13.16.208 salt.states.win_dism module

#### Installing of Windows features using DISM

Install windows features/capabilties with DISM

```
Language.Basic~~~en-US~0.0.1.0:
  dism.capability_installed

NetFx3:
  dism.feature_installed
```

salt.states.win_dism.**capability_installed**(*name*, *source=None*, *limit_access=False*, *image=None*, *restart=False*)

Install a DISM capability

**Args**: name (str): The capability to install source (str): The optional source of the capability limit_access (bool): Prevent DISM from contacting Windows Update for
online images

**image (Optional[str])**: **The path to the root directory of an offline** Windows image. If *None* is passed, the running operating system is targeted. Default is None.

restart (Optional[bool]): Reboot the machine if required by the install

**Example**: Run `dism.available_capabilities` to get a list of available capabilities. This will help you get the proper name to use.

```
install_dotnet35:
  dism.capability_installed:
    - name: NetFX3~~~~
```

salt.states.win_dism.**capability_removed**(*name*, *image=None*, *restart=False*)

Uninstall a DISM capability

**Args**: name (str): The capability to uninstall image (Optional[str]): The path to the root directory of an offline Windows image. If *None* is passed, the running operating system is targeted. Default is None.

restart (Optional[bool]): Reboot the machine if required by the install

**Example**: Run `dism.installed_capabilities` to get a list of installed capabilities. This will help you get the proper name to use.

```
remove_dotnet35:
  dism.capability_removed:
    - name: NetFX3~~~~
```

salt.states.win_dism.**feature_installed**(*name*, *package=None*, *source=None*, *limit_access=False*, *enable_parent=False*, *image=None*, *restart=False*)

Install a DISM feature

**Args**: name (str): The feature in which to install package (Optional[str]): The parent package for the feature. You do not
have to specify the package if it is the Windows Foundation Package. Otherwise, use package to specify the parent package of the feature

source (str): The optional source of the feature limit_access (bool): Prevent DISM from contacting Windows Update for
online images

**enable_parent (Optional[bool])**: **True will enable all parent features of** the specified feature

**image (Optional[str])**: **The path to the root directory of an offline** Windows image. If *None* is passed, the running operating system is targeted. Default is None.

restart (Optional[bool]): Reboot the machine if required by the install

**Example**: Run `dism.available_features` to get a list of available features. This will help you get the proper name to use.

```
install_telnet_client:
  dism.feature_installed:
    - name: TelnetClient
```

salt.states.win_dism.**feature_removed**(*name*, *remove_payload=False*, *image=None*, *restart=False*)

Disables a feature.

**Args**: name (str): The feature to disable remove_payload (Optional[bool]): Remove the feature's payload. Must supply source when enabling in the future.

**image (Optional[str])**: **The path to the root directory of an offline** Windows image. If *None* is passed, the running operating system is targeted. Default is None.

restart (Optional[bool]): Reboot the machine if required by the install

**Example**: Run `dism.installed_features` to get a list of installed features. This will help you get the proper name to use.

```
remove_telnet_client:
  dism.feature_removed:
    - name: TelnetClient
    - remove_payload: True
```

salt.states.win_dism.**package_installed**(*name*, *ignore_check=False*, *prevent_pending=False*, *image=None*, *restart=False*)

Install a package.

**Args**:

**name (str)**: **The package to install. Can be a .cab file, a .msu file,** or a folder

**ignore_check (Optional[bool])**: **Skip installation of the package if the** applicability checks fail

**prevent_pending (Optional[bool])**: **Skip the installation of the package** if there are pending online actions

**image (Optional[str])**: **The path to the root directory of an offline** Windows image. If *None* is passed, the running operating system is targeted. Default is None.

restart (Optional[bool]): Reboot the machine if required by the install

Example:

```
install_KB123123123:
  dism.package_installed:
    - name: C:\Packages\KB123123123.cab
```

salt.states.win_dism.**package_removed**(*name*, *image=None*, *restart=False*)

Uninstall a package

**Args**:

**name (str)**: **The full path to the package. Can be either a .cab file or a** folder. Should point to the original source of the package, not to where the file is installed. This can also be the name of a package as listed in `dism.installed_packages`

**image (Optional[str])**: **The path to the root directory of an offline** Windows image. If *None* is passed, the running operating system is targeted. Default is None.

restart (Optional[bool]): Reboot the machine if required by the install

Example:

```
# Example using source
remove_KB1231231:
  dism.package_installed:
    - name: C:\Packages\KB1231231.cab

# Example using name from ``dism.installed_packages``
remove_KB1231231:
```

```
dism.package_installed:
  - name: Package_for_KB1231231~31bf3856ad364e35~amd64~~10.0.1.3
```

### 13.16.209 salt.states.win_dns_client

Module for configuring DNS Client on Windows systems

salt.states.win_dns_client.**dns_dhcp**(*name*, *interface='Local Area Connection'*)
Configure the DNS server list from DHCP Server

salt.states.win_dns_client.**dns_exists**(*name*, *servers=None*, *interface='Local Area Connection'*, *replace=False*)
Configure the DNS server list in the specified interface

Example:

```
config_dns_servers:
  win_dns_client.dns_exists:
    - replace: True #remove any servers not in the "servers" list, default is False
    - servers:
      - 8.8.8.8
      - 8.8.8.9
```

salt.states.win_dns_client.**primary_suffix**(*name*, *suffix=None*, *updates=False*)
New in version 2014.7.0.

Configure the global primary DNS suffix of a DHCP client.

**suffix** [None] The suffix which is advertised for this client when acquiring a DHCP lease When none is set, the explicitly configured DNS suffix will be removed.

**updates** [False] Allow syncing the DNS suffix with the AD domain when the client's AD domain membership changes

```
primary_dns_suffix:
    win_dns_client.primary_suffix:
        - suffix: sub.domain.tld
        - updates: True
```

### 13.16.210 salt.states.win_firewall

State for configuring Windows Firewall

salt.states.win_firewall.**add_rule**(*name*, *localport*, *protocol='tcp'*, *action='allow'*, *dir='in'*)
Add a new firewall rule (Windows only)

salt.states.win_firewall.**disabled**(*name*)
Disable all the firewall profiles (Windows only)

### 13.16.211 salt.states.win_iis module

Microsoft IIS site management

This module provides the ability to add/remove websites and application pools from Microsoft IIS.

New in version 2016.3.0.

salt.states.win_iis.**create_apppool**(*name*)
Creates an IIS application pool.
**name** The name of the application pool to use

salt.states.win_iis.**deployed**(*name*, *protocol*, *sourcepath*, *port*, *apppool=''*, *hostheader=''*, *ipaddress=''*)
Ensure the website has been deployed. This only validates against the website name and will not update information on existing websites with the same name. If the website name doesn't exist it will create with the provided parameters.
**name** Name of the website in IIS.
**protocol** http or https
**sourcepath** The directory path on the IIS server to use as a root file store. example: c:websiteswebsite1
**port** The network port to listen for traffic. example: 80
**apppool** The application pool to configure for the website. Must already exist.
**hostheader** The hostheader to route to this website.
**ipaddress** The website ipaddress

salt.states.win_iis.**remove_apppool**(*name*)
Removes an existing Application Pool from the server
**name** The name of the application pool to remove

salt.states.win_iis.**remove_site**(*name*)
Remove an existing website from the webserver.
**name** The website name as shown in IIS.

### 13.16.212 salt.states.win_license module

#### Installation and activation of windows licenses

Install and activate windows licenses

```
XXXXX-XXXXX-XXXXX-XXXXX-XXXXX:
  license.activate
```

salt.states.win_license.**activate**(*name*)
Install and activate the given product key
**name** The 5x5 product key given to you by Microsoft

### 13.16.213 salt.states.win_network

#### Configuration of network interfaces on Windows hosts

New in version 2014.1.0.

This module provides the `network` state(s) on Windows hosts. DNS servers, IP addresses and default gateways can currently be managed.

Below is an example of the configuration for an interface that uses DHCP for both DNS servers and IP addresses:

```
Local Area Connection #2:
  network.managed:
    - dns_proto: dhcp
    - ip_proto: dhcp
```

**Note**: Both the `dns_proto` and `ip_proto` arguments are required.

Static DNS and IP addresses can be configured like so:

```
Local Area Connection #2:
  network.managed:
    - dns_proto: static
    - dns_servers:
      - 8.8.8.8
      - 8.8.4.4
    - ip_proto: static
    - ip_addrs:
      - 10.2.3.4/24
```

**Note**: IP addresses are specified using the format `<ip-address>/<subnet-length>`. Salt provides a convenience function called *ip.get_subnet_length* to calculate the subnet length from a netmask.

Optionally, if you are setting a static IP address, you can also specify the default gateway using the `gateway` parameter:

```
Local Area Connection #2:
  network.managed:
    - dns_proto: static
    - dns_servers:
      - 8.8.8.8
      - 8.8.4.4
    - ip_proto: static
    - ip_addrs:
      - 10.2.3.4/24
    - gateway: 10.2.3.1
```

salt.states.win_network.**managed**(*name*, *dns_proto=None*, *dns_servers=None*, *ip_proto=None*, *ip_addrs=None*, *gateway=None*, *enabled=True*, ***kwargs*)

Ensure that the named interface is configured properly.

**name** The name of the interface to manage

**dns_proto** [None] Set to `static` and use the `dns_servers` parameter to provide a list of DNS nameservers. set to `dhcp` to use DHCP to get the DNS servers.

**dns_servers** [None] A list of static DNS servers.

**ip_proto** [None] Set to `static` and use the `ip_addrs` and (optionally) `gateway` parameters to provide a list of static IP addresses and the default gateway. Set to `dhcp` to use DHCP.

**ip_addrs** [None] A list of static IP addresses.

**gateway** [None] A list of static IP addresses.

**enabled** [True] Set to `False` to ensure that this interface is disabled.

### 13.16.214 salt.states.win_path

Manage the Windows System PATH

salt.states.win_path.**absent**(*name*)

Remove the directory from the SYSTEM path

index: where the directory should be placed in the PATH (default: 0)

Example:

```
'C:\sysinternals':
  win_path.absent
```

salt.states.win_path.**exists**(*name*, *index=None*)

Add the directory to the system PATH at index location

index: where the directory should be placed in the PATH (default: None) [Note: Providing no index will append directory to PATH and will not enforce its location within the PATH.]

Example:

```
'C:\python27':
  win_path.exists

'C:\sysinternals':
  win_path.exists:
    index: 0
```

### 13.16.215 salt.states.win_powercfg

This module allows you to control the power settings of a windows minion via powercfg.

New in version 2015.8.0.

```
monitor:
    powercfg.set_timeout:
        - value: 30
        - power: dc
```

salt.states.win_powercfg.**set_timeout**(*name*, *value*, *power='ac'*)

Set the sleep timeouts of specific items such as disk, monitor.

CLI Example:

```
monitor:
    powercfg.set_timeout:
        - value: 30
        - power: dc

disk:
    powercfg.set_timeout:
        - value: 12
        - power: ac
```

**name** The setting to change, can be one of the following: monitor, disk, standby, hibernate
**timeout** The amount of time in minutes before the item will timeout i.e the monitor
**power** Should we set the value for AC or DC (battery)? Valid options ac,dc.

### 13.16.216 salt.states.win_servermanager

Manage Windows features via the ServerManager powershell module

salt.states.win_servermanager.**installed**(*name*, *recurse=False*, *force=False*, *source=None*, *restart=False*, *exclude=None*)

Install the windows feature
**Args:**

**name (str)**: **Short name of the feature (the right column in** win_servermanager.list_available)
recurse (Optional[bool]): install all sub-features as well force (Optional[bool]): if the feature is installed but one of its
sub-features are not installed set this to True to force the installation of the sub-features

**source (Optional[str])**: **Path to the source files if missing from the** target system. None means that the system will use windows update services to find the required files. Default is None

**restart (Optional[bool])**: **Restarts the computer when installation is** complete, if required by the role/feature installed. Default is False

**exclude (Optional[str])**: **The name of the feature to exclude when** installing the named feature.

**Note**: Some features require reboot after un/installation. If so, until the server is restarted other features can not be installed!

**Example**: Run `salt MinionName win_servermanager.list_available` to get a list of available roles and features. Use the name in the right column. Do not use the role or feature names mentioned in the PKGMGR documentation. In this example for IIS-WebServerRole the name to be used is Web-Server.

```
ISWebserverRole:
  win_servermanager.installed:
    - force: True
    - recurse: True
    - name: Web-Server
```

`salt.states.win_servermanager.`**`removed`**(*name*, *remove_payload=False*, *restart=False*)

Remove the windows feature

**Args**:

**name (str)**: **Short name of the feature (the right column in** win_servermanager.list_available)

**remove_payload (Optional[bool])**: **True will case the feature to be** removed from the side-by-side store

**restart (Optional[bool])**: **Restarts the computer when uninstall is** complete, if required by the role/feature removed. Default is False

**Note**: Some features require a reboot after uninstallation. If so the feature will not be completely uninstalled until the server is restarted.

**Example**: Run `salt MinionName win_servermanager.list_installed` to get a list of all features installed. Use the top name listed for each feature, not the indented one. Do not use the role or feature names mentioned in the PKGMGR documentation.

```
ISWebserverRole:
  win_servermanager.removed:
    - name: Web-Server
```

### 13.16.217 salt.states.win_system

#### Management of Windows system information

New in version 2014.1.0.

This state is used to manage system information such as the computer name and description.

```
ERIK-WORKSTATION:
  system.computer_name: []

This is Erik's computer, don't touch!:
  system.computer_desc: []
```

salt.states.win_system.**computer_desc**(*name*)
Manage the computer's description field
**name** The desired computer description

salt.states.win_system.**computer_name**(*name*)
Manage the computer's name
**name** The desired computer name

salt.states.win_system.**hostname**(*name*)
New in version 2016.3.0.

Manage the hostname of the computer
**name** The hostname to set

## 13.16.218 salt.states.win_update

### Management of the windows update agent

New in version 2014.7.0.

Set windows updates to run by category. Default behavior is to install all updates that do not require user interaction to complete.

Optionally set `category` to a category of your choice to only install certain updates. Default is to set to install all available updates.

The following example will install all Security and Critical Updates, and download but not install standard updates.

```
updates:
  win_update.installed:
    - categories:
      - 'Critical Updates'
      - 'Security Updates'
    - skips:
      - downloaded
  win_update.downloaded:
    - categories:
      - 'Updates'
    - skips:
      - downloaded
```

You can also specify a number of features about the update to have a fine grain approach to specific types of updates. These are the following features/states of updates available for configuring:

```
'UI' - User interaction required, skipped by default
'downloaded' - Already downloaded, included by default
'present' - Present on computer, skipped by default
'installed' - Already installed, skipped by default
'reboot' - Reboot required, included by default
'hidden' - Skip updates that have been hidden, skipped by default
'software' - Software updates, included by default
'driver' - driver updates, included by default
```

The following example installs all driver updates that don't require a reboot: .. code-block:: yaml

**gryffindor**:

**win_update.installed**:

- skips: - driver: True - software: False - reboot: False

To just update your windows machine, add this your sls:

```
updates:
  win_update.installed
```

**class** salt.states.win_update.**PyWinUpdater**(*categories=None*, *skipUI=True*, *skipDownloaded=False*, *skipInstalled=True*, *skipReboot=False*, *skipPresent=False*, *skipSoftwareUpdates=False*, *skipDriverUpdates=False*, *skipHidden=True*)

**AutoSearch**()

**Download**()

**GetAvailableCategories**()

**GetCategories**()

**GetDownloadResults**()

**GetInstallationResults**()

**Install**()

**Search**(*searchString*)

**SetCategories**(*categories*)

**SetSkip**(*skip*, *state*)

**SetSkips**(*skips*)

salt.states.win_update.**downloaded**(*name*, *categories=None*, *skips=None*, *retries=10*)

Cache updates for later install.

**name**: if categories is left empty, it will be assumed that you are passing the category option through the name. These are separate because you can only have one name, but can have multiple categories.

**categories**: the list of categories to be downloaded. These are simply strings in the update's information, so there is no enumeration of the categories available. Some known categories:

```
Updates
Windows 7
Critical Updates
Security Updates
Update Rollups
```

**skips**: a list of features of the updates to cull by. Available features:

```
'UI' - User interaction required, skipped by default
'downloaded' - Already downloaded, skipped by default (downloading)
'present' - Present on computer, included by default (installing)
'installed' - Already installed, skipped by default
'reboot' - Reboot required, included by default
'hidden' - skip those updates that have been hidden.
'software' - Software updates, included by default
'driver' - driver updates, skipped by default
```

**retries** Number of retries to make before giving up. This is total, not per step.

salt.states.win_update.**installed**(*name*, *categories=None*, *skips=None*, *retries=10*)

Install specified windows updates.

**name**: if categories is left empty, it will be assumed that you are passing the category option through the name. These are separate because you can only have one name, but can have multiple categories.

**categories**: the list of categories to be downloaded. These are simply strings in the update's information, so there is no enumeration of the categories available. Some known categories:

```
Updates
Windows 7
Critical Updates
Security Updates
Update Rollups
```

**skips**: a list of features of the updates to cull by. Available features:

```
'UI' - User interaction required, skipped by default
'downloaded' - Already downloaded, skipped by default (downloading)
'present' - Present on computer, included by default (installing)
'installed' - Already installed, skipped by default
'reboot' - Reboot required, included by default
'hidden' - skip those updates that have been hidden.
'software' - Software updates, included by default
'driver' - driver updates, skipped by default
```

**retries** Number of retries to make before giving up. This is total, not per step.

### 13.16.219 salt.states.winrepo

Manage Windows Package Repository

`salt.states.winrepo.`**`genrepo`**(*name*, *force=False*, *allow_empty=False*)

Refresh the winrepo.p file of the repository (salt-run winrepo.genrepo)

If `force` is `True` no checks will be made and the repository will be generated if `allow_empty` is `True` then the state will not return an error if there are 0 packages,

**Note**: This state only loads on minions that have the `roles: salt-master` grain set.

Example:

```
winrepo:
  winrepo.genrepo
```

### 13.16.220 salt.states.x509

Manage X509 Certificates

New in version 2015.8.0.

This module can enable managing a complete PKI infrastructure including creating private keys, CA's, certificates and CRLs. It includes the ability to generate a private key on a server, and have the corresponding public key sent to a remote CA to create a CA signed certificate. This can be done in a secure manner, where private keys are always generated locally and never moved across the network.

Here is a simple example scenario. In this example `ca` is the ca server, and `www` is a web server that needs a certificate signed by `ca`.

For remote signing, peers must be permitted to remotely call the *`sign_remote_certificate`* function.

/etc/salt/master.d/peer.conf

```
peer:
  .*:
    - x509.sign_remote_certificate
```

/srv/salt/top.sls

```
base:
  '*':
    - cert
  'ca':
    - ca
  'www':
    - www
```

This state creates the CA key, certificate and signing policy. It also publishes the certificate to the mine where it can be easily retrieved by other minions.

/srv/salt/ca.sls

```
salt-minion:
  service.running:
    - enable: True
    - listen:
      - file: /etc/salt/minion.d/signing_policies.conf

/etc/salt/minion.d/signing_policies.conf:
  file.managed:
    - source: salt://signing_policies.conf

/etc/pki:
  file.directory: []

/etc/pki/issued_certs:
  file.directory: []

/etc/pki/ca.key:
  x509.private_key_managed:
    - bits: 4096
    - backup: True
    - require:
      - file: /etc/pki

/etc/pki/ca.crt:
  x509.certificate_managed:
    - signing_private_key: /etc/pki/ca.key
    - CN: ca.example.com
    - C: US
    - ST: Utah
    - L: Salt Lake City
    - basicConstraints: "critical CA:true"
    - keyUsage: "critical cRLSign, keyCertSign"
    - subjectKeyIdentifier: hash
    - authorityKeyIdentifier: keyid,issuer:always
    - days_valid: 3650
    - days_remaining: 0
    - backup: True
    - require:
      - x509: /etc/pki/ca.key
```

```
mine.send:
  module.run:
    - func: x509.get_pem_entries
    - kwargs:
        glob_path: /etc/pki/ca.crt
    - onchanges:
      - x509: /etc/pki/ca.crt
```

The signing policy defines properties that override any property requested or included in a CRL. It also can define a restricted list of minons which are allowed to remotely invoke this signing policy.

/srv/salt/signing_policies.conf

```
x509_signing_policies:
  www:
    - minions: 'www'
    - signing_private_key: /etc/pki/ca.key
    - signing_cert: /etc/pki/ca.crt
    - C: US
    - ST: Utah
    - L: Salt Lake City
    - basicConstraints: "critical CA:false"
    - keyUsage: "critical keyEncipherment"
    - subjectKeyIdentifier: hash
    - authorityKeyIdentifier: keyid,issuer:always
    - days_valid: 90
    - copypath: /etc/pki/issued_certs/
```

This state will instruct all minions to trust certificates signed by our new CA. Using jinja to strip newlines from the text avoids dealing with newlines in the rendered yaml, and the `sign_remote_certificate` state will handle properly formatting the text before writing the output.

/srv/salt/cert.sls

```
/usr/local/share/ca-certificates:
  file.directory: []

/usr/local/share/ca-certificates/intca.crt:
  x509.pem_managed:
    - text: {{ salt['mine.get']('ca', 'x509.get_pem_entries')['ca']['/etc/pki/ca.crt
 ↪']|replace('\n', '') }}
```

This state creates a private key then requests a certificate signed by ca according to the www policy.

/srv/salt/www.sls

```
/etc/pki/www.key:
  x509.private_key_managed:
    - bits: 4096

/etc/pki/www.crt:
  x509.certificate_managed:
    - ca_server: ca
    - signing_policy: www
    - public_key: /etc/pki/www.key
    - CN: www.example.com
    - days_remaining: 30
    - backup: True
```

salt.states.x509.**certificate_managed**(*name*, *days_remaining=90*, *backup=False*, ***kwargs*)

Manage a Certificate

**name**: Path to the certificate

**days_remaining**: The minimum number of days remaining when the certificate should be recreated. Default is 90. A value of 0 disables automatic renewal.

**backup**: When replacing an existing file, backup the old file on the minion. Default is False.

**kwargs**: Any arguments supported by *x509.create_certificate* are supported.

Examples:

```
/etc/pki/ca.crt:
  x509.certificate_managed:
    - signing_private_key: /etc/pki/ca.key
    - CN: ca.example.com
    - C: US
    - ST: Utah
    - L: Salt Lake City
    - basicConstraints: "critical CA:true"
    - keyUsage: "critical cRLSign, keyCertSign"
    - subjectKeyIdentifier: hash
    - authorityKeyIdentifier: keyid,issuer:always
    - days_valid: 3650
    - days_remaining: 0
    - backup: True
```

```
/etc/ssl/www.crt:
  x509.certificate_managed:
    - ca_server: pki
    - signing_policy: www
    - public_key: /etc/ssl/www.key
    - CN: www.example.com
    - days_valid: 90
    - days_remaining: 30
    - backup: True
```

salt.states.x509.**crl_managed**(*name*, *signing_private_key*, *signing_cert=None*, *revoked=None*, *days_valid=100*, *digest=''*, *days_remaining=30*, *include_expired=False*, *backup=False*)

Manage a Certificate Revocation List

**name**: Path to the certificate

**signing_private_key**: The private key that will be used to sign this crl. This is usually your CA's private key.

**signing_cert**: The certificate of the authority that will be used to sign this crl. This is usually your CA's certificate.

**revoked**: A list of certificates to revoke. Must include either a serial number or a the certificate itself. Can optionally include the revocation date and notAfter date from the certificate. See example below for details.

**days_valid**: The number of days the certificate should be valid for. Default is 100.

**digest**: The digest to use for signing the CRL. This has no effect on versions of pyOpenSSL less than 0.14

**days_remaining**: The crl should be automatically recreated if there are less than `days_remaining` days until the crl expires. Set to 0 to disable automatic renewal. Default is 30.

**include_expired**: Include expired certificates in the CRL. Default is `False`.

**backup**: When replacing an existing file, backup the old file on the minion. Default is False.

Example:

```
/etc/pki/ca.crl:
  x509.crl_managed:
    - signing_private_key: /etc/pki/myca.key
    - signing_cert: /etc/pki/myca.crt
    - revoked:
      - compromized_Web_key:
        - certificate: /etc/pki/certs/badweb.crt
        - revocation_date: 2015-03-01 00:00:00
        - reason: keyCompromise
      - terminated_vpn_user:
        - serial_number: D6:D2:DC:D8:4D:5C:C0:F4
        - not_after: 2016-01-01 00:00:00
        - revocation_date: 2015-02-25 00:00:00
        - reason: cessationOfOperation
```

salt.states.x509.**csr_managed**(*name*, *backup=False*, ***kwargs*)

Manage a Certificate Signing Request

**name**: Path to the CSR

**properties**: The properties to be added to the certificate request, including items like subject, extensions and public key. See above for valid properties.

Example:

```
/etc/pki/mycert.csr:
  x509.csr_managed:
     - private_key: /etc/pki/mycert.key
     - CN: www.example.com
     - C: US
     - ST: Utah
     - L: Salt Lake City
     - keyUsage: 'critical dataEncipherment'
```

salt.states.x509.**pem_managed**(*name*, *text*, *backup=False*)

Manage the contents of a PEM file directly with the content in text, ensuring correct formatting.

**name**: The path to the file to manage

**text**: The PEM formatted text to write.

**backup**: When replacing an existing file, backup the old file on the minion. Default is False.

salt.states.x509.**private_key_managed**(*name*, *bits=2048*, *new=False*, *backup=False*)

Manage a private key's existence.

**name**: Path to the private key

**bits**: Key length in bits. Default 2048.

**new**: Always create a new key. Defaults to False. Combining new with `prereq` can allow key rotation whenever a new certificiate is generated.

**backup**: When replacing an existing file, backup the old file on the minion. Default is False.

Example:

The jinja templating in this example ensures a private key is generated if the file doesn't exist and that a new private key is generated whenever the certificate that uses it is to be renewed.

```
/etc/pki/www.key:
  x509.private_key_managed:
    - bits: 4096
    - new: True
    {% if salt['file.file_exists']('/etc/pki/ca.key') -%}
    - prereq:
      - x509: /etc/pki/www.crt
    {%- endif %}
```

### 13.16.221 salt.states.xmpp

#### Sending Messages over XMPP

New in version 2014.1.0.

This state is useful for firing messages during state runs, using the XMPP protocol

```
server-warning-message:
  xmpp.send_msg:
    - name: 'This is a server warning message'
    - profile: my-xmpp-account
    - recipient: admins@xmpp.example.com/salt
```

salt.states.xmpp.**send_msg**(*name*, *recipient*, *profile*)

Send a message to an XMPP user

```
server-warning-message:
  xmpp.send_msg:
    - name: 'This is a server warning message'
    - profile: my-xmpp-account
    - recipient: admins@xmpp.example.com/salt
```

**name** The message to send to the XMPP user

salt.states.xmpp.**send_msg_multi**(*name*, *profile*, *recipients=None*, *rooms=None*)

Send a message to an list of recipients or rooms

```
server-warning-message:
  xmpp.send_msg:
    - name: 'This is a server warning message'
    - profile: my-xmpp-account
    - recipients:
      - admins@xmpp.example.com/salt
    - rooms:
      - qa@conference.xmpp.example.com
```

**name** The message to send to the XMPP user

### 13.16.222 salt.states.zabbix_host module

Management of Zabbix hosts.

**codeauthor** Jiri Kotlin <jiri.kotlin@ultimum.io>

salt.states.zabbix_host.**absent**(*name*)

Ensures that the host does not exists, eventually deletes host.
**Args**: name: technical name of the host

salt.states.zabbix_host.**present**(*host*, *groups*, *interfaces*, ***kwargs*)

Ensures that the host exists, eventually creates new host.

NOTE: please use argument visible_name instead of name to not mess with name from salt sls
**Args**: host: technical name of the host groups: groupids of host groups to add the host to interfaces: interfaces to be created for the host
**optional kwargs**: _connection_user: zabbix user (can also be set in opts or pillar, see module's docstring)
_connection_password: zabbix password (can also be set in opts or pillar, see module's docstring)
_connection_url: url of zabbix frontend (can also be set in opts or pillar, see module's docstring)

**visible_name: string with visible name of the host, use `visible_name' instead of `name' parameter** to not mess with value supplied from Salt sls file.

all standard host properties: keyword argument names differ depending on your zabbix version, see:

https://www.zabbix.com/documentation/2.4/manual/api/reference/host/object#host

### 13.16.223 salt.states.zabbix_hostgroup module

Management of Zabbix host groups.

**codeauthor** Jiri Kotlin <jiri.kotlin@ultimum.io>

`salt.states.zabbix_hostgroup.`**`absent`**`(`*name*`)`
Ensures that the host group does not exist, eventually delete host group.
**Args**: name: name of the host group

`salt.states.zabbix_hostgroup.`**`present`**`(`*name*`)`
Ensures that the host group exists, eventually creates new host group.
**Args**: name: name of the host group

### 13.16.224 salt.states.zabbix_user module

Management of Zabbix users.

**codeauthor** Jiri Kotlin <jiri.kotlin@ultimum.io>

`salt.states.zabbix_user.`**`absent`**`(`*name*`)`
Ensures that the user does not exist, eventually delete user.
**Args**: name: user alias

`salt.states.zabbix_user.`**`present`**`(`*alias*, *passwd*, *usrgrps*, ***kwargs*`)`
Ensures that the user exists, eventually creates new user.

NOTE: use argument firstname instead of name to not mess values with name from salt sls
**Args**: alias: user alias passwd: user's password usrgrps: user groups to add the user to
**optional kwargs**:

**_connection_user: zabbix user (can also be set in opts or pillar,** see execution module's docstring)

**_connection_password: zabbix password (can also be set in opts or pillar,** see execution module's docstring)

**_connection_url: url of zabbix frontend (can also be set in opts or pillar,** see execution module's docstring)

**firstname: string with firstname of the user, use `firstname' instead of `name' parameter to not mess** with value supplied from Salt sls file.

### 13.16.225 salt.states.zabbix_usergroup module

Management of Zabbix user groups.

**codeauthor** Jiri Kotlin <jiri.kotlin@ultimum.io>

`salt.states.zabbix_usergroup.`**`absent`**`(`*name*`)`
Ensures that the user group does not exist, eventually delete user group.

**Args**: name: name of the user group

salt.states.zabbix_usergroup.**present**(*name*, ***kwargs*)

Creates new user.

**Args**: alias: user alias passwd: user's password usrgrps: user groups to add the user to

**optional kwargs**:

**_connection_user**: **zabbix user (can also be set in opts or pillar**, see execution module's docstring)

**_connection_password**: **zabbix password (can also be set in opts or pillar**, see execution module's docstring)

**_connection_url**: **url of zabbix frontend (can also be set in opts or pillar**, see execution module's docstring)

all standard user group properties: keyword argument names differ depending on your zabbix version, see:

https://www.zabbix.com/documentation/2.0/manual/appendix/api/usergroup/definitions#user_group

## 13.16.226 salt.states.zcbuildout

### Management of zc.buildout

This module is inspired from minitage's buildout maker (https://github.com/minitage/minitage/blob/master/src/minitage/core/makers/buildout.py)

New in version 2016.3.0.

---

**Note**: This state module is beta; the API is subject to change and no promise as to performance or functionality is yet present

---

### Available Functions

- built

```
installed1
  buildout.installed:
    - name: /path/to/buildout

installed2
  buildout.installed:
    - name: /path/to/buildout
    - parts:
      - a
      - b
    - python: /path/to/pythonpath/bin/python
    - unless: /bin/test_something_installed
    - onlyif: /bin/test_else_installed
```

salt.states.zcbuildout.**installed**(*name*, *config='buildout.cfg'*, *quiet=False*, *parts=None*, *user=None*, *env=()*, *buildout_ver=None*, *test_release=False*, *distribute=None*, *new_st=None*, *offline=False*, *newest=False*, *python='/usr/bin/python'*, *debug=False*, *verbose=False*, *unless=None*, *onlyif=None*, *use_vt=False*, *loglevel='debug'*, ***kwargs*)

Install buildout in a specific directory

It is a thin wrapper to modules.buildout.buildout
**name** directory to execute in
quiet
do not output console & logs

**config** buildout config to use (default: buildout.cfg)
**parts** specific buildout parts to run
**user** user used to run buildout as

New in version 2014.1.4.
**env** environment variables to set when running
**buildout_ver** force a specific buildout version (1 | 2)
**test_release** buildout accept test release
**new_st** Forcing use of setuptools >= 0.7
**distribute** use distribute over setuptools if possible
**offline** does buildout run offline
**python** python to use
**debug** run buildout with -D debug flag
**onlyif** Only execute cmd if statement on the host return 0
**unless** Do not execute cmd if statement on the host return 0
**newest** run buildout in newest mode
**verbose** run buildout in verbose mode (-vvvvv)
**use_vt** Use the new salt VT to stream output [experimental]
**loglevel** loglevel for buildout commands

### 13.16.227 salt.states.zenoss

State to manage monitoring in Zenoss.

New in version 2016.3.0.

This state module depends on the `zenoss' Salt execution module.

Allows for setting a state of minions in Zenoss using the Zenoss API. Currently Zenoss 4.x is supported.

```
enable_monitoring:
  zenoss.monitored:
    - name: web01.example.com
    - device_class: /Servers/Linux
    - collector: localhost
    - prod_state: 1000
```

salt.states.zenoss.**monitored**(*name*, *device_class=None*, *collector='localhost'*, *prod_state=None*)

Ensure a device is monitored. The `name' given will be used for Zenoss device name and should be resolvable.

```
enable_monitoring:
  zenoss.monitored:
    - name: web01.example.com
    - device_class: /Servers/Linux
```

```
    - collector: localhost
    - prod_state: 1000
```

### 13.16.228 salt.states.zk_concurrency

#### Control concurrency of steps within state execution using zookeeper

This module allows you to ``wrap'' a state's execution with concurrency control. This is useful to protect against all hosts executing highstate simultaneously if your services don't all HUP restart. The common way of protecting against this is to run in batch mode, but that doesn't protect from another person running the same batch command (and thereby having 2x the number of nodes deploying at once).

This module will bock while acquiring a slot, meaning that however the command gets called it will coordinate with zookeeper to ensure that no more than max_concurrency steps are executing with a single path.

```
acquire_lock:
  zk_concurrency.lock:
    - name: /trafficeserver
    - zk_hosts: 'zookeeper:2181'
    - max_concurrency: 4
    - prereq:
        - service: trafficserver

trafficserver:
  service.running:
    - watch:
      - file: /etc/trafficserver/records.config

/etc/trafficserver/records.config:
  file.managed:
    - source: salt://records.config

release_lock:
  zk_concurrency.unlock:
    - name: /trafficserver
    - require:
        - service: trafficserver
```

This example would allow the file state to change, but would limit the concurrency of the trafficserver service restart to 4.

`salt.states.zk_concurrency.`**`lock`**(*name*, *zk_hosts*, *identifier=None*, *max_concurrency=1*, *timeout=None*, *ephemeral_lease=False*)

Block state execution until you are able to get the lock (or hit the timeout)

`salt.states.zk_concurrency.`**`min_party`**(*name*, *zk_hosts*, *min_nodes*)

Ensure that there are *min_nodes* in the party at *name*.

`salt.states.zk_concurrency.`**`unlock`**(*name*, *zk_hosts=None*, *identifier=None*, *max_concurrency=1*, *ephemeral_lease=False*)

Remove lease from semaphore.

### 13.16.229 salt.states.zfs

Management zfs datasets

**maintainer** Jorge Schrauwen <sjorge@blackdot.be>

**maturity** new

**depends** zfs

**platform** smartos, illumos, solaris, freebsd, linux

New in version 2016.3.0.

```
test/shares/yuki:
  zfs.filesystem_present:
    - create_parent: true
    - properties:
        quota: 16G

test/iscsi/haruhi:
  zfs.volume_present:
    - create_parent: true
    - volume_size: 16M
    - sparse: true
    - properties:
        readonly: on

test/shares/yuki@frozen:
  zfs.snapshot_present

moka_origin:
  zfs.hold_present
    - snapshot: test/shares/yuki@frozen

test/shares/moka:
  zfs.filesystem_present:
    - cloned_from: test/shares/yuki@frozen

test/shares/moka@tsukune:
  zfs.snapshot_absent
```

salt.states.zfs.**bookmark_absent**(*name*, *force=False*, *recursive=False*)

ensure bookmark is absent on the system

**name** [string] name of snapshot

**force** [boolean] try harder to destroy the dataset (zfs destroy -f)

**recursive** [boolean] also destroy all the child datasets (zfs destroy -r)

salt.states.zfs.**bookmark_present**(*name*, *snapshot*)

ensure bookmark exists

**name** [string] name of bookmark

**snapshot** [string] name of snapshot

salt.states.zfs.**filesystem_absent**(*name*, *force=False*, *recursive=False*)

ensure filesystem is absent on the system

**name** [string] name of filesystem

**force** [boolean] try harder to destroy the dataset (zfs destroy -f)

**recursive** [boolean] also destroy all the child datasets (zfs destroy -r)

..warning:

If a volume with `name` exists, this state will succeed without destroying the volume specified by `name`. This module is dataset type sensitive.

salt.states.zfs.**filesystem_present**(*name*, *create_parent=False*, *properties=None*, *cloned_from=None*)

ensure filesystem exists and has properties set
**name** [string] name of filesystem
**create_parent** [boolean] creates all the non-existing parent datasets. any property specified on the command line using the -o option is ignored.
**cloned_from** [string] name of snapshot to clone
**properties** [dict] additional zfs properties (-o)

---

**Note**: `cloned_from` is only use if the filesystem does not exist yet, when `cloned_from` is set after the filesystem exists it will be ignored.

---

---

**Note**: Properties do not get cloned, if you specify the properties in the state file they will be applied on a subsequent run.

---

`salt.states.zfs.`**`hold_absent`**(*name*, *snapshot*, *recursive=False*)
ensure hold is absent on the system
**name** [string] name of holdt
**snapshot** [string] name of snapshot
**recursive** [boolean] recursively releases a hold with the given tag on the snapshots of all descendent file systems.

`salt.states.zfs.`**`hold_present`**(*name*, *snapshot*, *recursive=False*)
ensure hold is present on the system
**name** [string] name of holdt
**snapshot** [string] name of snapshot
**recursive** [boolean] recursively add hold with the given tag on the snapshots of all descendent file systems.

`salt.states.zfs.`**`promoted`**(*name*)
ensure a dataset is not a clone
**name** [string] name of fileset or volume
..warning:

```
only one dataset can be the origin,
if you promote a clone the original will now point to the promoted dataset
```

`salt.states.zfs.`**`scheduled_snapshot`**(*name*, *prefix*, *recursive=True*, *schedule=None*)
maintain a set of snapshots based on a schedule
**name** [string] name of filesystem or volume
**prefix** [string] prefix for the snapshots e.g. `test' will result in snapshots being named `test-YYYYMMDD_HHMM'
**recursive** [boolean] create snapshots for all children also
**schedule** [dict] dict holding the schedule, the following keys are available (minute, hour, day, month, and year) by default all are set to 0 the value indicated the number of snapshots of that type to keep around.
..warning:

```
snapshots will only be created and pruned every time the state runs.
a schedule must be setup to automatically run the state. this means that if
you run the state daily the hourly snapshot will only be made once per day!
```

`salt.states.zfs.`**`snapshot_absent`**(*name*, *force=False*, *recursive=False*)
ensure snapshot is absent on the system
**name** [string] name of snapshot
**force** [boolean] try harder to destroy the dataset (zfs destroy -f)
**recursive** [boolean] also destroy all the child datasets (zfs destroy -r)

salt.states.zfs.**snapshot_present**(*name*, *recursive=False*, *properties=None*)
ensure snapshot exists and has properties set
**name** [string] name of snapshot
**recursive** [boolean] recursively create snapshots of all descendent datasets
**properties** [dict] additional zfs properties (-o)

salt.states.zfs.**volume_absent**(*name*, *force=False*, *recursive=False*)
ensure volume is absent on the system
**name** [string] name of volume
**force** [boolean] try harder to destroy the dataset (zfs destroy -f)
**recursive** [boolean] also destroy all the child datasets (zfs destroy -r)
..warning:
If a filesystem with `name` exists, this state will succeed without destroying the filesystem specified by `name`. This module is dataset type sensitive.

salt.states.zfs.**volume_present**(*name*, *volume_size*, *sparse=False*, *create_parent=False*, *properties=None*, *cloned_from=None*)
ensure volume exists and has properties set
**name** [string] name of volume
**volume_size** [string] size of volume
**sparse** [boolean] create sparse volume
**create_parent** [boolean] creates all the non-existing parent datasets. any property specified on the command line using the -o option is ignored.
**cloned_from** [string] name of snapshot to clone
**properties** [dict] additional zfs properties (-o)

---

**Note**: `cloned_from` is only use if the volume does not exist yet, when `cloned_from` is set after the volume exists it will be ignored.

---

---

**Note**: Properties do not get cloned, if you specify the properties in the state file they will be applied on a subsequent run.

`volume_size` is considered a property, so the volume's size will be corrected when the properties get updated if it differs from the original volume.

The sparse parameter is ignored when using `cloned_from`.

---

### 13.16.230 salt.states.zpool

Management zpool

**maintainer** Jorge Schrauwen <sjorge@blackdot.be>

**maturity** new

**depends** zpool

**platform** smartos, illumos, solaris, freebsd, linux

New in version 2016.3.0.

```
oldpool:
  zpool.absent:
    - export: true

newpool:
```

```
  zpool.present:
    - config:
        import: false
        force: true
    - properties:
        comment: salty storage pool
    - layout:
        mirror-0:
          /dev/disk0
          /dev/disk1
        mirror-1:
          /dev/disk2
          /dev/disk3

simplepool:
  zpool.present:
    - config:
        import: false
        force: true
    - properties:
        comment: another salty storage pool
    - layout:
        - /dev/disk0
        - /dev/disk1
```

**Warning**: The layout will never be updated, it will only be used at time of creation. It's a whole lot of work to figure out if a devices needs to be detached, removed, ... this is best done by the sysadmin on a case per case basis.

Filesystem properties are also not updated, this should be managed by the zfs state module.

salt.states.zpool.**absent**(*name*, *export=False*, *force=False*)

ensure storage pool is absent on the system

**name** [string] name of storage pool

**export** [boolean] export instread of destroy the zpool if present

**force** [boolean] force destroy or export

salt.states.zpool.**present**(*name*, *properties=None*, *filesystem_properties=None*, *layout=None*, *config=None*)

ensure storage pool is present on the system

**name** [string] name of storage pool

**properties** [dict] optional set of properties to set for the storage pool

**filesystem_properties** [dict] optional set of filesystem properties to set for the storage pool (creation only)

**layout**: **dict** disk layout to use if the pool does not exist (creation only)

**config** [dict] fine grain control over this state

---

**Note**:

**The following configuration properties can be toggled in the config parameter.**

- import (true) - try to import the pool before creating it if absent
- import_dirs (None) - specify additional locations to scan for devices on import
- device_dir (None, SunOS=/dev/rdsk) - specify device directory to use if not absolute path
- force (false) - try to force the import or creation

---

**Note**: Because ID's inside the layout dict must be unique they need to have a suffix.

```
mirror-0:
  /tmp/vdisk3
  /tmp/vdisk2
mirror-1:
  /tmp/vdisk0
  /tmp/vdisk1
```

The above yaml will always result in the following zpool create:

```
zpool create mypool mirror /tmp/vdisk3 /tmp/vdisk2 mirror /tmp/vdisk0 /tmp/vdisk1
```

**Warning**: Pay attention to the order of your dict!

```
mirror-0:
  /tmp/vdisk0
  /tmp/vdisk1
/tmp/vdisk2:
```

The above will result in the following zpool create:

```
zpool create mypool mirror /tmp/vdisk0 /tmp/vdisk1 /tmp/vdisk2
```

Creating a 3-way mirror! Why you probably expect it to be mirror root vdev with 2 devices + a root vdev of 1 device!

## 13.17 thorium modules

| | |
|---|---|
| *check* | The check Thorium state is used to create gateways to commands, the checks make it easy to make states that watch registers for changes and then just succeed or fail based on the state of the register, this creates the pattern of having a command execution get gated by a check state via a requisite. |
| *file* | Writes matches to disk to verify activity, helpful when testing |
| *local* | Run remote execution commands via the local client |
| *reg* | Used to manage the thorium register. |
| *timer* | Allow for flow based timers. |

### 13.17.1 salt.thorium.check module

The check Thorium state is used to create gateways to commands, the checks make it easy to make states that watch registers for changes and then just succeed or fail based on the state of the register, this creates the pattern of having a command execution get gated by a check state via a requisite.

`salt.thorium.check.`**`contains`**(*name*, *value*)

Only succeed if the value in the given register location is greater than the given value

salt.thorium.check.**gt**(*name*, *value*)
Only succeed if the value in the given register location is greater than the given value

salt.thorium.check.**lt**(*name*, *value*)
Only succeed if the value in the given register location is greater than the given value

### 13.17.2 salt.thorium.file module

Writes matches to disk to verify activity, helpful when testing

salt.thorium.file.**save**(*name*)
Save the register to <salt cachedir>/thorium/saves/<name>

### 13.17.3 salt.thorium.local module

Run remote execution commands via the local client

salt.thorium.local.**cmd**(*name*, *tgt*, *fun*, *arg=()*, *tgt_type='glob'*, *ret=''*, *kwarg=None*, ***kwargs*)
Execute a remote execution command

### 13.17.4 salt.thorium.reg module

Used to manage the thorium register. The thorium register is where compound values are stored and computed, such as averages etc.

salt.thorium.reg.**list**(*name*, *add*, *match*)
Add to the named list the specified values

salt.thorium.reg.**mean**(*name*, *add*, *match*)
Accept a numeric value from the matched events and store a running average of the values in the given register. If the specified value is not numeric it will be skipped

salt.thorium.reg.**set**(*name*, *add*, *match*)
Add a value to the named set

### 13.17.5 salt.thorium.timer module

Allow for flow based timers. These timers allow for a sleep to exist across multiple runs of the flow

salt.thorium.timer.**hold**(*name*, *seconds*)
Wait for a given period of time, then fire a result of True, requireing this state allows for an action to be blocked for evaluation based on time

## 13.18 master tops modules

| | |
|---|---|
| *cobbler* | Cobbler Tops |
| *ext_nodes* | External Nodes Classifier |
| *mongo* | Read tops data from a mongodb collection |
| *reclass_adapter* | Read tops data from a reclass database |

### 13.18.1 salt.tops.cobbler

#### Cobbler Tops

Cobbler Tops is a master tops subsystem used to look up mapping information from Cobbler via its API. The same cobbler.* parameters are used for both the Cobbler tops and Cobbler pillar modules.

```
master_tops:
  cobbler: {}
cobbler.url: https://example.com/cobbler_api #default is http://localhost/cobbler_api
cobbler.user: username # default is no username
cobbler.password: password # default is no password
```

#### Module Documentation

`salt.tops.cobbler.`**`top`**`(`*`**kwargs`*`)`

Look up top data in Cobbler for a minion.

### 13.18.2 salt.tops.ext_nodes

#### External Nodes Classifier

The External Nodes Classifier is a master tops subsystem that retrieves mapping information from major configuration management systems. One of the most common external nodes classifiers system is provided by Cobbler and is called `cobbler-ext-nodes`.

The cobbler-ext-nodes command can be used with this configuration:

```
master_tops:
  ext_nodes: cobbler-ext-nodes
```

It is noteworthy that the Salt system does not directly ingest the data sent from the `cobbler-ext-nodes` command, but converts the data into information that is used by a Salt top file.

Any command can replace the call to `cobbler-ext-nodes' above, but currently the data must be formatted in the same way that the standard `cobbler-ext-nodes' does.

See (admittedly degenerate and probably not complete) example:

```
classes:
  - basepackages
  - database
```

The above essentially is the same as a top.sls containing the following:

```
base:
  '*':
    - basepackages
    - database

base:
  '*':
    - basepackages
    - database
```

salt.tops.ext_nodes.**top**(***kwargs*)
Run the command configured

### 13.18.3 salt.tops.mongo

Read tops data from a mongodb collection

This module will load tops data from a mongo collection. It uses the node's id for lookups.

#### Salt Master Mongo Configuration

The module shares the same base mongo connection variables as *salt.returners.mongo_return*. These variables go in your master config file.

- `mongo.db` - The mongo database to connect to. Defaults to `'salt'`.
- `mongo.host` - The mongo host to connect to. Supports replica sets by specifying all hosts in the set, comma-delimited. Defaults to `'salt'`.
- `mongo.port` - The port that the mongo database is running on. Defaults to `27017`.
- `mongo.user` - The username for connecting to mongo. Only required if you are using mongo authentication. Defaults to `''`.
- `mongo.password` - The password for connecting to mongo. Only required if you are using mongo authentication. Defaults to `''`.

#### Configuring the Mongo Tops Subsystem

```
master_tops:
  mongo:
    collection: tops
    id_field: _id
    re_replace: ""
    re_pattern: \.example\.com
    states_field: states
    environment_field: environment
```

#### Module Documentation

salt.tops.mongo.**top**(***kwargs*)
Connect to a mongo database and read per-node tops data.
**Parameters**:
- *collection*: The mongodb collection to read data from. Defaults to `'tops'`.
- *id_field*: The field in the collection that represents an individual minion id. Defaults to `'_id'`.
- *re_pattern*: If your naming convention in the collection is shorter than the minion id, you can use this to trim the name. *re_pattern* will be used to match the name, and *re_replace* will be used to replace it. Backrefs are supported as they are in the Python standard library. If `None`, no mangling of the name will be performed - the collection will be searched with the entire minion id. Defaults to `None`.
- *re_replace*: Use as the replacement value in node ids matched with *re_pattern*. Defaults to ``. Feel free to use backreferences here.
- *states_field*: The name of the field providing a list of states.
- *environment_field*: The name of the field providing the environment. Defaults to `environment`.

### 13.18.4 salt.tops.reclass_adapter

Read tops data from a reclass database

This *master_tops* plugin provides access to the **reclass** database, such that state information (top data) are retrieved from **reclass**.

You can find more information about **reclass** at http://reclass.pantsfullofunix.net.

To use the plugin, add it to the `master_tops` list in the Salt master config and tell **reclass** by way of a few options how and where to find the inventory:

```
master_tops:
  reclass:
    storage_type: yaml_fs
    inventory_base_uri: /srv/salt
```

This would cause **reclass** to read the inventory from YAML files in `/srv/salt/nodes` and `/srv/salt/classes`.

If you are also using **reclass** as `ext_pillar` plugin, and you want to avoid having to specify the same information for both, use YAML anchors (take note of the differing data types for `ext_pillar` and `master_tops`):

```
reclass: &reclass
  storage_type: yaml_fs
  inventory_base_uri: /srv/salt
  reclass_source_path: ~/code/reclass

ext_pillar:
  - reclass: *reclass

master_tops:
  reclass: *reclass
```

If you want to run reclass from source, rather than installing it, you can either let the master know via the `PYTHONPATH` environment variable, or by setting the configuration option, like in the example above.

`salt.tops.reclass_adapter.top`(***kwargs*)
Query **reclass** for the top data (states of the minions).

## 13.19 wheel modules

| | |
|---|---|
| *config* | Manage the master configuration file |
| *error* | Error generator to enable integration testing of salt wheel error handling |
| *file_roots* | Read in files from the file_root and save files to the file root |
| *key* | Wheel system wrapper for the Salt key system to be used in interactions with the Salt Master programmatically. |
| *minions* | Wheel system wrapper for connected minions |
| *pillar_roots* | The *pillar_roots* wheel module is used to manage files under the pillar roots directories on the master server. |

### 13.19.1 salt.wheel.config

Manage the master configuration file

salt.wheel.config.**apply**(*key*, *value*)
Set a single key

> **Note:** This will strip comments from your config file

salt.wheel.config.**update_config**(*file_name*, *yaml_contents*)
Update master config with `yaml_contents`.

Writes `yaml_contents` to a file named `file_name.conf` under the folder specified by `default_include`. This folder is named `master.d` by default. Please look at `include-configuration` for more information.

Example low data:

```
data = {
    'username': 'salt',
    'password': 'salt',
    'fun': 'config.update_config',
    'file_name': 'gui',
    'yaml_contents': {'id': 1},
    'client': 'wheel',
    'eauth': 'pam',
}
```

salt.wheel.config.**values**()
Return the raw values of the config file

### 13.19.2 salt.wheel.error

Error generator to enable integration testing of salt wheel error handling

salt.wheel.error.**error**(*name=None*, *message=''*)
If name is None Then return empty dict

Otherwise raise an exception with __name__ from name, message from message

CLI Example:

```
salt-wheel error
salt-wheel error.error name="Exception" message="This is an error."
```

### 13.19.3 salt.wheel.file_roots

Read in files from the file_root and save files to the file root

salt.wheel.file_roots.**find**(*path*, *saltenv='base'*, *env=None*)
Return a dict of the files located with the given path and environment

salt.wheel.file_roots.**list_env**(*saltenv='base'*, *env=None*)
Return all of the file paths found in an environment

salt.wheel.file_roots.**list_roots**()
Return all of the files names in all available environments

salt.wheel.file_roots.**read**(*path*, *saltenv='base'*, *env=None*)
Read the contents of a text file, if the file is binary then

salt.wheel.file_roots.**write**(*data*, *path*, *saltenv='base'*, *index=0*, *env=None*)
Write the named file, by default the first file found is written, but the index of the file can be specified to write to a lower priority file root

### 13.19.4 salt.wheel.key

Wheel system wrapper for the Salt key system to be used in interactions with the Salt Master programmatically.

The key module for the wheel system is meant to provide an internal interface for other Salt systems to interact with the Salt Master. The following usage examples assume that a WheelClient is available:

```
import salt.config
import salt.wheel
opts = salt.config.master_config('/etc/salt/master')
wheel = salt.wheel.WheelClient(opts)
```

Note that importing and using the `WheelClient` must be performed on the same machine as the Salt Master and as the same user that runs the Salt Master, unless *external_auth* is configured and the user is authorized to execute wheel functions.

The function documentation starts with the `wheel` reference from the code sample above and use the `WheelClient` functions to show how they can be called from a Python interpreter.

The wheel key functions can also be called via a `salt` command at the CLI using the saltutil execution module.

salt.wheel.key.**accept**(*match*, *include_rejected=False*, *include_denied=False*)
Accept keys based on a glob match. Returns a dictionary.
**match** The glob match of keys to accept.
**include_rejected** To include rejected keys in the match along with pending keys, set this to `True`. Defaults to `False`.
**include_denied** To include denied keys in the match along with pending keys, set this to `True`. Defaults to `False`.

```
>>> wheel.cmd('key.accept', ['minion1'])
{'minions': ['minion1']}
```

salt.wheel.key.**accept_dict**(*match*, *include_rejected=False*, *include_denied=False*)
Accept keys based on a dict of keys. Returns a dictionary.
**match** The dictionary of keys to accept.
**include_rejected** To include rejected keys in the match along with pending keys, set this to `True`. Defaults to `False`.

New in version 2016.3.4.

**include_denied** To include denied keys in the match along with pending keys, set this to `True`. Defaults to `False`.

New in version 2016.3.4.

Example to move a list of keys from the `minions_pre` (pending) directory to the `minions` (accepted) directory:

```
>>> wheel.cmd('accept_dict',
{
    'minions_pre': [
        'jerry',
        'stuart',
        'bob',
    ],
```

```
})
{'minions': ['jerry', 'stuart', 'bob']}
```

salt.wheel.key.**delete**(*match*)

Delete keys based on a glob match. Returns a dictionary.

**match** The glob match of keys to delete.

```
>>> wheel.cmd_async({'fun': 'key.delete', 'match': 'minion1'})
{'jid': '20160826201244808521', 'tag': 'salt/wheel/20160826201244808521'}
```

salt.wheel.key.**delete_dict**(*match*)

Delete keys based on a dict of keys. Returns a dictionary.

**match** The dictionary of keys to delete.

```
>>> wheel.cmd_async({'fun': 'key.delete_dict',
'match': {
    'minions': [
        'jerry',
        'stuart',
        'bob',
    ],
})
{'jid': '20160826201244808521', 'tag': 'salt/wheel/20160826201244808521'}
```

salt.wheel.key.**finger**(*match*)

Return the matching key fingerprints. Returns a dictionary.

**match** The key for with to retrieve the fingerprint.

```
>>> wheel.cmd('key.finger', ['minion1'])
{'minions': {'minion1': '5d:f6:79:43:5e:d4:42:3f:57:b8:45:a8:7e:a4:6e:ca'}}
```

salt.wheel.key.**gen**(*id_=None*, *keysize=2048*)

Generate a key pair. No keys are stored on the master. A key pair is returned as a dict containing pub and priv keys. Returns a dictionary containing the the `pub` and `priv` keys with their generated values.

**id_** Set a name to generate a key pair for use with salt. If not specified, a random name will be specified.

**keysize** The size of the key pair to generate. The size must be `2048`, which is the default, or greater. If set to a value less than `2048`, the key size will be rounded up to `2048`.

```
>>> wheel.cmd('key.gen')
{'pub': '-----BEGIN PUBLIC KEY-----
```

**MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBC** ... BBPfamX9gGPQTpN9e8HwcZjXQnmg8OrcUl10WHw09SDWLOlnW+

iQIDAQAB

-----END PUBLIC KEY-----`, `priv': `-----BEGIN RSA PRIVATE KEY-----

**MIIEpAIBAAKCAQEA42Kf+w9XeZWgguzv** ... QH3/W74X1+WTBlx4R2KGLYBiH+bCCFEQ/Zvcu4Xp4bIOPtRKozEQ==

-----END RSA PRIVATE KEY-----`}

salt.wheel.key.**gen_accept**(*id_*, *keysize=2048*, *force=False*)

Generate a key pair then accept the public key. This function returns the key pair in a dict, only the public key is preserved on the master. Returns a dictionary.

**id_** The name of the minion for which to generate a key pair.

**keysize** The size of the key pair to generate. The size must be `2048`, which is the default, or greater. If set to a value less than `2048`, the key size will be rounded up to `2048`.

**force** If a public key has already been accepted for the given minion on the master, then the gen_accept function will return an empty dictionary and not create a new key. This is the default behavior. If `force` is set to `True`, then the minion's previously accepted key will be overwritten.

```
>>> wheel.cmd('key.gen_accept', ['foo'])
{'pub': '-----BEGIN PUBLIC KEY-----
```

**MIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBC** ... BBPfamX9gGPQTpN9e8HwcZjXQnmg8OrcUl10WHw09SDWLOlnW+

iQIDAQAB
-----END PUBLIC KEY-----`, `priv': `-----BEGIN RSA PRIVATE KEY-----

**MIIEpAIBAAKCAQEA42Kf+w9XeZWgguzv**
... QH3/W74X1+WTBlx4R2KGLYBiH+bCCFEQ/Zvcu4Xp4bIOPtRKozEQ==

-----END RSA PRIVATE KEY-----`}
We can now see that the `foo` minion's key has been accepted by the master:

```
>>> wheel.cmd('key.list', ['accepted'])
{'minions': ['foo', 'minion1', 'minion2', 'minion3']}
```

`salt.wheel.key.`**`key_str`**(*match*)
Return information about the key. Returns a dictionary.
**match** The key to return information about.

```
>>> wheel.cmd('key.key_str', ['minion1'])
{'minions': {'minion1': '-----BEGIN PUBLIC KEY-----
```

**MIIBIjANBgkqhkiG9w0B** ... TWugEQpPt

iQIDAQAB -----END PUBLIC KEY-----`}}

`salt.wheel.key.`**`list`**(*match*)
List all the keys under a named status. Returns a dictionary.
**match** The type of keys to list. The `pre`, `un`, and `unaccepted` options will list unaccepted/unsigned keys. `acc` or `accepted` will list accepted/signed keys. `rej` or `rejected` will list rejected keys. Finally, `all` will list all keys.

```
>>> wheel.cmd('key.list', ['accepted'])
{'minions': ['minion1', 'minion2', 'minion3']}
```

`salt.wheel.key.`**`list_all`**()
List all the keys. Returns a dictionary containing lists of the minions in each salt-key category, including `minions`, `minions_rejected`, `minions_denied`, etc. Returns a dictionary.

```
>>> wheel.cmd('key.list_all')
{'local': ['master.pem', 'master.pub'], 'minions_rejected': [],
'minions_denied': [], 'minions_pre': [],
'minions': ['minion1', 'minion2', 'minion3']}
```

`salt.wheel.key.`**`reject`**(*match*, *include_accepted=False*, *include_denied=False*)
Reject keys based on a glob match. Returns a dictionary.
**match** The glob match of keys to reject.
**include_accepted** To include accepted keys in the match along with pending keys, set this to `True`. Defaults to `False`.
**include_denied** To include denied keys in the match along with pending keys, set this to `True`. Defaults to `False`.

```
>>> wheel.cmd_async({'fun': 'key.reject', 'match': 'minion1'})
{'jid': '20160826201244808521', 'tag': 'salt/wheel/20160826201244808521'}
```

salt.wheel.key.**reject_dict**(*match*, *include_accepted=False*, *include_denied=False*)

Reject keys based on a dict of keys. Returns a dictionary.

**match** The dictionary of keys to reject.

**include_accepted** To include accepted keys in the match along with pending keys, set this to `True`. Defaults to `False`.

New in version 2016.3.4.

**include_denied** To include denied keys in the match along with pending keys, set this to `True`. Defaults to `False`.

New in version 2016.3.4.

```
>>> wheel.cmd_async({'fun': 'key.reject_dict',
'match': {
    'minions': [
        'jerry',
        'stuart',
        'bob',
    ],
})
{'jid': '20160826201244808521', 'tag': 'salt/wheel/20160826201244808521'}
```

### 13.19.5 salt.wheel.minions

Wheel system wrapper for connected minions

salt.wheel.minions.**connected**()

List all connected minions on a salt-master

### 13.19.6 salt.wheel.pillar_roots

The *pillar_roots* wheel module is used to manage files under the pillar roots directories on the master server.

salt.wheel.pillar_roots.**find**(*path*, *saltenv='base'*, *env=None*)

Return a dict of the files located with the given path and environment

salt.wheel.pillar_roots.**list_env**(*saltenv='base'*, *env=None*)

Return all of the file paths found in an environment

salt.wheel.pillar_roots.**list_roots**()

Return all of the files names in all available environments

salt.wheel.pillar_roots.**read**(*path*, *saltenv='base'*, *env=None*)

Read the contents of a text file, if the file is binary then

salt.wheel.pillar_roots.**write**(*data*, *path*, *saltenv='base'*, *index=0*, *env=None*)

Write the named file, by default the first file found is written, but the index of the file can be specified to write to a lower priority file root

CHAPTER 14

# APIs

## 14.1 Python client API

Salt provides several entry points for interfacing with Python applications. These entry points are often referred to as `*Client()` APIs. Each client accesses different parts of Salt, either from the master or from a minion. Each client is detailed below.

**See also**:

There are many ways to access Salt programmatically.

Salt can be used from CLI scripts as well as via a REST interface.

See Salt's *outputter system* to retrieve structured data from Salt as JSON, or as shell-friendly text, or many other formats.

See the *state.event* runner to utilize Salt's event bus from shell scripts.

Salt's netapi module provides access to Salt externally via a REST interface. Review the netapi module documentation for more information.

### 14.1.1 Salt's `opts` dictionary

Some clients require access to Salt's `opts` dictionary. (The dictionary representation of the *master* or *minion* config files.)

A common pattern for fetching the `opts` dictionary is to defer to environment variables if they exist or otherwise fetch the config from the default location.

`salt.config.client_config`(*path*, *env_var='SALT_CLIENT_CONFIG'*, *defaults=None*)

Load Master configuration data

Usage:

```
import salt.config
master_opts = salt.config.client_config('/etc/salt/master')
```

Returns a dictionary of the Salt Master configuration file with necessary options needed to communicate with a locally-running Salt Master daemon. This function searches for client specific configurations and adds them to the data from the master configuration.

This is useful for master-side operations like *LocalClient*.

salt.config.**minion_config**(*path*, *env_var='SALT_MINION_CONFIG'*, *defaults=None*, *cache_minion_id=False*, *ignore_config_errors=True*, *minion_id=None*)

Reads in the minion configuration file and sets up special options

This is useful for Minion-side operations, such as the *Caller* class, and manually running the loader interface.

```
import salt.client
minion_opts = salt.config.minion_config('/etc/salt/minion')
```

### 14.1.2 Salt's Loader Interface

Modules in the Salt ecosystem are loaded into memory using a custom loader system. This allows modules to have conditional requirements (OS, OS version, installed libraries, etc) and allows Salt to inject special variables (__salt__, __opts__, etc).

Most modules can be manually loaded. This is often useful in third-party Python apps or when writing tests. However some modules require and expect a full, running Salt system underneath. Notably modules that facilitate master-to-minion communication such as the *mine*, *publish*, and peer execution modules. The error KeyError: 'master_uri' is a likely indicator for this situation. In those instances use the *Caller* class to execute those modules instead.

Each module type has a corresponding loader function.

salt.loader.**minion_mods**(*opts*, *context=None*, *utils=None*, *whitelist=None*, *initial_load=False*, *loaded_base_name=None*, *notify=False*, *static_modules=None*, *proxy=None*)

Load execution modules

Returns a dictionary of execution modules appropriate for the current system by evaluating the __virtual__() function in each module.

**Parameters**

- **opts** (*dict*) -- The Salt options dictionary
- **context** (*dict*) -- A Salt context that should be made present inside generated modules in __context__
- **utils** (*dict*) -- Utility functions which should be made available to Salt modules in __utils__. See *utils_dir* in salt.config for additional information about configuration.
- **whitelist** (*list*) -- A list of modules which should be whitelisted.
- **initial_load** (*bool*) -- Deprecated flag! Unused.
- **loaded_base_name** (*str*) -- A string marker for the loaded base name.
- **notify** (*bool*) -- Flag indicating that an event should be fired upon completion of module loading.

```
import salt.config
import salt.loader

__opts__ = salt.config.minion_config('/etc/salt/minion')
__grains__ = salt.loader.grains(__opts__)
__opts__['grains'] = __grains__
__utils__ = salt.loader.utils(__opts__)
__salt__ = salt.loader.minion_mods(__opts__, utils=__utils__)
__salt__['test.ping']()
```

salt.loader.**raw_mod**(*opts*, *name*, *functions*, *mod='modules'*)

Returns a single module loaded raw and bypassing the __virtual__ function

```
import salt.config
import salt.loader

__opts__ = salt.config.minion_config('/etc/salt/minion')
testmod = salt.loader.raw_mod(__opts__, 'test', None)
testmod['test.ping']()
```

salt.loader.**states**(*opts*, *functions*, *utils*, *serializers*, *whitelist=None*, *proxy=None*)

Returns the state modules

**Parameters**

- **opts** (*dict*) -- The Salt options dictionary
- **functions** (*dict*) -- A dictionary of minion modules, with module names as keys and funcs as values.

```
import salt.config
import salt.loader

__opts__ = salt.config.minion_config('/etc/salt/minion')
statemods = salt.loader.states(__opts__, None, None)
```

salt.loader.**grains**(*opts*, *force_refresh=False*, *proxy=None*)

Return the functions for the dynamic grains and the values for the static grains.

Since grains are computed early in the startup process, grains functions do not have __salt__ or __proxy__ available. At proxy-minion startup, this function is called with the proxymodule LazyLoader object so grains functions can communicate with their controlled device.

```
import salt.config
import salt.loader

__opts__ = salt.config.minion_config('/etc/salt/minion')
__grains__ = salt.loader.grains(__opts__)
print __grains__['id']
```

salt.loader.**grain_funcs**(*opts*, *proxy=None*)

Returns the grain functions

```
import salt.config
import salt.loader

__opts__ = salt.config.minion_config('/etc/salt/minion')
grainfuncs = salt.loader.grain_funcs(__opts__)
```

### 14.1.3 Salt's Client Interfaces

#### LocalClient

class salt.client.**LocalClient**(*c_path='/etc/salt/master'*, *mopts=None*, *skip_perm_errors=False*, *io_loop=None*, *keep_loop=False*, *auto_reconnect=False*)

The interface used by the **salt** CLI tool on the Salt Master

`LocalClient` is used to send a command to Salt minions to execute execution modules and return the results to the Salt Master.

Importing and using `LocalClient` must be done on the same machine as the Salt Master and it must be done using the same user that the Salt Master is running as. (Unless *`external_auth`* is configured and authentication credentials are included in the execution).

```
import salt.client

local = salt.client.LocalClient()
local.cmd('*', 'test.fib', [10])
```

**cmd**(*tgt*, *fun*, *arg=()*, *timeout=None*, *expr_form='glob'*, *ret=''*, *jid=''*, *kwarg=None*, ***kwargs*)

Synchronously execute a command on targeted minions

The cmd method will execute and wait for the timeout period for all minions to reply, then it will return all minion data at once.

```
>>> import salt.client
>>> local = salt.client.LocalClient()
>>> local.cmd('*', 'cmd.run', ['whoami'])
{'jerry': 'root'}
```

With extra keyword arguments for the command function to be run:

```
local.cmd('*', 'test.arg', ['arg1', 'arg2'], kwarg={'foo': 'bar'})
```

Compound commands can be used for multiple executions in a single publish. Function names and function arguments are provided in separate lists but the index values must correlate and an empty list must be used if no arguments are required.

```
>>> local.cmd('*', [
        'grains.items',
        'sys.doc',
        'cmd.run',
    ],
    [
        [],
        [],
        ['uptime'],
    ])
```

**Parameters**

- **tgt** (*string or list*) -- Which minions to target for the execution. Default is shell glob. Modified by the `expr_form` option.
- **fun** (*string or list of strings*) -- The module and function to call on the specified minions of the form `module.function`. For example `test.ping` or `grains.items`.

  **Compound commands** Multiple functions may be called in a single publish by passing a list of commands. This can dramatically lower overhead and speed up the application communicating with Salt.

  This requires that the `arg` param is a list of lists. The `fun` list and the `arg` list must correlate by index meaning a function that does not take arguments must still have a corresponding empty list at the expected index.
- **arg** (*list or list-of-lists*) -- A list of arguments to pass to the remote function. If the function takes no arguments `arg` may be omitted except when executing a compound command.

- **timeout** -- Seconds to wait after the last minion returns but before all minions return.
- **expr_form** -- The type of `tgt`. Allowed values:
  - `glob` - Bash glob completion - Default
  - `pcre` - Perl style regular expression
  - `list` - Python list of hosts
  - `grain` - Match based on a grain comparison
  - `grain_pcre` - Grain comparison with a regex
  - `pillar` - Pillar data comparison
  - `pillar_pcre` - Pillar data comparison with a regex
  - `nodegroup` - Match on nodegroup
  - `range` - Use a Range server for matching
  - `compound` - Pass a compound match string
- **ret** -- The returner to use. The value passed can be single returner, or a comma delimited list of returners to call in order on the minions
- **kwarg** -- A dictionary with keyword arguments for the function.
- **kwargs** -- Optional keyword arguments. Authentication credentials may be passed when using *external_auth*.

  For example: `local.cmd('*','test.ping',username='saltdev',password='saltde`
  Or: `local.cmd('*','test.ping',token='5871821ea51754fdcea8153c1c745433')`

**Returns** A dictionary with the result of the execution, keyed by minion ID. A compound command will return a sub-dictionary keyed by function name.

**cmd_async**(*tgt*, *fun*, *arg=()*, *expr_form='glob'*, *ret=''*, *jid=''*, *kwarg=None*, ***kwargs*)
Asynchronously send a command to connected minions

The function signature is the same as `cmd()` with the following exceptions.

**Returns** A job ID or 0 on failure.

```
>>> local.cmd_async('*', 'test.sleep', [300])
'20131219215921857715'
```

**cmd_batch**(*tgt*, *fun*, *arg=()*, *expr_form='glob'*, *ret=''*, *kwarg=None*, *batch='10%'*, ***kwargs*)
Iteratively execute a command on subsets of minions at a time

The function signature is the same as `cmd()` with the following exceptions.

**Parameters** **batch** -- The batch identifier of systems to execute on

**Returns** A generator of minion returns

```
>>> returns = local.cmd_batch('*', 'state.highstate', batch='10%')
>>> for ret in returns:
...     print(ret)
{'jerry': {...}}
{'dave': {...}}
{'stewart': {...}}
```

**cmd_iter**(*tgt*, *fun*, *arg=()*, *timeout=None*, *expr_form='glob'*, *ret=''*, *kwarg=None*, ***kwargs*)
Yields the individual minion returns as they come in

The function signature is the same as `cmd()` with the following exceptions.

**Returns** A generator yielding the individual minion returns

```
>>> ret = local.cmd_iter('*', 'test.ping')
>>> for i in ret:
...     print(i)
{'jerry': {'ret': True}}
{'dave': {'ret': True}}
{'stewart': {'ret': True}}
```

**cmd_iter_no_block**(*tgt*, *fun*, *arg=()*, *timeout=None*, *expr_form='glob'*, *ret=''*, *kwarg=None*, *show_jid=False*, *verbose=False*, ***kwargs*)
**Yields the individual minion returns as they come in, or None** when no returns are available.
The function signature is the same as `cmd()` with the following exceptions.

**Returns** A generator yielding the individual minion returns, or None when no returns are available. This allows for actions to be injected in between minion returns.

```
>>> ret = local.cmd_iter_no_block('*', 'test.ping')
>>> for i in ret:
...     print(i)
None
{'jerry': {'ret': True}}
{'dave': {'ret': True}}
None
{'stewart': {'ret': True}}
```

**cmd_subset**(*tgt*, *fun*, *arg=()*, *expr_form='glob'*, *ret=''*, *kwarg=None*, *sub=3*, *cli=False*, *progress=False*, ***kwargs*)
Execute a command on a random subset of the targeted systems

The function signature is the same as `cmd()` with the following exceptions.

**Parameters** **sub** -- The number of systems to execute on

```
>>> SLC.cmd_subset('*', 'test.ping', sub=1)
{'jerry': True}
```

**get_cli_returns**(*jid*, *minions*, *timeout=None*, *tgt='**', *tgt_type='glob'*, *verbose=False*, *show_jid=False*, ***kwargs*)
Starts a watcher looking at the return data for a specified JID

**Returns** all of the information for the JID

**get_event_iter_returns**(*jid*, *minions*, *timeout=None*)
Gather the return data from the event system, break hard when timeout is reached.

**run_job**(*tgt*, *fun*, *arg=()*, *expr_form='glob'*, *ret=''*, *timeout=None*, *jid=''*, *kwarg=None*, *listen=False*, ***kwargs*)
Asynchronously send a command to connected minions

Prep the job directory and publish a command to any targeted minions.

**Returns** A dictionary of (validated) `pub_data` or an empty dictionary on failure. The `pub_data` contains the job ID and a list of all minions that are expected to return data.

```
>>> local.run_job('*', 'test.sleep', [300])
{'jid': '20131219215650131543', 'minions': ['jerry']}
```

### Salt Caller

class salt.client.**Caller**(*c_path='/etc/salt/minion'*, *mopts=None*)

Caller is the same interface used by the **salt-call** command-line tool on the Salt Minion.

Changed in version 2015.8.0: Added the cmd method for consistency with the other Salt clients. The existing function and sminion.functions interfaces still exist but have been removed from the docs.

Importing and using Caller must be done on the same machine as a Salt Minion and it must be done using the same user that the Salt Minion is running as.

Usage:

```
import salt.client
caller = salt.client.Caller()
caller.cmd('test.ping')
```

Note, a running master or minion daemon is not required to use this class. Running salt-call --local simply sets *file_client* to 'local'. The same can be achieved at the Python level by including that setting in a minion config file.

New in version 2014.7.0: Pass the minion config as the mopts dictionary.

```
import salt.client
import salt.config
__opts__ = salt.config.minion_config('/etc/salt/minion')
__opts__['file_client'] = 'local'
caller = salt.client.Caller(mopts=__opts__)
```

**cmd**(*fun*, **args*, ***kwargs*)

Call an execution module with the given arguments and keyword arguments

Changed in version 2015.8.0: Added the cmd method for consistency with the other Salt clients. The existing function and sminion.functions interfaces still exist but have been removed from the docs.

```
caller.cmd('test.arg', 'Foo', 'Bar', baz='Baz')

caller.cmd('event.send', 'myco/myevent/something',
    data={'foo': 'Foo'}, with_env=['GIT_COMMIT'], with_grains=True)
```

### RunnerClient

class salt.runner.**RunnerClient**(*opts*)

The interface used by the **salt-run** CLI tool on the Salt Master

It executes *runner modules* which run on the Salt Master.

Importing and using RunnerClient must be done on the same machine as the Salt Master and it must be done using the same user that the Salt Master is running as.

Salt's *external_auth* can be used to authenticate calls. The eauth user must be authorized to execute runner modules: (@runner). Only the master_call() below supports eauth.

**async**(*fun*, *low*, *user='UNKNOWN'*)

Execute the function in a multiprocess and return the event tag to use to watch for the return

**cmd**(*fun*, *arg=None*, *pub_data=None*, *kwarg=None*, *print_event=True*)

Execute a function

**cmd_async**(*low*)
Execute a runner function asynchronously; eauth is respected

This function requires that *external_auth* is configured and the user is authorized to execute runner functions: (`@runner`).

```
runner.eauth_async({
    'fun': 'jobs.list_jobs',
    'username': 'saltdev',
    'password': 'saltdev',
    'eauth': 'pam',
})
```

**cmd_sync**(*low*, *timeout=None*)
Execute a runner function synchronously; eauth is respected

This function requires that *external_auth* is configured and the user is authorized to execute runner functions: (`@runner`).

```
runner.eauth_sync({
    'fun': 'jobs.list_jobs',
    'username': 'saltdev',
    'password': 'saltdev',
    'eauth': 'pam',
})
```

### WheelClient

class salt.wheel.**WheelClient**(*opts=None*)
An interface to Salt's wheel modules

*Wheel modules* interact with various parts of the Salt Master.

Importing and using `WheelClient` must be done on the same machine as the Salt Master and it must be done using the same user that the Salt Master is running as. Unless *external_auth* is configured and the user is authorized to execute wheel functions: (`@wheel`).

Usage:

```
import salt.config
import salt.wheel
opts = salt.config.master_config('/etc/salt/master')
wheel = salt.wheel.WheelClient(opts)
```

**async**(*fun*, *low*, *user='UNKNOWN'*)
Execute the function in a multiprocess and return the event tag to use to watch for the return

**cmd**(*fun*, *arg=None*, *pub_data=None*, *kwarg=None*, *print_event=True*)
Execute a function

```
>>> wheel.cmd('key.finger', ['jerry'])
{'minions': {'jerry': '5d:f6:79:43:5e:d4:42:3f:57:b8:45:a8:7e:a4:6e:ca'}}
```

**cmd_async**(*low*)
Execute a function asynchronously; eauth is respected

This function requires that *external_auth* is configured and the user is authorized

```
>>> wheel.cmd_async({
    'fun': 'key.finger',
    'match': 'jerry',
    'eauth': 'auto',
    'username': 'saltdev',
    'password': 'saltdev',
})
{'jid': '20131219224744416681', 'tag': 'salt/wheel/20131219224744416681'}
```

**cmd_sync**(*low*, *timeout=None*)
Execute a wheel function synchronously; eauth is respected

This function requires that *external_auth* is configured and the user is authorized to execute runner functions: (`@wheel`).

```
>>> wheel.cmd_sync({
'fun': 'key.finger',
'match': 'jerry',
'eauth': 'auto',
'username': 'saltdev',
'password': 'saltdev',
})
{'minions': {'jerry': '5d:f6:79:43:5e:d4:42:3f:57:b8:45:a8:7e:a4:6e:ca'}}
```

### CloudClient

class salt.cloud.**CloudClient**(*path=None*, *opts=None*, *config_dir=None*, *pillars=None*)
The client class to wrap cloud interactions

**action**(*fun=None*, *cloudmap=None*, *names=None*, *provider=None*, *instance=None*, *kwargs=None*)
Execute a single action via the cloud plugin backend

Examples:

```
client.action(fun='show_instance', names=['myinstance'])
client.action(fun='show_image', provider='my-ec2-config',
    kwargs={'image': 'ami-10314d79'}
)
```

**create**(*provider*, *names*, ***kwargs*)
Create the named VMs, without using a profile

Example:

```
client.create(names=['myinstance'], provider='my-ec2-config',
    kwargs={'image': 'ami-1624987f', 'size': 't1.micro',
            'ssh_username': 'ec2-user', 'securitygroup': 'default',
            'delvol_on_destroy': True})
```

**destroy**(*names*)
Destroy the named VMs

**extra_action**(*names*, *provider*, *action*, ***kwargs*)
Perform actions with block storage devices

Example:

```
client.extra_action(names=['myblock'], action='volume_create',
    provider='my-nova', kwargs={'voltype': 'SSD', 'size': 1000}
)
client.extra_action(names=['salt-net'], action='network_create',
    provider='my-nova', kwargs={'cidr': '192.168.100.0/24'}
)
```

**full_query**(*query_type='list_nodes_full'*)
Query all instance information

**list_images**(*provider=None*)
List all available images in configured cloud systems

**list_locations**(*provider=None*)
List all available locations in configured cloud systems

**list_sizes**(*provider=None*)
List all available sizes in configured cloud systems

**low**(*fun*, *low*)
Pass the cloud function and low data structure to run

**map_run**(*path*, ***kwargs*)
Pass in a location for a map to execute

**min_query**(*query_type='list_nodes_min'*)
Query select instance information

**profile**(*profile*, *names*, *vm_overrides=None*, ***kwargs*)
Pass in a profile to create, names is a list of vm names to allocate
vm_overrides is a special dict that will be per node options overrides
Example:

```
>>> client= salt.cloud.CloudClient(path='/etc/salt/cloud')
>>> client.profile('do_512_git', names=['minion01',])
{'minion01': {u'backups_active': 'False',
        u'created_at': '2014-09-04T18:10:15Z',
        u'droplet': {u'event_id': 31000502,
                     u'id': 2530006,
                     u'image_id': 5140006,
                     u'name': u'minion01',
                     u'size_id': 66},
        u'id': '2530006',
        u'image_id': '5140006',
        u'ip_address': '107.XXX.XXX.XXX',
        u'locked': 'True',
        u'name': 'minion01',
        u'private_ip_address': None,
        u'region_id': '4',
        u'size_id': '66',
        u'status': 'new'}}
```

**query**(*query_type='list_nodes'*)
Query basic instance information

**select_query**(*query_type='list_nodes_select'*)
Query select instance information

#### SSHClient

class salt.client.ssh.client.**SSHClient**(*c_path='/etc/salt/master'*, *mopts=None*, *disable_custom_roster=False*)

Create a client object for executing routines via the salt-ssh backend

New in version 2015.5.0.

**cmd**(*tgt*, *fun*, *arg=()*, *timeout=None*, *expr_form='glob'*, *kwarg=None*, ***kwargs*)

Execute a single command via the salt-ssh subsystem and return all routines at once

New in version 2015.5.0.

**cmd_iter**(*tgt*, *fun*, *arg=()*, *timeout=None*, *expr_form='glob'*, *ret=''*, *kwarg=None*, ***kwargs*)

Execute a single command via the salt-ssh subsystem and return a generator

New in version 2015.5.0.

## 14.2 netapi modules

### 14.2.1 Introduction to netapi modules

netapi modules provide API-centric access to Salt. Usually externally-facing services such as REST or WebSockets, XMPP, XMLRPC, etc.

In general netapi modules bind to a port and start a service. They are purposefully open-ended. A single module can be configured to run as well as multiple modules simultaneously.

netapi modules are enabled by adding configuration to your Salt Master config file and then starting the **salt-api** daemon. Check the docs for each module to see external requirements and configuration settings.

Communication with Salt and Salt satellite projects is done using Salt's own *Python API*. A list of available client interfaces is below.

---

**salt-api**

Prior to Salt's 2014.7.0 release, netapi modules lived in the separate sister projected `salt-api`. That project has been merged into the main Salt project.

---

**See also:**

*The full list of netapi modules*

### 14.2.2 Client interfaces

Salt's client interfaces expose executing functions by crafting a dictionary of values that are mapped to function arguments. This allows calling functions simply by creating a data structure. (And this is exactly how much of Salt's own internals work!)

class salt.netapi.**NetapiClient**(*opts*)

Provide a uniform method of accessing the various client interfaces in Salt in the form of low-data data structures. For example:

```
>>> client = NetapiClient(__opts__)
>>> lowstate = {'client': 'local', 'tgt': '*', 'fun': 'test.ping', 'arg': ''}
>>> client.run(lowstate)
```

**local**(**args*, ***kwargs*)
Run execution modules synchronously

See *salt.client.LocalClient.cmd()* for all available parameters.

Sends a command from the master to the targeted minions. This is the same interface that Salt's own CLI uses. Note the `arg` and `kwarg` parameters are sent down to the minion(s) and the given function, `fun`, is called with those parameters.

**Returns** Returns the result from the execution module

**local_async**(**args*, ***kwargs*)
Run execution modules asynchronously

Wraps *salt.client.LocalClient.run_job()*.

**Returns** job ID

**local_subset**(**args*, ***kwargs*)
Run execution modules against subsets of minions

New in version 2016.3.0.

Wraps *salt.client.LocalClient.cmd_subset()*

**runner**(*fun*, *timeout=None*, ***kwargs*)
Run *runner modules <all-salt.runners>* synchronously

Wraps *salt.runner.RunnerClient.cmd_sync()*.

Note that runner functions must be called using keyword arguments. Positional arguments are not supported.

**Returns** Returns the result from the runner module

**runner_async**(*fun*, ***kwargs*)
Run *runner modules <all-salt.runners>* asynchronously

Wraps *salt.runner.RunnerClient.cmd_async()*.

Note that runner functions must be called using keyword arguments. Positional arguments are not supported.

**Returns** event data and a job ID for the executed function.

**ssh**(**args*, ***kwargs*)
Run salt-ssh commands synchronously

Wraps `salt.client.ssh.client.SSHClient.cmd_sync()`.

**Returns** Returns the result from the salt-ssh command

**ssh_async**(*fun*, *timeout=None*, ***kwargs*)
Run salt-ssh commands asynchronously

Wraps `salt.client.ssh.client.SSHClient.cmd_async()`.

**Returns** Returns the JID to check for results on

**wheel**(*fun*, ***kwargs*)
Run *wheel modules* synchronously

Wraps `salt.wheel.WheelClient.master_call()`.

Note that wheel functions must be called using keyword arguments. Positional arguments are not supported.

**Returns** Returns the result from the wheel module

**wheel_async**(*fun*, ***kwargs*)
Run *wheel modules* asynchronously

Wraps `salt.wheel.WheelClient.master_call()`.

Note that wheel functions must be called using keyword arguments. Positional arguments are not supported.

**Returns** Returns the result from the wheel module

### HTTP Modules

This tutorial demonstrates using the various HTTP modules available in Salt. These modules wrap the Python `tornado`, `urllib2`, and `requests` libraries, extending them in a manner that is more consistent with Salt workflows.

### The `salt.utils.http` Library

This library forms the core of the HTTP modules. Since it is designed to be used from the minion as an execution module, in addition to the master as a runner, it was abstracted into this multi-use library. This library can also be imported by 3rd-party programs wishing to take advantage of its extended functionality.

Core functionality of the execution, state, and runner modules is derived from this library, so common usages between them are described here. Documentation specific to each module is described below.

This library can be imported with:

```
import salt.utils.http
```

### Configuring Libraries

This library can make use of either `tornado`, which is required by Salt, `urllib2`, which ships with Python, or `requests`, which can be installed separately. By default, `tornado` will be used. In order to switch to `urllib2`, set the following variable:

```
backend: urllib2
```

In order to switch to `requests`, set the following variable:

```
backend: requests
```

This can be set in the master or minion configuration file, or passed as an option directly to any `http.query()` functions.

### `salt.utils.http.query()`

This function forms a basic query, but with some add-ons not present in the `tornado`, `urllib2`, and `requests` libraries. Not all functionality currently available in these libraries has been added, but can be in future iterations.

### HTTPS Request Methods

A basic query can be performed by calling this function with no more than a single URL:

```
salt.utils.http.query('http://example.com')
```

By default the query will be performed with a `GET` method. The method can be overridden with the `method` argument:

```
salt.utils.http.query('http://example.com/delete/url', 'DELETE')
```

When using the `POST` method (and others, such as `PUT`), extra data is usually sent as well. This data can be sent directly, in whatever format is required by the remote server (XML, JSON, plain text, etc).

```
salt.utils.http.query(
    'http://example.com/delete/url',
    method='POST',
    data=json.loads(mydict)
)
```

### Data Formatting and Templating

Bear in mind that the data must be sent pre-formatted; this function will not format it for you. However, a templated file stored on the local system may be passed through, along with variables to populate it with. To pass through only the file (untemplated):

```
salt.utils.http.query(
    'http://example.com/post/url',
    method='POST',
    data_file='/srv/salt/somefile.xml'
)
```

To pass through a file that contains jinja + yaml templating (the default):

```
salt.utils.http.query(
    'http://example.com/post/url',
    method='POST',
    data_file='/srv/salt/somefile.jinja',
    data_render=True,
    template_data={'key1': 'value1', 'key2': 'value2'}
)
```

To pass through a file that contains mako templating:

```
salt.utils.http.query(
    'http://example.com/post/url',
    method='POST',
    data_file='/srv/salt/somefile.mako',
    data_render=True,
    data_renderer='mako',
    template_data={'key1': 'value1', 'key2': 'value2'}
)
```

Because this function uses Salt's own rendering system, any Salt renderer can be used. Because Salt's renderer requires `__opts__` to be set, an `opts` dictionary should be passed in. If it is not, then the default `__opts__` values for the node type (master or minion) will be used. Because this library is intended primarily for use by minions, the default node type is `minion`. However, this can be changed to `master` if necessary.

```
salt.utils.http.query(
    'http://example.com/post/url',
    method='POST',
    data_file='/srv/salt/somefile.jinja',
```

```
    data_render=True,
    template_data={'key1': 'value1', 'key2': 'value2'},
    opts=__opts__
)

salt.utils.http.query(
    'http://example.com/post/url',
    method='POST',
    data_file='/srv/salt/somefile.jinja',
    data_render=True,
    template_data={'key1': 'value1', 'key2': 'value2'},
    node='master'
)
```

#### Headers

Headers may also be passed through, either as a `header_list`, a `header_dict`, or as a `header_file`. As with the `data_file`, the `header_file` may also be templated. Take note that because HTTP headers are normally syntactically-correct YAML, they will automatically be imported as an a Python dict.

```
salt.utils.http.query(
    'http://example.com/delete/url',
    method='POST',
    header_file='/srv/salt/headers.jinja',
    header_render=True,
    header_renderer='jinja',
    template_data={'key1': 'value1', 'key2': 'value2'}
)
```

Because much of the data that would be templated between headers and data may be the same, the `template_data` is the same for both. Correcting possible variable name collisions is up to the user.

#### Authentication

The `query()` function supports basic HTTP authentication. A username and password may be passed in as `username` and `password`, respectively.

```
salt.utils.http.query(
    'http://example.com',
    username='larry',
    password=`5700g3543v4r`,
)
```

#### Cookies and Sessions

Cookies are also supported, using Python's built-in `cookielib`. However, they are turned off by default. To turn cookies on, set `cookies` to True.

```
salt.utils.http.query(
    'http://example.com',
    cookies=True
)
```

By default cookies are stored in Salt's cache directory, normally `/var/cache/salt`, as a file called `cookies.txt`. However, this location may be changed with the `cookie_jar` argument:

```
salt.utils.http.query(
    'http://example.com',
    cookies=True,
    cookie_jar='/path/to/cookie_jar.txt'
)
```

By default, the format of the cookie jar is LWP (aka, lib-www-perl). This default was chosen because it is a human-readable text file. If desired, the format of the cookie jar can be set to Mozilla:

```
salt.utils.http.query(
    'http://example.com',
    cookies=True,
    cookie_jar='/path/to/cookie_jar.txt',
    cookie_format='mozilla'
)
```

Because Salt commands are normally one-off commands that are piped together, this library cannot normally behave as a normal browser, with session cookies that persist across multiple HTTP requests. However, the session can be persisted in a separate cookie jar. The default filename for this file, inside Salt's cache directory, is `cookies.session.p`. This can also be changed.

```
salt.utils.http.query(
    'http://example.com',
    persist_session=True,
    session_cookie_jar='/path/to/jar.p'
)
```

The format of this file is msgpack, which is consistent with much of the rest of Salt's internal structure. Historically, the extension for this file is `.p`. There are no current plans to make this configurable.

### Proxy

If the `tornado` backend is used (`tornado` is the default), proxy information configured in `proxy_host`, `proxy_port`, `proxy_username`, and `proxy_password` from the `__opts__` dictionary will be used. Normally these are set in the minion configuration file.

```
proxy_host: proxy.my-domain
proxy_port: 31337
proxy_username: charon
proxy_password: obolus
```

```
salt.utils.http.query(
    'http://example.com',
    opts=__opts__,
    backend='tornado'
)
```

### Return Data

**Note:** Return data encoding

If `decode` is set to `True`, `query()` will attempt to decode the return data. `decode_type` defaults to `auto`. Set it to a specific encoding, `xml`, for example, to override autodetection.

Because Salt's http library was designed to be used with REST interfaces, `query()` will attempt to decode the data received from the remote server when `decode` is set to `True`. First it will check the `Content-type` header to try and find references to XML. If it does not find any, it will look for references to JSON. If it does not find any, it will fall back to plain text, which will not be decoded.

JSON data is translated into a dict using Python's built-in `json` library. XML is translated using `salt.utils.xml_util`, which will use Python's built-in XML libraries to attempt to convert the XML into a dict. In order to force either JSON or XML decoding, the `decode_type` may be set:

```
salt.utils.http.query(
    'http://example.com',
    decode_type='xml'
)
```

Once translated, the return dict from `query()` will include a dict called `dict`.

If the data is not to be translated using one of these methods, decoding may be turned off.

```
salt.utils.http.query(
    'http://example.com',
    decode=False
)
```

If decoding is turned on, and references to JSON or XML cannot be found, then this module will default to plain text, and return the undecoded data as `text` (even if text is set to `False`; see below).

The `query()` function can return the HTTP status code, headers, and/or text as required. However, each must individually be turned on.

```
salt.utils.http.query(
    'http://example.com',
    status=True,
    headers=True,
    text=True
)
```

The return from these will be found in the return dict as `status`, `headers` and `text`, respectively.

### Writing Return Data to Files

It is possible to write either the return data or headers to files, as soon as the response is received from the server, but specifying file locations via the `text_out` or `headers_out` arguments. `text` and `headers` do not need to be returned to the user in order to do this.

```
salt.utils.http.query(
    'http://example.com',
    text=False,
    headers=False,
    text_out='/path/to/url_download.txt',
    headers_out='/path/to/headers_download.txt',
)
```

### SSL Verification

By default, this function will verify SSL certificates. However, for testing or debugging purposes, SSL verification can be turned off.

```
salt.utils.http.query(
    'https://example.com',
    verify_ssl=False,
)
```

### CA Bundles

The `requests` library has its own method of detecting which CA (certificate authority) bundle file to use. Usually this is implemented by the packager for the specific operating system distribution that you are using. However, `urllib2` requires a little more work under the hood. By default, Salt will try to auto-detect the location of this file. However, if it is not in an expected location, or a different path needs to be specified, it may be done so using the `ca_bundle` variable.

```
salt.utils.http.query(
    'https://example.com',
    ca_bundle='/path/to/ca_bundle.pem',
)
```

The `update_ca_bundle()` function can be used to update the bundle file at a specified location. If the target location is not specified, then it will attempt to auto-detect the location of the bundle file. If the URL to download the bundle from does not exist, a bundle will be downloaded from the cURL website.

CAUTION: The `target` and the `source` should always be specified! Failure to specify the `target` may result in the file being written to the wrong location on the local system. Failure to specify the `source` may cause the upstream URL to receive excess unnecessary traffic, and may cause a file to be download which is hazardous or does not meet the needs of the user.

```
salt.utils.http.update_ca_bundle(
    target='/path/to/ca-bundle.crt',
    source='https://example.com/path/to/ca-bundle.crt',
    opts=__opts__,
)
```

The `opts` parameter should also always be specified. If it is, then the `target` and the `source` may be specified in the relevant configuration file (master or minion) as `ca_bundle` and `ca_bundle_url`, respectively.

```
ca_bundle: /path/to/ca-bundle.crt
ca_bundle_url: https://example.com/path/to/ca-bundle.crt
```

If Salt is unable to auto-detect the location of the CA bundle, it will raise an error.

The `update_ca_bundle()` function can also be passed a string or a list of strings which represent files on the local system, which should be appended (in the specified order) to the end of the CA bundle file. This is useful in environments where private certs need to be made available, and are not otherwise reasonable to add to the bundle file.

```
salt.utils.http.update_ca_bundle(
    opts=__opts__,
    merge_files=[
        '/etc/ssl/private_cert_1.pem',
        '/etc/ssl/private_cert_2.pem',
```

```
        '/etc/ssl/private_cert_3.pem',
    ]
)
```

### Test Mode

This function may be run in test mode. This mode will perform all work up until the actual HTTP request. By default, instead of performing the request, an empty dict will be returned. Using this function with `TRACE` logging turned on will reveal the contents of the headers and POST data to be sent.

Rather than returning an empty dict, an alternate `test_url` may be passed in. If this is detected, then test mode will replace the `url` with the `test_url`, set `test` to `True` in the return data, and perform the rest of the requested operations as usual. This allows a custom, non-destructive URL to be used for testing when necessary.

### Execution Module

The `http` execution module is a very thin wrapper around the `salt.utils.http` library. The `opts` can be passed through as well, but if they are not specified, the minion defaults will be used as necessary.

Because passing complete data structures from the command line can be tricky at best and dangerous (in terms of execution injection attacks) at worse, the `data_file`, and `header_file` are likely to see more use here.

All methods for the library are available in the execution module, as kwargs.

```
salt myminion http.query http://example.com/restapi method=POST \
    username='larry' password='5700g3543v4r' headers=True text=True \
    status=True decode_type=xml data_render=True \
    header_file=/tmp/headers.txt data_file=/tmp/data.txt \
    header_render=True cookies=True persist_session=True
```

### Runner Module

Like the execution module, the `http` runner module is a very thin wrapper around the `salt.utils.http` library. The only significant difference is that because runners execute on the master instead of a minion, a target is not required, and default opts will be derived from the master config, rather than the minion config.

All methods for the library are available in the runner module, as kwargs.

```
salt-run http.query http://example.com/restapi method=POST \
    username='larry' password='5700g3543v4r' headers=True text=True \
    status=True decode_type=xml data_render=True \
    header_file=/tmp/headers.txt data_file=/tmp/data.txt \
    header_render=True cookies=True persist_session=True
```

### State Module

The state module is a wrapper around the runner module, which applies stateful logic to a query. All kwargs as listed above are specified as usual in state files, but two more kwargs are available to apply stateful logic. A required parameter is `match`, which specifies a pattern to look for in the return text. By default, this will perform a string comparison of looking for the value of match in the return text. In Python terms this looks like:

```
if match in html_text:
    return True
```

If more complex pattern matching is required, a regular expression can be used by specifying a `match_type`. By default this is set to `string`, but it can be manually set to `pcre` instead. Please note that despite the name, this will use Python's `re.search()` rather than `re.match()`.

Therefore, the following states are valid:

```
http://example.com/restapi:
  http.query:
    - match: 'SUCCESS'
    - username: 'larry'
    - password: '5700g3543v4r'
    - data_render: True
    - header_file: /tmp/headers.txt
    - data_file: /tmp/data.txt
    - header_render: True
    - cookies: True
    - persist_session: True

http://example.com/restapi:
  http.query:
    - match_type: pcre
    - match: '(?i)succe[ss|ed]'
    - username: 'larry'
    - password: '5700g3543v4r'
    - data_render: True
    - header_file: /tmp/headers.txt
    - data_file: /tmp/data.txt
    - header_render: True
    - cookies: True
    - persist_session: True
```

In addition to, or instead of a match pattern, the status code for a URL can be checked. This is done using the `status` argument:

```
http://example.com/:
  http.query:
    - status: '200'
```

If both are specified, both will be checked, but if only one is `True` and the other is `False`, then `False` will be returned. In this case, the comments in the return data will contain information for troubleshooting.

Because this is a monitoring state, it will return extra data to code that expects it. This data will always include `text` and `status`. Optionally, `headers` and `dict` may also be requested by setting the `headers` and `decode` arguments to True, respectively.

### Writing netapi modules

`netapi` modules, put simply, bind a port and start a service. They are purposefully open-ended and can be used to present a variety of external interfaces to Salt, and even present multiple interfaces at once.

**See also:**

*The full list of netapi modules*

### Configuration

All `netapi` configuration is done in the *Salt master config* and takes a form similar to the following:

```
rest_cherrypy:
  port: 8000
  debug: True
  ssl_crt: /etc/pki/tls/certs/localhost.crt
  ssl_key: /etc/pki/tls/certs/localhost.key
```

### The `__virtual__` function

Like all module types in Salt, `netapi` modules go through Salt's loader interface to determine if they should be loaded into memory and then executed.

The `__virtual__` function in the module makes this determination and should return `False` or a string that will serve as the name of the module. If the module raises an `ImportError` or any other errors, it will not be loaded.

### The `start` function

The `start()` function will be called for each `netapi` module that is loaded. This function should contain the server loop that actually starts the service. This is started in a multiprocess.

### Inline documentation

As with the rest of Salt, it is a best-practice to include liberal inline documentation in the form of a module docstring and docstrings on any classes, methods, and functions in your `netapi` module.

### Loader "magic" methods

The loader makes the `__opts__` data structure available to any function in a `netapi` module.

CHAPTER 15

# Architecture

If you are used to configuration management tools that require you to plan down to the last detail before you install anything, you are probably wondering why this section doesn't appear before the installation instructions. With Salt, you can switch to a high availability architecture at any time, and add additional components to scale your deployment as you go.

Since a single Salt master can manage thousands of systems, we usually recommend that you start by deploying a single Salt master, and then modifying your deployment as needed for redundancy, geographical distribution, and scale.

## 15.1 High Availability Features in Salt

Salt supports several features for high availability and fault tolerance. Brief documentation for these features is listed alongside their configuration parameters in Configuration file examples.

### 15.1.1 Multimaster

Salt minions can connect to multiple masters at one time by configuring the *master* configuration parameter as a YAML list of all the available masters. By default, all masters are ``hot'', meaning that any master can direct commands to the Salt infrastructure.

In a multimaster configuration, each master must have the same cryptographic keys, and minion keys must be accepted on all masters separately. The contents of file_roots and pillar_roots need to be kept in sync with processes external to Salt as well

A tutorial on setting up multimaster with ``hot'' masters is here:

*Multimaster Tutorial*

### 15.1.2 Multimaster with Failover

Changing the `master_type` parameter from `str` to `failover` will cause minions to connect to the first responding master in the list of masters. Every *`master_alive_interval`* seconds the minions will check to make sure the current master is still responding. If the master does not respond, the minion will attempt to connect to the next master in the list. If the minion runs out of masters, the list will be recycled in case dead masters have been restored. Note that *`master_alive_interval`* must be present in the minion configuration, or else the recurring job to check master status will not get scheduled.

Failover can be combined with PKI-style encrypted keys, but PKI is NOT REQUIRED to use failover.

Multimaster with PKI and Failover is discussed in *this tutorial*

`master_type: failover` can be combined with `master_shuffle: True` to spread minion connections across all masters (one master per minion, not each minion connecting to all masters). Adding Salt Syndics into the mix makes it possible to create a load-balanced Salt infrastructure. If a master fails, minions will notice and select another master from the available list.

### 15.1.3 Syndic

Salt's Syndic feature is a way to create differing infrastructure topologies. It is not strictly an HA feature, but can be treated as such.

With the syndic, a Salt infrastructure can be partitioned in such a way that certain masters control certain segments of the infrastructure, and ``Master of Masters'' nodes can control multiple segments underneath them.

Syndics are covered in depth in *Salt Syndic*.

### 15.1.4 Syndic with Multimaster

New in version 2015.5.0.

Syndic with Multimaster lets you connect a syndic to multiple masters to provide an additional layer of redundancy in a syndic configuration.

Syndics are covered in depth in *Salt Syndic*.

## 15.2 Salt Syndic

The most basic or typical Salt topology consists of a single Master node controlling a group of Minion nodes. An intermediate node type, called Syndic, when used offers greater structural flexibility and scalability in the construction of Salt topologies than topologies constructed only out of Master and Minion node types.

A Syndic node can be thought of as a special passthrough Minion node. A Syndic node consists of a `salt-syndic` daemon and a `salt-master` daemon running on the same system. The `salt-master` daemon running on the Syndic node controls a group of lower level Minion nodes and the `salt-syndic` daemon connects higher level Master node, sometimes called a Master of Masters.

The `salt-syndic` daemon relays publications and events between the Master node and the local `salt-master` daemon. This gives the Master node control over the Minion nodes attached to the `salt-master` daemon running on the Syndic node.

### 15.2.1 Configuring the Syndic

To setup a Salt Syndic you need to tell the Syndic node and its Master node about each other. If your Master node is located at `10.10.0.1`, then your configurations would be:

On the Syndic node:

```
# /etc/salt/master
syndic_master: 10.10.0.1  # may be either an IP address or a hostname
```

```
# /etc/salt/minion

# id is shared by the salt-syndic daemon and a possible salt-minion daemon
# on the Syndic node
id: my_syndic
```

On the Master node:

```
# /etc/salt/master
order_masters: True
```

The *syndic_master* option tells the Syndic node where to find the Master node in the same way that the *master* option tells a Minion node where to find a Master node.

The *id* option is used by the `salt-syndic` daemon to identify with the Master node and if unset will default to the hostname or IP address of the Syndic just as with a Minion.

The *order_masters* option configures the Master node to send extra information with its publications that is needed by Syndic nodes connected directly to it.

---

**Note:** Each Syndic must provide its own `file_roots` directory. Files will not be automatically transferred from the Master node.

---

### 15.2.2 Configuring the Syndic with Multimaster

New in version 2015.5.0.

Syndic with Multimaster lets you connect a syndic to multiple masters to provide an additional layer of redundancy in a syndic configuration.

Higher level masters should first be configured in a multimaster configuration. See *Multimaster Tutorial*.

On the syndic, the *syndic_master* option is populated with a list of the higher level masters.

Since each syndic is connected to each master, jobs sent from any master are forwarded to minions that are connected to each syndic. If the `master_id` value is set in the master config on the higher level masters, job results are returned to the master that originated the request in a best effort fashion. Events/jobs without a `master_id` are returned to any available master.

### 15.2.3 Running the Syndic

The `salt-syndic` daemon is a separate process that needs to be started in addition to the `salt-master` daemon running on the Syndic node. Starting the `salt-syndic` daemon is the same as starting the other Salt daemons.

The Master node in many ways sees the Syndic as an ordinary Minion node. In particular, the Master will need to accept the Syndic's Minion key as it would for any other Minion.

On the Syndic node:

```
# salt-syndic
or
# service salt-syndic start
```

On the Master node:

```
# salt-key -a my_syndic
```

The Master node will now be able to control the Minion nodes connected to the Syndic. Only the Syndic key will be listed in the Master node's key registry but this also means that key activity between the Syndic's Minions and the Syndic does not encumber the Master node. In this way, the Syndic's key on the Master node can be thought of as a placeholder for the keys of all the Minion and Syndic nodes beneath it, giving the Master node a clear, high level structural view on the Salt cluster.

On the Master node:

```
# salt-key -L
Accepted Keys:
my_syndic
Denied Keys:
Unaccepted Keys:
Rejected Keys:

# salt '*' test.ping
minion_1:
    True
minion_2:
    True
minion_4:
    True
minion_3:
    True
```

### 15.2.4 Topology

A Master node (a node which is itself not a Syndic to another higher level Master node) must run a `salt-master` daemon and optionally a `salt-minion` daemon.

A Syndic node must run `salt-syndic` and `salt-master` daemons and optionally a `salt-minion` daemon.

A Minion node must run a `salt-minion` daemon.

When a `salt-master` daemon issues a command, it will be received by the Syndic and Minion nodes directly connected to it. A Minion node will process the command in the way it ordinarily would. On a Syndic node, the `salt-syndic` daemon will relay the command to the `salt-master` daemon running on the Syndic node, which then propagates the command to to the Minions and Syndics connected to it.

When events and job return data are generated by `salt-minion` daemons, they are aggregated by the `salt-master` daemon they are connected to, which `salt-master` daemon then relays the data back through its `salt-syndic` daemon until the data reaches the Master or Syndic node that issued the command.

### 15.2.5 Syndic wait

`syndic_wait` is a master configuration file setting that specifies the number of seconds the Salt client should wait for additional syndics to check in with their lists of expected minions before giving up. This value defaults to `5` seconds.

The `syndic_wait` setting is necessary because the higher-level master does not have a way of knowing which minions are below the syndics. The higher-level master has its own list of expected minions and the masters below them have their own lists as well, so the Salt client does not how long to wait for all returns. The `syndic_wait` option allows time for all minions to return to the Salt client.

**Note:** To reduce the amount of time the CLI waits for Minions to respond, install a Minion on the Syndic or tune the value of the `syndic_wait` configuration.

While it is possible to run a Syndic without a Minion installed on the same system, it is recommended, for a faster CLI response time, to do so. Without a Minion installed on the Syndic node, the timeout value of `syndic_wait` increases significantly - about three-fold. With a Minion installed on the Syndic, the CLI timeout resides at the value defined in `syndic_wait`.

**Note:** If you have a very large infrastructure or many layers of Syndics, you may find that the CLI doesn't wait long enough for the Syndics to return their events. If you think this is the case, you can set the *syndic_wait* value in the Master configs on the Master or Syndic nodes from which commands are executed. The default value is `5`, and should work for the majority of deployments.

In order for a Master or Syndic node to return information from Minions that are below their Syndics, the CLI requires a short wait time in order to allow the Syndics to gather responses from their Minions. This value is defined in the *syndic_wait* config option and has a default of five seconds.

### 15.2.6 Syndic config options

These are the options that can be used to configure a Syndic node. Note that other than `id`, Syndic config options are placed in the Master config on the Syndic node.

- *id*: Syndic id (shared by the `salt-syndic` daemon with a potential `salt-minion` daemon on the same system)
- *syndic_master*: Master node IP address or hostname
- *syndic_master_port*: Master node ret_port
- *syndic_log_file*: path to the logfile (absolute or not)
- *syndic_pidfile*: path to the pidfile (absolute or not)
- *syndic_wait*: time in seconds to wait on returns from this syndic

## 15.3 Using Salt at scale

The focus of this tutorial will be building a Salt infrastructure for handling large numbers of minions. This will include tuning, topology, and best practices.

For how to install the Salt Master please go here: Installing saltstack

**Note:** This tutorial is intended for large installations, although these same settings won't hurt, it may not be worth the complexity to smaller installations.

When used with minions, the term `many' refers to at least a thousand and `a few' always means 500.

For simplicity reasons, this tutorial will default to the standard ports used by Salt.

### 15.3.1 The Master

The most common problems on the Salt Master are:

1. too many minions authing at once
2. too many minions re-authing at once
3. too many minions re-connecting at once
4. too many minions returning at once
5. too few resources (CPU/HDD)

The first three are all ``thundering herd'' problems. To mitigate these issues we must configure the minions to back-off appropriately when the Master is under heavy load.

The fourth is caused by masters with little hardware resources in combination with a possible bug in ZeroMQ. At least that's what it looks like till today (Issue 118651, Issue 5948, Mail thread)

To fully understand each problem, it is important to understand, how Salt works.

Very briefly, the Salt Master offers two services to the minions.

- a job publisher on port 4505
- an open port 4506 to receive the minions returns

All minions are always connected to the publisher on port 4505 and only connect to the open return port 4506 if necessary. On an idle Master, there will only be connections on port 4505.

#### Too many minions authing

When the Minion service is first started up, it will connect to its Master's publisher on port 4505. If too many minions are started at once, this can cause a ``thundering herd''. This can be avoided by not starting too many minions at once.

The connection itself usually isn't the culprit, the more likely cause of master-side issues is the authentication that the Minion must do with the Master. If the Master is too heavily loaded to handle the auth request it will time it out. The Minion will then wait *acceptance_wait_time* to retry. If *acceptance_wait_time_max* is set then the Minion will increase its wait time by the *acceptance_wait_time* each subsequent retry until reaching *acceptance_wait_time_max*.

#### Too many minions re-authing

This is most likely to happen in the testing phase of a Salt deployment, when all Minion keys have already been accepted, but the framework is being tested and parameters are frequently changed in the Salt Master's configuration file(s).

The Salt Master generates a new AES key to encrypt its publications at certain events such as a Master restart or the removal of a Minion key. If you are encountering this problem of too many minions re-authing against the Master, you will need to recalibrate your setup to reduce the rate of events like a Master restart or Minion key removal (`salt-key -d`).

When the Master generates a new AES key, the minions aren't notified of this but will discover it on the next pub job they receive. When the Minion receives such a job it will then re-auth with the Master. Since Salt does minion-side filtering this means that all the minions will re-auth on the next command published on the master-- causing another ``thundering herd''. This can be avoided by setting the

```
random_reauth_delay: 60
```

in the minions configuration file to a higher value and stagger the amount of re-auth attempts. Increasing this value will of course increase the time it takes until all minions are reachable via Salt commands.

### Too many minions re-connecting

By default the zmq socket will re-connect every 100ms which for some larger installations may be too quick. This will control how quickly the TCP session is re-established, but has no bearing on the auth load.

To tune the minions sockets reconnect attempts, there are a few values in the sample configuration file (default values)

```
recon_default: 1000
recon_max: 5000
recon_randomize: True
```

- recon_default: the default value the socket should use, i.e. 1000. This value is in milliseconds. (1000ms = 1 second)
- recon_max: the max value that the socket should use as a delay before trying to reconnect This value is in milliseconds. (5000ms = 5 seconds)
- recon_randomize: enables randomization between recon_default and recon_max

To tune this values to an existing environment, a few decision have to be made.

1. How long can one wait, before the minions should be online and reachable via Salt?
2. How many reconnects can the Master handle without a syn flood?

These questions can not be answered generally. Their answers depend on the hardware and the administrators requirements.

Here is an example scenario with the goal, to have all minions reconnect within a 60 second time-frame on a Salt Master service restart.

```
recon_default: 1000
recon_max: 59000
recon_randomize: True
```

Each Minion will have a randomized reconnect value between `recon_default' and `recon_default + recon_max', which in this example means between 1000ms and 60000ms (or between 1 and 60 seconds). The generated random-value will be doubled after each attempt to reconnect (ZeroMQ default behavior).

Lets say the generated random value is 11 seconds (or 11000ms).

```
reconnect 1: wait 11 seconds
reconnect 2: wait 22 seconds
reconnect 3: wait 33 seconds
reconnect 4: wait 44 seconds
reconnect 5: wait 55 seconds
reconnect 6: wait time is bigger than 60 seconds (recon_default + recon_max)
reconnect 7: wait 11 seconds
reconnect 8: wait 22 seconds
reconnect 9: wait 33 seconds
reconnect x: etc.
```

With a thousand minions this will mean

```
1000/60 = ~16
```

round about 16 connection attempts a second. These values should be altered to values that match your environment. Keep in mind though, that it may grow over time and that more minions might raise the problem again.

#### Too many minions returning at once

This can also happen during the testing phase, if all minions are addressed at once with

```
$ salt * disk.usage
```

it may cause thousands of minions trying to return their data to the Salt Master open port 4506. Also causing a flood of syn-flood if the Master can't handle that many returns at once.

This can be easily avoided with Salt's batch mode:

```
$ salt * disk.usage -b 50
```

This will only address 50 minions at once while looping through all addressed minions.

### 15.3.2 Too few resources

The masters resources always have to match the environment. There is no way to give good advise without knowing the environment the Master is supposed to run in. But here are some general tuning tips for different situations:

#### The Master is CPU bound

Salt uses RSA-Key-Pairs on the masters and minions end. Both generate 4096 bit key-pairs on first start. While the key-size for the Master is currently not configurable, the minions keysize can be configured with different key-sizes. For example with a 2048 bit key:

```
keysize: 2048
```

With thousands of decryptions, the amount of time that can be saved on the masters end should not be neglected. See here for reference: Pull Request 9235 how much influence the key-size can have.

Downsizing the Salt Master's key is not that important, because the minions do not encrypt as many messages as the Master does.

In installations with large or with complex pillar files, it is possible for the master to exhibit poor performance as a result of having to render many pillar files at once. This exhibit itself in a number of ways, both as high load on the master and on minions which block on waiting for their pillar to be delivered to them.

To reduce pillar rendering times, it is possible to cache pillars on the master. To do this, see the set of master configuration options which are prefixed with *pillar_cache*.

---

**Note**: Caching pillars on the master may introduce security considerations. Be certain to read caveats outlined in the master configuration file to understand how pillar caching may affect a master's ability to protect sensitive data!

---

#### The Master is disk IO bound

By default, the Master saves every Minion's return for every job in its job-cache. The cache can then be used later, to lookup results for previous jobs. The default directory for this is:

```
cachedir: /var/cache/salt
```

and then in the `/proc` directory.

Each job return for every Minion is saved in a single file. Over time this directory can grow quite large, depending on the number of published jobs. The amount of files and directories will scale with the number of jobs published and the retention time defined by

```
keep_jobs: 24
```

```
250 jobs/day * 2000 minions returns = 500.000 files a day
```

If no job history is needed, the job cache can be disabled:

```
job_cache: False
```

If the job cache is necessary there are (currently) 2 options:

- ext_job_cache: this will have the minions store their return data directly into a returner (not sent through the Master)
- master_job_cache (New in *2014.7.0*): this will make the Master store the job data using a returner (instead of the local job cache on disk).

## 15.4 Multi Master Tutorial

As of Salt 0.16.0, the ability to connect minions to multiple masters has been made available. The multi-master system allows for redundancy of Salt masters and facilitates multiple points of communication out to minions. When using a multi-master setup, all masters are running hot, and any active master can be used to send commands out to the minions.

---

**Note**: If you need failover capabilities with multiple masters, there is also a MultiMaster-PKI setup available, that uses a different topology MultiMaster-PKI with Failover Tutorial

---

In 0.16.0, the masters do not share any information, keys need to be accepted on both masters, and shared files need to be shared manually or use tools like the git fileserver backend to ensure that the *`file_roots`* are kept consistent.

### 15.4.1 Summary of Steps

1. Create a redundant master server
2. Copy primary master key to redundant master
3. Start redundant master
4. Configure minions to connect to redundant master
5. Restart minions
6. Accept keys on redundant master

### 15.4.2 Prepping a Redundant Master

The first task is to prepare the redundant master. If the redundant master is already running, stop it. There is only one requirement when preparing a redundant master, which is that masters share the same private key. When the first master was created, the master's identifying key pair was generated and placed in the master's `pki_dir`. The default location of the master's key pair is `/etc/salt/pki/master/`. Take the private key, `master.pem`, and copy it to the same location on the redundant master. Do the same for the master's public key, `master.pub`. Assuming that no minions have yet been connected to the new redundant master, it is safe to delete any existing key in this location and replace it.

---

**Note**: There is no logical limit to the number of redundant masters that can be used.

---

Once the new key is in place, the redundant master can be safely started.

### 15.4.3 Configure Minions

Since minions need to be master-aware, the new master needs to be added to the minion configurations. Simply update the minion configurations to list all connected masters:

```
master:
  - saltmaster1.example.com
  - saltmaster2.example.com
```

Now the minion can be safely restarted.

---

**Note**: If the ipc_mode for the minion is set to TCP (default in Windows), then each minion in the multi-minion setup (one per master) needs its own tcp_pub_port and tcp_pull_port.

If these settings are left as the default 4510/4511, each minion object will receive a port 2 higher than the previous. Thus the first minion will get 4510/4511, the second will get 4512/4513, and so on. If these port decisions are unacceptable, you must configure tcp_pub_port and tcp_pull_port with lists of ports for each master. The length of these lists should match the number of masters, and there should not be overlap in the lists.

---

Now the minions will check into the original master and also check into the new redundant master. Both masters are first-class and have rights to the minions.

---

**Note**: Minions can automatically detect failed masters and attempt to reconnect to reconnect to them quickly. To enable this functionality, set *master_alive_interval* in the minion config and specify a number of seconds to poll the masters for connection status.

If this option is not set, minions will still reconnect to failed masters but the first command sent after a master comes back up may be lost while the minion authenticates.

---

### 15.4.4 Sharing Files Between Masters

Salt does not automatically share files between multiple masters. A number of files should be shared or sharing of these files should be strongly considered.

#### Minion Keys

Minion keys can be accepted the normal way using **salt-key** on both masters. Keys accepted, deleted, or rejected on one master will NOT be automatically managed on redundant masters; this needs to be taken care of by running salt-key on both masters or sharing the `/etc/salt/pki/master/{minions,minions_pre,minions_rejected}` directories between masters.

---

**Note**: While sharing the **/etc/salt/pki/master** directory will work, it is strongly discouraged, since allowing access to the **master.pem** key outside of Salt creates a *SERIOUS* security risk.

---

#### File_Roots

The *`file_roots`* contents should be kept consistent between masters. Otherwise state runs will not always be consistent on minions since instructions managed by one master will not agree with other masters.

The recommended way to sync these is to use a fileserver backend like gitfs or to keep these files on shared storage.

---

**Important**: If using gitfs/git_pillar with the cachedir shared between masters using GlusterFS, nfs, or another network filesystem, and the masters are running Salt 2015.5.9 or later, it is strongly recommended not to turn off *`gitfs_global_lock`*/*`git_pillar_global_lock`* as doing so will cause lock files to be removed if they were created by a different master.

---

#### Pillar_Roots

Pillar roots should be given the same considerations as *`file_roots`*.

#### Master Configurations

While reasons may exist to maintain separate master configurations, it is wise to remember that each master maintains independent control over minions. Therefore, access controls should be in sync between masters unless a valid reason otherwise exists to keep them inconsistent.

These access control options include but are not limited to:

- external_auth
- publisher_acl
- peer
- peer_run

## 15.5 Multi-Master-PKI Tutorial With Failover

This tutorial will explain, how to run a salt-environment where a single minion can have multiple masters and fail-over between them if its current master fails.

The individual steps are

- setup the master(s) to sign its auth-replies

- setup minion(s) to verify master-public-keys
- enable multiple masters on minion(s)
- enable master-check on minion(s)

  Please note, that it is advised to have good knowledge of the salt- authentication and communication-process to understand this tutorial. All of the settings described here, go on top of the default authentication/communication process.

### 15.5.1 Motivation

The default behaviour of a salt-minion is to connect to a master and accept the masters public key. With each publication, the master sends his public-key for the minion to check and if this public-key ever changes, the minion complains and exits. Practically this means, that there can only be a single master at any given time.

Would it not be much nicer, if the minion could have any number of masters (1:n) and jump to the next master if its current master died because of a network or hardware failure?

---

**Note**: There is also a MultiMaster-Tutorial with a different approach and topology than this one, that might also suite your needs or might even be better suited Multi-Master Tutorial

---

It is also desirable, to add some sort of authenticity-check to the very first public key a minion receives from a master. Currently a minions takes the first masters public key for granted.

### 15.5.2 The Goal

Setup the master to sign the public key it sends to the minions and enable the minions to verify this signature for authenticity.

### 15.5.3 Prepping the master to sign its public key

For signing to work, both master and minion must have the signing and/or verification settings enabled. If the master signs the public key but the minion does not verify it, the minion will complain and exit. The same happens, when the master does not sign but the minion tries to verify.

The easiest way to have the master sign its public key is to set

```
master_sign_pubkey: True
```

After restarting the salt-master service, the master will automatically generate a new key-pair

```
master_sign.pem
master_sign.pub
```

A custom name can be set for the signing key-pair by setting

```
master_sign_key_name: <name_without_suffix>
```

The master will then generate that key-pair upon restart and use it for creating the public keys signature attached to the auth-reply.

The computation is done for every auth-request of a minion. If many minions auth very often, it is advised to use conf_master:*master_pubkey_signature* and conf_master:*master_use_pubkey_signature* settings described below.

If multiple masters are in use and should sign their auth-replies, the signing key-pair master_sign.* has to be copied to each master. Otherwise a minion will fail to verify the masters public when connecting to a different master than it did initially. That is because the public keys signature was created with a different signing key-pair.

### 15.5.4 Prepping the minion to verify received public keys

The minion must have the public key (and only that one!) available to be able to verify a signature it receives. That public key (defaults to master_sign.pub) must be copied from the master to the minions pki-directory.

```
/etc/salt/pki/minion/master_sign.pub

DO NOT COPY THE master_sign.pem FILE. IT MUST STAY ON THE MASTER AND
ONLY THERE!
```

When that is done, enable the signature checking in the minions configuration

```
verify_master_pubkey_sign: True
```

and restart the minion. For the first try, the minion should be run in manual debug mode.

```
salt-minion -l debug
```

Upon connecting to the master, the following lines should appear on the output:

```
[DEBUG   ] Attempting to authenticate with the Salt Master at 172.16.0.10
[DEBUG   ] Loaded minion key: /etc/salt/pki/minion/minion.pem
[DEBUG   ] salt.crypt.verify_signature: Loading public key
[DEBUG   ] salt.crypt.verify_signature: Verifying signature
[DEBUG   ] Successfully verified signature of master public key with verification
 ↪public key master_sign.pub
[INFO    ] Received signed and verified master pubkey from master 172.16.0.10
[DEBUG   ] Decrypting the current master AES key
```

If the signature verification fails, something went wrong and it will look like this

```
[DEBUG   ] Attempting to authenticate with the Salt Master at 172.16.0.10
[DEBUG   ] Loaded minion key: /etc/salt/pki/minion/minion.pem
[DEBUG   ] salt.crypt.verify_signature: Loading public key
[DEBUG   ] salt.crypt.verify_signature: Verifying signature
[DEBUG   ] Failed to verify signature of public key
[CRITICAL] The Salt Master server's public key did not authenticate!
```

In a case like this, it should be checked, that the verification pubkey (master_sign.pub) on the minion is the same as the one on the master.

Once the verification is successful, the minion can be started in daemon mode again.

For the paranoid among us, its also possible to verify the publication whenever it is received from the master. That is, for every single auth-attempt which can be quite frequent. For example just the start of the minion will force the signature to be checked 6 times for various things like auth, mine, *highstate*, etc.

If that is desired, enable the setting

```
always_verify_signature: True
```

### 15.5.5 Multiple Masters For A Minion

Configuring multiple masters on a minion is done by specifying two settings:

- a list of masters addresses
- what type of master is defined

```
master:
    - 172.16.0.10
    - 172.16.0.11
    - 172.16.0.12
```

```
master_type: failover
```

This tells the minion that all the master above are available for it to connect to. When started with this configuration, it will try the master in the order they are defined. To randomize that order, set

```
master_shuffle: True
```

The master-list will then be shuffled before the first connection attempt.

The first master that accepts the minion, is used by the minion. If the master does not yet know the minion, that counts as accepted and the minion stays on that master.

For the minion to be able to detect if its still connected to its current master enable the check for it

```
master_alive_interval: <seconds>
```

If the loss of the connection is detected, the minion will temporarily remove the failed master from the list and try one of the other masters defined (again shuffled if that is enabled).

### 15.5.6 Testing the setup

At least two running masters are needed to test the failover setup.

Both masters should be running and the minion should be running on the command line in debug mode

```
salt-minion -l debug
```

The minion will connect to the first master from its master list

```
[DEBUG   ] Attempting to authenticate with the Salt Master at 172.16.0.10
[DEBUG   ] Loaded minion key: /etc/salt/pki/minion/minion.pem
[DEBUG   ] salt.crypt.verify_signature: Loading public key
[DEBUG   ] salt.crypt.verify_signature: Verifying signature
[DEBUG   ] Successfully verified signature of master public key with verification
 ↪public key master_sign.pub
[INFO    ] Received signed and verified master pubkey from master 172.16.0.10
[DEBUG   ] Decrypting the current master AES key
```

A test.ping on the master the minion is currently connected to should be run to test connectivity.

If successful, that master should be turned off. A firewall-rule denying the minions packets will also do the trick.

Depending on the configured conf_minion:*master_alive_interval*, the minion will notice the loss of the connection and log it to its logfile.

```
[INFO    ] Connection to master 172.16.0.10 lost
[INFO    ] Trying to tune in to next master from master-list
```

The minion will then remove the current master from the list and try connecting to the next master

```
[INFO    ] Removing possibly failed master 172.16.0.10 from list of masters
[WARNING ] Master ip address changed from 172.16.0.10 to 172.16.0.11
[DEBUG   ] Attempting to authenticate with the Salt Master at 172.16.0.11
```

If everything is configured correctly, the new masters public key will be verified successfully

```
[DEBUG   ] Loaded minion key: /etc/salt/pki/minion/minion.pem
[DEBUG   ] salt.crypt.verify_signature: Loading public key
[DEBUG   ] salt.crypt.verify_signature: Verifying signature
[DEBUG   ] Successfully verified signature of master public key with verification
 ↪public key master_sign.pub
```

the authentication with the new master is successful

```
[INFO    ] Received signed and verified master pubkey from master 172.16.0.11
[DEBUG   ] Decrypting the current master AES key
[DEBUG   ] Loaded minion key: /etc/salt/pki/minion/minion.pem
[INFO    ] Authentication with master successful!
```

and the minion can be pinged again from its new master.

### 15.5.7 Performance Tuning

With the setup described above, the master computes a signature for every auth-request of a minion. With many minions and many auth-requests, that can chew up quite a bit of CPU-Power.

To avoid that, the master can use a pre-created signature of its public-key. The signature is saved as a base64 encoded string which the master reads once when starting and attaches only that string to auth-replies.

Enabling this also gives paranoid users the possibility, to have the signing key-pair on a different system than the actual salt-master and create the public keys signature there. Probably on a system with more restrictive firewall rules, without internet access, less users, etc.

That signature can be created with

```
salt-key --gen-signature
```

This will create a default signature file in the master pki-directory

```
/etc/salt/pki/master/master_pubkey_signature
```

It is a simple text-file with the binary-signature converted to base64.

If no signing-pair is present yet, this will auto-create the signing pair and the signature file in one call

```
salt-key --gen-signature --auto-create
```

Telling the master to use the pre-created signature is done with

```
master_use_pubkey_signature: True
```

That requires the file `master_pubkey_signature' to be present in the masters pki-directory with the correct signature.

If the signature file is named differently, its name can be set with

```
master_pubkey_signature: <filename>
```

With many masters and many public-keys (default and signing), it is advised to use the salt-masters hostname for the signature-files name. Signatures can be easily confused because they do not provide any information about the key the signature was created from.

Verifying that everything works is done the same way as above.

### 15.5.8 How the signing and verification works

The default key-pair of the salt-master is

```
/etc/salt/pki/master/master.pem
/etc/salt/pki/master/master.pub
```

To be able to create a signature of a message (in this case a public-key), another key-pair has to be added to the setup. Its default name is:

```
master_sign.pem
master_sign.pub
```

The combination of the master.* and master_sign.* key-pairs give the possibility of generating signatures. The signature of a given message is unique and can be verified, if the public-key of the signing-key-pair is available to the recipient (the minion).

The signature of the masters public-key in master.pub is computed with

```
master_sign.pem
master.pub
M2Crypto.EVP.sign_update()
```

This results in a binary signature which is converted to base64 and attached to the auth-reply send to the minion.

With the signing-pairs public-key available to the minion, the attached signature can be verified with

```
master_sign.pub
master.pub
M2Cryptos EVP.verify_update().
```

When running multiple masters, either the signing key-pair has to be present on all of them, or the master_pubkey_signature has to be pre-computed for each master individually (because they all have different public-keys).

DO NOT PUT THE SAME master.pub ON ALL MASTERS FOR EASE OF USE.

CHAPTER 16

# Windows

This section contains details on the Windows Package Manager, and specific information you need to use Salt on Windows.

## 16.1 Windows Software Repository

**Note:** In 2015.8.0 and later, the Windows Software Repository cache is compiled on the Salt Minion, which enables pillar, grains and other things to be available during compilation time. To support this new functionality, a next-generation (ng) package repository was created. See See the *Changes in Version 2015.8.0* for details.

The SaltStack Windows Software Repository provides a package manager and software repository similar to what is provided by yum and apt on Linux. This repository enables the installation of software using the installers on remote Windows systems.

In many senses, the operation is similar to that of the other package managers salt is aware of:

- the `pkg.installed` and similar states work on Windows.
- the `pkg.install` and similar module functions work on Windows.

High level differences to yum and apt are:

- The repository metadata (SLS files) is hosted through either salt or git.
- Packages can be downloaded from within the salt repository, a git repository or from http(s) or ftp urls.
- No dependencies are managed. Dependencies between packages needs to be managed manually.

Requirements:

- GitPython 0.3 or later, or pygit2 0.20.3 with libgit 0.20.0 or later installed on your Salt master. The Windows package definitions are downloaded and updated using Git.

### 16.1.1 Configuration

#### Populate the Repository

The SLS files used to install Windows packages are not distributed by default with Salt. Run the following command to initialize the repository on your Salt master:

```
salt-run winrepo.update_git_repos
```

#### Sync Repo to Windows Minions

Run `pkg.refresh_db` on each of your Windows minions to synchronize the package repository.

```
salt -G 'os:windows' pkg.refresh_db
```

### 16.1.2 Install Windows Software

After completing the configuration steps, you are ready to manage software on your Windows minions.

#### Show Installed Packages

```
salt -G 'os:windows' pkg.list_pkgs
```

#### Install a Package

You can query the available version of a package using the Salt pkg module.

```
salt winminion pkg.available_version firefox

{'firefox': {'15.0.1': 'Mozilla Firefox 15.0.1 (x86 en-US)',
             '16.0.2': 'Mozilla Firefox 16.0.2 (x86 en-US)',
             '17.0.1': 'Mozilla Firefox 17.0.1 (x86 en-US)'}}
```

As you can see, there are three versions of Firefox available for installation. You can refer a software package by its `name` or its `full_name` surround by single quotes.

```
salt winminion pkg.install 'firefox'
```

The above line will install the latest version of Firefox.

```
salt winminion pkg.install 'firefox' version=16.0.2
```

The above line will install version 16.0.2 of Firefox.

If a different version of the package is already installed it will be replaced with the version in the winrepo (only if the package itself supports live updating).

You can also specify the full name:

```
salt winminion pkg.install 'Mozilla Firefox 17.0.1 (x86 en-US)'
```

### 16.1.3 Uninstall Windows Software

Uninstall software using the pkg module:

```
salt winminion pkg.remove firefox
salt winminion pkg.purge firefox
```

**Note:** `pkg.purge` just executes `pkg.remove` on Windows. At some point in the future `pkg.purge` may direct the installer to remove all configs and settings for software packages that support that option.

### 16.1.4 Repository Location

Salt maintains a repository of SLS files to install a large number of Windows packages:

- 2015.8.0 and later minions: https://github.com/saltstack/salt-winrepo-ng
- Earlier releases: https://github.com/saltstack/salt-winrepo

By default, these repositories are mirrored to `/srv/salt/win/repo_ng` and `/srv/salt/win/repo`.

This location can be changed in the master config file by setting the *winrepo_dir_ng* and *winrepo_dir* options.

### 16.1.5 Maintaining Windows Repo Definitions in Git Repositories

Windows software package definitions can be hosted in one or more Git repositories. The default repositories are hosted on GitHub by SaltStack. These include software definition files for various open source software projects. These software definition files are `.sls` files. There are two default repositories: `salt-winrepo` and `salt-winrepo-ng`. `salt-winrepo` contains software definition files for older minions (older than 2015.8.0). `salt-winrepo-ng` is for newer minions (2015.8.0 and newer).

Each software definition file contains all the information salt needs to install that software on a minion including the HTTP or FTP locations of the installer files, required command-line switches for silent install, etc. Anyone is welcome to send a pull request to this repo to add new package definitions. The repos can be browsed here: salt-winrepo salt-winrepo-ng

**Note:** The newer software definition files are run through the salt's parser which allows for the use of jinja.

Configure which git repositories the master can search for package definitions by modifying or extending the *winrepo_remotes* and *winrepo_remotes_ng* options.

**Important:** `winrepo_remotes` was called `win_gitrepos` in Salt versions earlier than 2015.8.0

Package definitions are pulled down from the online repository by running the *winrepo.update_git_repos* runner. This command is run on the master:

```
salt-run winrepo.update_git_repos
```

This will pull down the software definition files for older minions (`salt-winrepo`) and new minions (`salt-winrepo-ng`). They are stored in the `file_roots` under `win/repo/salt-winrepo` and `win/repo-ng/salt-winrepo-ng` respectively.

**Important:** If you have customized software definition files that aren't maintained in a repository, those should be stored under `win/repo` for older minions and `win/repo-ng` for newer minions. The reason for this is that the contents of `win/repo/salt-winrepo` and `win/repo-ng/salt-winrepo-ng` are wiped out every time you run a `winrepo.update_git_repos`.

Additionally, when you run `winrepo.genrepo` and `pkg.refresh_db` the entire contents under `win/repo` and `win/repo-ng`, to include all subdirectories, are used to create the msgpack file.

The next step (if you have older minions) is to create the msgpack file for the repo (`winrepo.p`). This is done by running the *winrepo.genrepo* runner. This is also run on the master:

```
salt-run winrepo.genrepo
```

**Note**: If you have only 2015.8.0 and newer minions, you no longer need to run `salt-run winrepo.genrepo` on the master.

Finally, you need to refresh the minion database by running the *pkg.refresh_db* command. This is run on the master as well:

```
salt '*' pkg.refresh_db
```

On older minions (older than 2015.8.0) this will copy the winrepo.p file down to the minion. On newer minions (2015.8.0 and newer) this will copy all the software definition files (.sls) down to the minion and then create the msgpack file (`winrepo.p`) locally. The reason this is done locally is because the jinja needs to be parsed using the minion's grains.

**Important**: Every time you modify the software definition files on the master, either by running `salt-run winrepo.update_git_repos`, modifying existing files, or by creating your own, you need to refresh the database on your minions. For older minions, that means running `salt-run winrepo.genrepo` and then `salt '*' pkg.refresh_db`. For newer minions (2015.8.0 and newer) it is just `salt '*' pkg.refresh_db`.

**Note**: If the `winrepo.genrepo` or the `pkg.refresh_db` fails, it is likely a problem with the jinja in one of the software definition files. This will cause the operations to stop. You'll need to fix the syntax in order for the msgpack file to be created successfully.

To disable one of the repos, set it to an empty list `[]` in the master config. For example, to disable *winrepo_remotes* set the following in the master config file:

```
winrepo_remotes: []
```

### 16.1.6 Creating a Package Definition SLS File

The package definition file is a yaml file that contains all the information needed to install a piece of software using salt. It defines information about the package to include version, full name, flags required for the installer and uninstaller, whether or not to use the windows task scheduler to install the package, where to find the installation package, etc.

Take a look at this example for Firefox:

```
firefox:
  '17.0.1':
    installer: 'salt://win/repo/firefox/English/Firefox Setup 17.0.1.exe'
    full_name: Mozilla Firefox 17.0.1 (x86 en-US)
    locale: en_US
    reboot: False
```

```
    install_flags: '-ms'
    uninstaller: '%ProgramFiles(x86)%/Mozilla Firefox/uninstall/helper.exe'
    uninstall_flags: '/S'
  '16.0.2':
    installer: 'salt://win/repo/firefox/English/Firefox Setup 16.0.2.exe'
    full_name: Mozilla Firefox 16.0.2 (x86 en-US)
    locale: en_US
    reboot: False
    install_flags: '-ms'
    uninstaller: '%ProgramFiles(x86)%/Mozilla Firefox/uninstall/helper.exe'
    uninstall_flags: '/S'
  '15.0.1':
    installer: 'salt://win/repo/firefox/English/Firefox Setup 15.0.1.exe'
    full_name: Mozilla Firefox 15.0.1 (x86 en-US)
    locale: en_US
    reboot: False
    install_flags: '-ms'
    uninstaller: '%ProgramFiles(x86)%/Mozilla Firefox/uninstall/helper.exe'
    uninstall_flags: '/S'
```

Each software definition file begins with a package name for the software. As in the example above `firefox`. The next line is indented two spaces and contains the version to be defined. As in the example above, a software definition file can define multiple versions for the same piece of software. The lines following the version are indented two more spaces and contain all the information needed to install that package.

**Warning**: The package name and the `full_name` must be unique to all other packages in the software repository.

The version line is the version for the package to be installed. It is used when you need to install a specific version of a piece of software.

**Warning**: The version must be enclosed in quotes, otherwise the yaml parser will remove trailing zeros.

**Note**: There are unique situations where previous versions are unavailable. Take Google Chrome for example. There is only one url provided for a standalone installation of Google Chrome. (https://dl.google.com/edgedl/chrome/install/GoogleChromeStandaloneEnterprise.msi) When a new version is released, the url just points to the new version. To handle situations such as these, set the version to *latest*. Salt will install the version of Chrome at the URL and report that version. Here's an example:

```
chrome:
  latest:
    full_name: 'Google Chrome'
    installer: 'https://dl.google.com/edgedl/chrome/install/
↪GoogleChromeStandaloneEnterprise.msi'
    install_flags: '/qn /norestart'
    uninstaller: 'https://dl.google.com/edgedl/chrome/install/
↪GoogleChromeStandaloneEnterprise.msi'
    uninstall_flags: '/qn /norestart'
    msiexec: True
    locale: en_US
    reboot: False
```

Available parameters are as follows:

**param str full_name** The Full Name for the software as shown in ``Programs and Features'' in the control panel. You can also get this information by installing the package manually and then running `pkg.list_pkgs`. Here's an example of the output from `pkg.list_pkgs`:

```
salt 'test-2008' pkg.list_pkgs
test-2008
    ----------
    7-Zip 9.20 (x64 edition):
        9.20.00.0
    Microsoft .NET Framework 4 Client Profile:
        4.0.30319,4.0.30319
    Microsoft .NET Framework 4 Extended:
        4.0.30319,4.0.30319
    Microsoft Visual C++ 2008 Redistributable - x64 9.0.21022:
        9.0.21022
    Mozilla Firefox 17.0.1 (x86 en-US):
        17.0.1
    Mozilla Maintenance Service:
        17.0.1
    NSClient++ (x64):
        0.3.8.76
    Notepad++:
        6.4.2
    Salt Minion 0.16.0:
        0.16.0
```

Notice the Full Name for Firefox: Mozilla Firefox 17.0.0 (x86 en-US). That's exactly what's in the `full_name` parameter in the software definition file.

If any of the software insalled on the machine matches one of the software definition files in the repository the full_name will be automatically renamed to the package name. The example below shows the `pkg.list_pkgs` for a machine that already has Mozilla Firefox 17.0.1 installed.

```
test-2008:
    ----------
    7zip:
        9.20.00.0
    Microsoft .NET Framework 4 Client Profile:
        4.0.30319,4.0.30319
    Microsoft .NET Framework 4 Extended:
        4.0.30319,4.0.30319
    Microsoft Visual C++ 2008 Redistributable - x64 9.0.21022:
        9.0.21022
    Mozilla Maintenance Service:
        17.0.1
    Notepad++:
        6.4.2
    Salt Minion 0.16.0:
        0.16.0
    firefox:
        17.0.1
    nsclient:
        0.3.9.328
```

**Important**: The version number and `full_name` need to match the output from `pkg.list_pkgs` so that the

status can be verified when running highstate.

---

**Note:** It is still possible to successfully install packages using `pkg.install` even if they don't match. This can make troubleshooting difficult so be careful.

---

**param str installer** The path to the `.exe` or `.msi` to use to install the package. This can be a path or a URL. If it is a URL or a salt path (salt://), the package will be cached locally and then executed. If it is a path to a file on disk or a file share, it will be executed directly.

**param str install_flags** Any flags that need to be passed to the installer to make it perform a silent install. These can often be found by adding `/?` or `/h` when running the installer from the command-line. A great resource for finding these silent install flags can be found on the WPKG project's wiki:

Salt will not return if the installer is waiting for user input so these are important.

**param str uninstaller** The path to the program used to uninstall this software. This can be the path to the same *exe* or *msi* used to install the software. It can also be a GUID. You can find this value in the registry under the following keys:

- Software\Microsoft\Windows\CurrentVersion\Uninstall
- Software\Wow6432None\Microsoft\Windows\CurrentVersion\Uninstall

**param str uninstall_flags** Any flags that need to be passed to the uninstaller to make it perform a silent uninstall. These can often be found by adding `/?` or `/h` when running the uninstaller from the command-line. A great resource for finding these silent install flags can be found on the WPKG project's wiki:

Salt will not return if the uninstaller is waiting for user input so these are important.

Here are some examples of installer and uninstaller settings:

```
7zip:
  '9.20.00.0':
    installer: salt://win/repo/7zip/7z920-x64.msi
    full_name: 7-Zip 9.20 (x64 edition)
    reboot: False
    install_flags: '/qn /norestart'
    msiexec: True
    uninstaller: '{23170F69-40C1-2702-0920-000001000000}'
    uninstall_flags: '/qn /norestart'
```

Alternatively the `uninstaller` can also simply repeat the URL of the msi file.

```
7zip:
  '9.20.00.0':
    installer: salt://win/repo/7zip/7z920-x64.msi
    full_name: 7-Zip 9.20 (x64 edition)
    reboot: False
    install_flags: '/qn /norestart'
    msiexec: True
    uninstaller: salt://win/repo/7zip/7z920-x64.msi
    uninstall_flags: '/qn /norestart'
```

**param bool msiexec** This tells salt to use `msiexec /i` to install the package and `msiexec /x` to uninstall. This is for *.msi* installations.

**param bool allusers** This parameter is specific to *.msi* installations. It tells *msiexec* to install the software for all users. The default is True.

**param bool cache_dir** If true, the entire directory where the installer resides will be recursively cached. This is useful for installers that depend on other files in the same directory for installation.

---

**Note**: Only applies to salt: installer URLs.

---

Here's an example for a software package that has dependent files:

```
sqlexpress:
  '12.0.2000.8':
    installer: 'salt://win/repo/sqlexpress/setup.exe'
    full_name: Microsoft SQL Server 2014 Setup (English)
    reboot: False
    install_flags: '/ACTION=install /IACCEPTSQLSERVERLICENSETERMS /Q'
    cache_dir: True
```

**param bool use_scheduler** If true, windows will use the task scheduler to run the installation. This is useful for running the salt installation itself as the installation process kills any currently running instances of salt.

**param bool reboot** Not implemented

**param str local** Not implemented

Examples can be found at https://github.com/saltstack/salt-winrepo-ng

### 16.1.7 Managing Windows Software on a Standalone Windows Minion

The Windows Package Repository functions similar in a standalone environment, with a few differences in the configuration.

To replace the winrepo runner that is used on the Salt master, an *execution module* exists to provide the same functionality to standalone minions. The functions are named the same as the ones in the runner, and are used in the same way; the only difference is that `salt-call` is used instead of `salt-run`:

```
salt-call winrepo.update_git_repos
salt-call winrepo.genrepo
salt-call pkg.refresh_db
```

After executing the previous commands the repository on the standalone system is ready to use.

#### Custom Location for Repository SLS Files

If *file_roots* has not been modified in the minion configuration, then no additional configuration needs to be added to the minion configuration. The *winrepo.genrepo* function from the *winrepo* execution module will by default look for the filename specified by *winrepo_cachefile* within `C:\salt\srv\salt\win\repo`.

If the *file_roots* parameter has been modified, then *winrepo_dir* must be modified to fall within that path, at the proper relative path. For example, if the `base` environment in *file_roots* points to `D:\foo`, and `winrepo_source_dir` is `salt://win/repo`, then *winrepo_dir* must be set to `D:\foo\win\repo` to ensure that *winrepo.genrepo* puts the cachefile into right location.

### 16.1.8 Config Options for Minions 2015.8.0 and Later

The `winrepo_source_dir` config parameter (default: `salt://win/repo`) controls where *`pkg.refresh_db`* looks for the cachefile (default: `winrepo.p`). This means that the default location for the winrepo cachefile would be `salt://win/repo/winrepo.p`. Both `winrepo_source_dir` and *`winrepo_cachefile`* can be adjusted to match the actual location of this file on the Salt fileserver.

### 16.1.9 Config Options for Minions Before 2015.8.0

If connected to a master, the minion will by default look for the winrepo cachefile (the file generated by the *`winrepo.genrepo runner`*) at `salt://win/repo/winrepo.p`. If the cachefile is in a different path on the salt fileserver, then *`win_repo_cachefile`* will need to be updated to reflect the proper location.

### 16.1.10 Changes in Version 2015.8.0

Git repository management for the Windows Software Repository has changed in version 2015.8.0, and several master/minion config parameters have been renamed to make their naming more consistent with each other.

For a list of the winrepo config options, see *here* for master config options, and *here* for configuration options for masterless Windows minions.

On the master, the *`winrepo.update_git_repos`* runner has been updated to use either pygit2 or GitPython to checkout the git repositories containing repo data. If pygit2 or GitPython is installed, existing winrepo git checkouts should be removed after upgrading to 2015.8.0, to allow them to be checked out again by running *`winrepo.update_git_repos`*.

If neither GitPython nor pygit2 are installed, then Salt will fall back to the pre-existing behavior for *`winrepo.update_git_repos`*, and a warning will be logged in the master log.

---

**Note:** Standalone Windows minions do not support the new GitPython/pygit2 functionality, and will instead use the *`git.latest`* state to keep repositories up-to-date. More information on how to use the Windows Software Repo on a standalone minion can be found *here*.

---

#### Config Parameters Renamed

Many of the legacy winrepo configuration parameters have changed in version 2015.8.0 to make the naming more consistent. The old parameter names will still work, but a warning will be logged indicating that the old name is deprecated.

Below are the parameters which have changed for version 2015.8.0:

#### Master Config

| Old Name | New Name |
|---|---|
| win_repo | *`winrepo_dir`* |
| win_repo_mastercachefile | *`winrepo_cachefile`* |
| win_gitrepos | *`winrepo_remotes`* |

---

**Note:** `winrepo_cachefile` is no longer used by 2015.8.0 and later minions, and the `winrepo_dir` setting is replaced by `winrepo_dir_ng` for 2015.8.0 and later minions.

---

See *here* for detailed information on all master config options for the Windows Repo.

### Minion Config

| Old Name | New Name |
|---|---|
| win_repo | *winrepo_dir* |
| win_repo_cachefile | *winrepo_cachefile* |
| win_gitrepos | *winrepo_remotes* |

See *here* for detailed information on all minion config options for the Windows Repo.

### pygit2/GitPython Support for Maintaining Git Repos

The *winrepo.update_git_repos* runner (and the corresponding *remote execution function* for standalone minions) now makes use of the same underlying code used by the *Git Fileserver Backend* and *Git External Pillar* to maintain and update its local clones of git repositories. If a compatible version of either pygit2 (0.20.3 and later) or GitPython (0.3.0 or later) is installed, then Salt will use it instead of the old method (which invokes the *git.latest* state).

---

**Note**: If compatible versions of both pygit2 and GitPython are installed, then Salt will prefer pygit2, to override this behavior use the *winrepo_provider* configuration parameter:

```
winrepo_provider: gitpython
```

The *winrepo execution module* (discussed above in the *Managing Windows Software on a Standalone Windows Minion* section) does not yet officially support the new pygit2/GitPython functionality, but if either pygit2 or GitPython is installed into Salt's bundled Python then it *should* work. However, it should be considered experimental at this time.

---

To minimize potential issues, it is a good idea to remove any winrepo git repositories that were checked out by the old (pre-2015.8.0) winrepo code when upgrading the master to 2015.8.0 or later, and run *winrepo.update_git_repos* to clone them anew after the master is started.

Additional added features include the ability to access authenticated git repositories (**NOTE**: pygit2 only), and to set per-remote config settings. An example of this would be the following:

```
winrepo_remotes:
  - https://github.com/saltstack/salt-winrepo.git
  - git@github.com:myuser/myrepo.git:
    - pubkey: /path/to/key.pub
    - privkey: /path/to/key
    - passphrase: myaw3s0m3pa$$phr4$3
  - https://github.com/myuser/privaterepo.git:
    - user: mygithubuser
    - password: CorrectHorseBatteryStaple
```

---

**Note**: Per-remote configuration settings work in the same fashion as they do in gitfs, with global parameters being overridden by their per-remote counterparts (for instance, setting *winrepo_passphrase* would set a global passphrase for winrepo that would apply to all SSH-based remotes, unless overridden by a `passphrase` per-remote parameter).

See *here* for more a more in-depth explanation of how per-remote configuration works in gitfs, the same principles apply to winrepo.

There are a couple other changes in how Salt manages git repos using pygit2/GitPython. First of all, a `clean` argument has been added to the *winrepo.update_git_repos* runner, which (if set to `True`) will tell the runner to dispose of directories under the *winrepo_dir* which are not explicitly configured. This prevents the need to manually remove these directories when a repo is removed from the config file. To clean these old directories, just pass `clean=True`, like so:

```
salt-run winrepo.update_git_repos clean=True
```

However, if a mix of git and non-git Windows Repo definition files are being used, then this should *not* be used, as it will remove the directories containing non-git definitions.

The other major change is that collisions between repo names are now detected, and the *winrepo.update_git_repos* runner will not proceed if any are detected. Consider the following configuration:

```
winrepo_remotes:
  - https://foo.com/bar/baz.git
  - https://mydomain.tld/baz.git
  - https://github.com/foobar/baz
```

The *winrepo.update_git_repos* runner will refuse to update repos here, as all three of these repos would be checked out to the same directory. To work around this, a per-remote parameter called `name` can be used to resolve these conflicts:

```
winrepo_remotes:
  - https://foo.com/bar/baz.git
  - https://mydomain.tld/baz.git:
    - name: baz_junior
  - https://github.com/foobar/baz:
    - name: baz_the_third
```

### 16.1.11 Troubleshooting

#### Incorrect name/version

If the package seems to install properly, but salt reports a failure then it is likely you have a version or `full_name` mismatch.

Check the exact `full_name` and version used by the package. Use `pkg.list_pkgs` to check that the names and version exactly match what is installed.

#### Changes to sls files not being picked up

Ensure you have (re)generated the repository cache file (for older minions) and then updated the repository cache on the relevant minions:

```
salt-run winrepo.genrepo
salt winminion pkg.refresh_db
```

#### Packages management under Windows 2003

On Windows server 2003, you need to install optional Windows component ``wmi windows installer provider'' to have full list of installed packages. If you don't have this, salt-minion can't report some installed software.

#### How Success and Failure are Reported

The install state/module function of the Windows package manager works roughly as follows:

1. Execute `pkg.list_pkgs` and store the result
2. Check if any action needs to be taken. (i.e. compare required package and version against `pkg.list_pkgs` results)
3. If so, run the installer command.
4. Execute `pkg.list_pkgs` and compare to the result stored from before installation.
5. Success/Failure/Changes will be reported based on the differences between the original and final `pkg.list_pkgs` results.

If there are any problems in using the package manager it is likely due to the data in your sls files not matching the difference between the pre and post `pkg.list_pkgs` results.

## 16.2 Windows-specific Behaviour

Salt is capable of managing Windows systems, however due to various differences between the operating systems, there are some things you need to keep in mind.

This document will contain any quirks that apply across Salt or generally across multiple module functions. Any Windows-specific behavior for particular module functions will be documented in the module function documentation. Therefore this document should be read in conjunction with the module function documentation.

### 16.2.1 Group parameter for files

Salt was originally written for managing Unix-based systems, and therefore the file module functions were designed around that security model. Rather than trying to shoehorn that model on to Windows, Salt ignores these parameters and makes non-applicable module functions unavailable instead.

One of the commonly ignored parameters is the `group` parameter for managing files. Under Windows, while files do have a `primary group' property, this is rarely used. It generally has no bearing on permissions unless intentionally configured and is most commonly used to provide Unix compatibility (e.g. Services For Unix, NFS services).

Because of this, any file module functions that typically require a group, do not under Windows. Attempts to directly use file module functions that operate on the group (e.g. `file.chgrp`) will return a pseudo-value and cause a log message to appear. No group parameters will be acted on.

If you do want to access and change the `primary group' property and understand the implications, use the `file.get_pgid` or `file.get_pgroup` functions or the `pgroup` parameter on the `file.chown` module function.

### 16.2.2 Dealing with case-insensitive but case-preserving names

Windows is case-insensitive, but however preserves the case of names and it is this preserved form that is returned from system functions. This causes some issues with Salt because it assumes case-sensitive names. These issues generally occur in the state functions and can cause bizarre looking errors.

To avoid such issues, always pretend Windows is case-sensitive and use the right case for names, e.g. specify `user=Administrator` instead of `user=administrator`.

Follow issue 11801 for any changes to this behavior.

### 16.2.3 Dealing with various username forms

Salt does not understand the various forms that Windows usernames can come in, e.g. username, mydomain\username, username@mydomain.tld can all refer to the same user. In fact, Salt generally only considers the raw username value, i.e. the username without the domain or host information.

Using these alternative forms will likely confuse Salt and cause odd errors to happen. Use only the raw username value in the correct case to avoid problems.

Follow issue 11801 for any changes to this behavior.

### 16.2.4 Specifying the None group

Each Windows system has built-in _None_ group. This is the default `primary group' for files for users not on a domain environment.

Unfortunately, the word _None_ has special meaning in Python - it is a special value indicating `nothing', similar to `null` or `nil` in other languages.

To specify the None group, it must be specified in quotes, e.g. `./salt '*' file.chpgrp C:\path\to\file "'None'"`.

### 16.2.5 Symbolic link loops

Under Windows, if any symbolic link loops are detected or if there are too many levels of symlinks (defaults to 64), an error is always raised.

For some functions, this behavior is different to the behavior on Unix platforms. In general, avoid symlink loops on either platform.

### 16.2.6 Modifying security properties (ACLs) on files

There is no support in Salt for modifying ACLs, and therefore no support for changing file permissions, besides modifying the owner/user.

CHAPTER 17

# Developing Salt

## 17.1 Overview

In its most typical use, Salt is a software application in which clients, called ``minions'' can be commanded and controlled from a central command server called a ``master''.

Commands are normally issued to the minions (via the master) by calling a client script simply called, `salt'.

Salt features a pluggable transport system to issue commands from a master to minions. The default transport is ZeroMQ.

## 17.2 Salt Client

### 17.2.1 Overview

The salt client is run on the same machine as the Salt Master and communicates with the salt-master to issue commands and to receive the results and display them to the user.

The primary abstraction for the salt client is called `LocalClient'.

When LocalClient wants to publish a command to minions, it connects to the master by issuing a request to the master's ReqServer (TCP: 4506)

The LocalClient system listens to responses for its requests by listening to the master event bus publisher (master_event_pub.ipc).

## 17.3 Salt Master

### 17.3.1 Overview

The salt-master daemon runs on the designated Salt master and performs functions such as authenticating minions, sending, and receiving requests from connected minions and sending and receiving requests and replies to the `salt' CLI.

### 17.3.2 Moving Pieces

When a Salt master starts up, a number of processes are started, all of which are called `salt-master' in a process-list but have various role categories.

Among those categories are:

- Publisher
- EventPublisher
- MWorker

### 17.3.3 Publisher

The Publisher process is responsible for sending commands over the designated transport to connected minions. The Publisher is bound to the following:

- TCP: port 4505
- IPC: publish_pull.ipc

Each salt minion establishes a connection to the master Publisher.

### 17.3.4 EventPublisher

The EventPublisher publishes events onto the event bus. It is bound to the following:

- IPC: master_event_pull.ipc
- IPC: master_event_pub.ipc

### 17.3.5 MWorker

Worker processes manage the back-end operations for the Salt Master.

The number of workers is equivalent to the number of `worker_threads' specified in the master configuration and is always at least one.

Workers are bound to the following:

- IPC: workers.ipc

### 17.3.6 ReqServer

The Salt request server takes requests and distributes them to available MWorker processes for processing. It also receives replies back from minions.

**The ReqServer is bound to the following:**

- TCP: 4506
- IPC: workers.ipc

Each salt minion establishes a connection to the master ReqServer.

### 17.3.7 Job Flow

The Salt master works by always publishing commands to all connected minions and the minions decide if the command is meant for them by checking themselves against the command target.

The typical lifecycle of a salt job from the perspective of the master might be as follows:

1. A command is issued on the CLI. For example, `salt my_minion test.ping'.

2) The `salt' command uses LocalClient to generate a request to the salt master by connecting to the ReqServer on TCP:4506 and issuing the job.

3) The salt-master ReqServer sees the request and passes it to an available MWorker over workers.ipc.

4) A worker picks up the request and handles it. First, it checks to ensure that the requested user has permissions to issue the command. Then, it sends the publish command to all connected minions. For the curious, this happens in ClearFuncs.publish().

5) The worker announces on the master event bus that it is about to publish a job to connected minions. This happens by placing the event on the master event bus (master_event_pull.ipc) where the EventPublisher picks it up and distributes it to all connected event listeners on master_event_pub.ipc.

6) The message to the minions is encrypted and sent to the Publisher via IPC on publish_pull.ipc.

7) Connected minions have a TCP session established with the Publisher on TCP port 4505 where they await commands. When the Publisher receives the job over publish_pull, it sends the jobs across the wire to the minions for processing.

8) After the minions receive the request, they decrypt it and perform any requested work, if they determine that they are targeted to do so.

9) When the minion is ready to respond, it publishes the result of its job back to the master by sending the encrypted result back to the master on TCP 4506 where it is again picked up by the ReqServer and forwarded to an available MWorker for processing. (Again, this happens by passing this message across workers.ipc to an available worker.)

10) When the MWorker receives the job it decrypts it and fires an event onto the master event bus (master_event_pull.ipc). (Again for the curious, this happens in AESFuncs._return().

11) The EventPublisher sees this event and re-publishes it on the bus to all connected listeners of the master event bus (on master_event_pub.ipc). This is where the LocalClient has been waiting, listening to the event bus for minion replies. It gathers the job and stores the result.

12) When all targeted minions have replied or the timeout has been exceeded, the salt client displays the results of the job to the user on the CLI.

## 17.4 Salt Minion

### 17.4.1 Overview

The salt-minion is a single process that sits on machines to be managed by Salt. It can either operate as a stand-alone daemon which accepts commands locally via `salt-call' or it can connect back to a master and receive commands remotely.

When starting up, salt minions connect _back_ to a master defined in the minion config file. The connect to two ports on the master:

- **TCP: 4505** This is the connection to the master Publisher. It is on this port that the minion receives jobs from the master.

- **TCP: 4506** This is the connection to the master ReqServer. It is on this port that the minion sends job results back to the master.

### 17.4.2 Event System

Similar to the master, a salt-minion has its own event system that operates over IPC by default. The minion event system operates on a push/pull system with IPC files at minion_event_<unique_id>_pub.ipc and minion_event_<unique_id>_pull.ipc.

The astute reader might ask why have an event bus at all with a single-process daemon. The answer is that the salt-minion may fork other processes as required to do the work without blocking the main salt-minion process and this necessitates a mechanism by which those processes can communicate with each other. Secondarily, this provides a bus by which any user with sufficient permissions can read or write to the bus as a common interface with the salt minion.

### 17.4.3 Job Flow

When a salt minion starts up, it attempts to connect to the Publisher and the ReqServer on the salt master. It then attempts to authenticate and once the minion has successfully authenticated, it simply listens for jobs.

Jobs normally come either come from the `salt-call' script run by a local user on the salt minion or they can come directly from a master.

### 17.4.4 Master Job Flow

1) A master publishes a job that is received by a minion as outlined by the master's job flow above.

2) The minion is polling its receive socket that's connected to the master Publisher (TCP 4505 on master). When it detects an incoming message, it picks it up from the socket and decrypts it.

3) A new minion process or thread is created and provided with the contents of the decrypted message. The _thread_return() method is provided with the contents of the received message.

4) The new minion thread is created. The _thread_return() function starts up and actually calls out to the requested function contained in the job.

5. The requested function runs and returns a result. [Still in thread.]

6) The result of the function that's run is encrypted and returned to the master's ReqServer (TCP 4506 on master). [Still in thread.]

7) Thread exits. Because the main thread was only blocked for the time that it took to initialize the worker thread, many other requests could have been received and processed during this time.

## 17.5 A Note on ClearFuncs vs. AESFuncs

A common source of confusion is determining when messages are passed in the clear and when they are passed using encryption. There are two rules governing this behaviour:

1) ClearFuncs is used for intra-master communication and during the initial authentication handshake between a minion and master during the key exhange.

2. AESFuncs is used everywhere else.

## 17.6 Contributing

There is a great need for contributions to Salt and patches are welcome! The goal here is to make contributions clear, make sure there is a trail for where the code has come from, and most importantly, to give credit where credit is due!

There are a number of ways to contribute to Salt development.

For details on how to contribute documentation improvements please review *Writing Salt Documentation*.

### 17.6.1 Salt Coding Style

SaltStack has its own coding style guide that informs contributors on various coding approaches. Please review the *Salt Coding Style* documentation for information about Salt's particular coding patterns.

Within the *Salt Coding Style* documentation, there is a section about running Salt's `.pylintrc` file. SaltStack recommends running the `.pylintrc` file on any files you are changing with your code contribution before submitting a pull request to Salt's repository. Please see the *Linting* documentation for more information.

#### Sending a GitHub pull request

Sending pull requests on GitHub is the preferred method for receiving contributions. The workflow advice below mirrors GitHub's own guide and is well worth reading.

1. Fork saltstack/salt on GitHub.
2. Make a local clone of your fork.

```
git clone git@github.com:my-account/salt.git
cd salt
```

3. Add saltstack/salt as a git remote.

```
git remote add upstream https://github.com/saltstack/salt.git
```

4. Create a new branch in your clone.

---

**Note:** A branch should have one purpose. For example, ``Fix bug X,'' or ``Add feature Y''. Multiple unrelated fixes and/or features should be isolated into separate branches.

---

If you're working on a bug or documentation fix, create your branch from the oldest release branch that contains the bug or requires the documentation update. See *Which Salt Branch?*.

```
git fetch upstream
git checkout -b fix-broken-thing upstream/2016.3
```

If you're working on a feature, create your branch from the develop branch.

```
git fetch upstream
git checkout -b add-cool-feature upstream/develop
```

5. Edit and commit changes to your branch.

```
vim path/to/file1 path/to/file2
git diff
git add path/to/file1 path/to/file2
git commit
```

Write a short, descriptive commit title and a longer commit message if necessary.

---

**Note**: If your change fixes a bug or implements a feature already filed in the issue tracker, be sure to reference the issue number in the commit message body.

---

```
Fix broken things in file1 and file2

Fixes #31337

# Please enter the commit message for your changes. Lines starting
# with '#' will be ignored, and an empty message aborts the commit.
# On branch fix-broken-thing
# Changes to be committed:
#       modified:   path/to/file1
#       modified:   path/to/file2
```

If you get stuck, there are many introductory Git resources on http://help.github.com.

6. Push your locally-committed changes to your GitHub fork.

```
git push -u origin fix-broken-thing
```

or

```
git push -u origin add-cool-feature
```

---

**Note**: You may want to rebase before pushing to work out any potential conflicts:

```
git fetch upstream
git rebase upstream/2016.3 fix-broken-thing
git push -u origin fix-broken-thing
```

or

```
git fetch upstream
git rebase upstream/develop add-cool-feature
git push -u origin add-cool-feature
```

If you do rebase, and the push is rejected with a `(non-fast-forward)` comment, then run `git status`. You will likely see a message about the branches diverging:

```
On branch fix-broken-thing
Your branch and 'origin/fix-broken-thing' have diverged,
and have 1 and 2 different commits each, respectively.
  (use "git pull" to merge the remote branch into yours)
nothing to commit, working tree clean
```

Do **NOT** perform a `git pull` or `git merge` here. Instead, add `--force` to the end of the `git push` command to get the changes pushed to your fork. Pulling or merging, while they will resolve the non-fast-

forward issue, will likely add extra commits to the pull request which were not part of your changes.

7. Find the branch on your GitHub salt fork.

   https://github.com/my-account/salt/branches/fix-broken-thing

8. Open a new pull request.

   Click on `Pull Request` on the right near the top of the page,

   https://github.com/my-account/salt/pull/new/fix-broken-thing

   (a) If your branch is a fix for a release branch, choose that as the base branch (e.g. `2016.3`),

   https://github.com/my-account/salt/compare/saltstack:2016.3...fix-broken-thing

   If your branch is a feature, choose `develop` as the base branch,

   https://github.com/my-account/salt/compare/saltstack:develop...add-cool-feature

   (b) Review that the proposed changes are what you expect.

   (c) Write a descriptive comment. Include links to related issues (e.g. `Fixes #31337.') in the comment field.

   (d) Click `Create pull request`.

9. Salt project members will review your pull request and automated tests will run on it.

   If you recognize any test failures as being related to your proposed changes or if a reviewer asks for modifications:

   (a) Make the new changes in your local clone on the same local branch.

   (b) Push the branch to GitHub again using the same commands as before.

   (c) New and updated commits will be added to the pull request automatically.

   (d) Feel free to add a comment to the discussion.

**Note:** Jenkins

Pull request against saltstack/salt are automatically tested on a variety of operating systems and configurations. On average these tests take 30 minutes. Depending on your GitHub notification settings you may also receive an email message about the test results.

Test progress and results can be found at http://jenkins.saltstack.com/.

### Which Salt branch?

GitHub will open pull requests against Salt's main branch, `develop`, by default. Ideally, features should go into `develop` and bug fixes and documentation changes should go into the oldest supported release branch affected by the bug or documentation update. See *Sending a GitHub pull request*.

If you have a bug fix or doc change and have already forked your working branch from `develop` and do not know how to rebase your commits against another branch, then submit it to `develop` anyway and we'll be sure to backport it to the correct place.

### 17.6.2 The current release branch

The current release branch is the most recent stable release. Pull requests containing bug fixes should be made against the release branch.

The branch name will be a date-based name such as `2016.3`.

Bug fixes are made on this branch so that minor releases can be cut from this branch without introducing surprises and new features. This approach maximizes stability.

The Salt development team will ``merge-forward'' any fixes made on the release branch to the `develop` branch once the pull request has been accepted. This keeps the fix in isolation on the release branch and also keeps the `develop` branch up-to-date.

---

**Note**: Closing GitHub issues from commits

This ``merge-forward'' strategy requires that the magic keywords to close a GitHub issue appear in the commit message text directly. Only including the text in a pull request will not close the issue.

GitHub will close the referenced issue once the *commit* containing the magic text is merged into the default branch (`develop`). Any magic text input only into the pull request description will not be seen at the Git-level when those commits are merged-forward. In other words, only the commits are merged-forward and not the pull request.

---

### 17.6.3 The `develop` branch

The `develop` branch is unstable and bleeding-edge. Pull requests containing feature additions or non-bug-fix changes should be made against the `develop` branch.

The Salt development team will back-port bug fixes made to `develop` to the current release branch if the contributor cannot create the pull request against that branch.

#### Keeping Salt Forks in Sync

Salt is advancing quickly. It is therefore critical to pull upstream changes from upstream into your fork on a regular basis. Nothing is worse than putting hard work into a pull request only to see bunches of merge conflicts because it has diverged too far from upstream.

**See also**:

GitHub Fork a Repo Guide

The following assumes `origin` is the name of your fork and `upstream` is the name of the main saltstack/salt repository.

1. View existing remotes.

```
git remote -v
```

2. Add the `upstream` remote.

```
# For ssh github
git remote add upstream git@github.com:saltstack/salt.git

# For https github
git remote add upstream https://github.com/saltstack/salt.git
```

3. Pull upstream changes into your clone.

```
git fetch upstream
```

4. Update your copy of the `develop` branch.

```
git checkout develop
git merge --ff-only upstream/develop
```

   If Git complains that a fast-forward merge is not possible, you have local commits.

   - Run `git pull --rebase origin develop` to rebase your changes on top of the upstream changes.
   - Or, run `git branch <branch-name>` to create a new branch with your commits. You will then need to reset your `develop` branch before updating it with the changes from upstream.

   If Git complains that local files will be overwritten, you have changes to files in your working directory. Run `git status` to see the files in question.

5. Update your fork.

```
git push origin develop
```

6. Repeat the previous two steps for any other branches you work with, such as the current release branch.

### Posting patches to the mailing list

Patches will also be accepted by email. Format patches using git format-patch and send them to the salt-users mailing list. The contributor will then get credit for the patch, and the Salt community will have an archive of the patch and a place for discussion.

### Backporting Pull Requests

If a bug is fixed on `develop` and the bug is also present on a currently-supported release branch it will need to be back-ported to all applicable branches.

---

**Note:** Most Salt contributors can skip these instructions

These instructions do not need to be read in order to contribute to the Salt project! The SaltStack team will back-port fixes on behalf of contributors in order to keep the contribution process easy.

These instructions are intended for frequent Salt contributors, advanced Git users, SaltStack employees, or independent souls who wish to back-port changes themselves.

---

It is often easiest to fix a bug on the oldest supported release branch and then merge that branch forward into `develop` (as described earlier in this document). When that is not possible the fix must be back-ported, or copied, into any other affected branches.

These steps assume a pull request `#1234` has been merged into `develop`. And `upstream` is the name of the remote pointing to the main Salt repo.

1. Identify the oldest supported release branch that is affected by the bug.
2. Create a new branch for the back-port by reusing the same branch from the original pull request.

   Name the branch `bp-<NNNN>` and use the number of the original pull request.

```
git fetch upstream refs/pull/1234/head:bp-1234
git checkout bp-1234
```

3. Find the parent commit of the original pull request.

   The parent commit of the original pull request must be known in order to rebase onto a release branch. The easiest way to find this is on GitHub.

   Open the original pull request on GitHub and find the first commit in the list of commits. Select and copy the SHA for that commit. The parent of that commit can be specified by appending `~1` to the end.

4. Rebase the new branch on top of the release branch.

   - `<release-branch>` is the branch identified in step #1.
   - `<orig-base>` is the SHA identified in step #3 -- don't forget to add `~1` to the end!

   ```
   git rebase --onto <release-branch> <orig-base> bp-1234
   ```

   Note, release branches prior to `2016.3` will not be able to make use of rebase and must use cherry-picking instead.

5. Push the back-port branch to GitHub and open a new pull request.

   Opening a pull request for the back-port allows for the test suite and normal code-review process.

   ```
   git push -u origin bp-1234
   ```

#### Issue and Pull Request Labeling System

SaltStack uses several labeling schemes to help facilitate code contributions and bug resolution. See the *Labels and Milestones* documentation for more information.

#### Mentionbot

SaltStack runs a mention-bot which notifies contributors who might be able to help review incoming pull-requests based on their past contribution to files which are being changed.

If you do not wish to receive these notifications, please add your GitHub handle to the blacklist line in the *.mentionbot* file located in the root of the Salt repository.

## 17.7 Deprecating Code

Salt should remain backwards compatible, though sometimes, this backwards compatibility needs to be broken because a specific feature and/or solution is no longer necessary or required. At first one might think, let me change this code, it seems that it's not used anywhere else so it should be safe to remove. Then, once there's a new release, users complain about functionality which was removed and they where using it, etc. This should, at all costs, be avoided, and, in these cases, *that* specific code should be deprecated.

In order to give users enough time to migrate from the old code behavior to the new behavior, the deprecation time frame should be carefully determined based on the significance and complexity of the changes required by the user.

Salt feature releases are based on the Periodic Table. Any new features going into the develop branch will be named after the next element in the Periodic Table. For example, Beryllium was the feature release name of the develop branch before the 2015.8 branch was tagged. At that point in time, any new features going into the develop branch after 2015.8 was branched were part of the Boron feature release.

A deprecation warning should be in place for at least two major releases before the deprecated code and its accompanying deprecation warning are removed. More time should be given for more complex changes. For example, if the current release under development is `Sodium`, the deprecated code and associated warnings should remain in place and warn for at least `Aluminum`.

To help in this deprecation task, salt provides `salt.utils.warn_until`. The idea behind this helper function is to show the deprecation warning to the user until salt reaches the provided version. Once that provided version is equaled `salt.utils.warn_until` will raise a `RuntimeError` making salt stop its execution. This stoppage is unpleasant and will remind the developer that the deprecation limit has been reached and that the code can then be safely removed.

Consider the following example:

```
def some_function(bar=False, foo=None):
    if foo is not None:
        salt.utils.warn_until(
            'Aluminum',
            'The \'foo\' argument has been deprecated and its '
            'functionality removed, as such, its usage is no longer '
            'required.'
        )
```

Development begins on the `Aluminum` release when the `Magnesium` branch is forked from the develop branch. Once this occurs, all uses of the `warn_until` function targeting `Aluminum`, along with the code they are warning about should be removed from the code.

## 17.8 Dunder Dictionaries

Salt provides several special ``dunder'' dictionaries as a convenience for Salt development. These include `__opts__`, `__context__`, `__salt__`, and others. This document will describe each dictionary and detail where they exist and what information and/or functionality they provide.

### 17.8.1 __opts__

#### Available in

- All loader modules

The `__opts__` dictionary contains all of the options passed in the configuration file for the master or minion.

---

**Note:** In many places in salt, instead of pulling raw data from the __opts__ dict, configuration data should be pulled from the salt *get* functions such as config.get, aka - __salt__['config.get'](`foo:bar') The *get* functions also allow for dict traversal via the *:* delimiter. Consider using get functions whenever using __opts__ or __pillar__ and __grains__ (when using grains for configuration data)

---

The configuration file data made available in the `__opts__` dictionary is the configuration data relative to the running daemon. If the modules are loaded and executed by the master, then the master configuration data is available, if the modules are executed by the minion, then the minion configuration is available. Any additional information passed into the respective configuration files is made available

### 17.8.2 __salt__

#### Available in

- Execution Modules
- State Modules
- Returners
- Runners

`__salt__` contains the execution module functions. This allows for all functions to be called as they have been set up by the salt loader.

```
__salt__['cmd.run']('fdisk -l')
__salt__['network.ip_addrs']()
```

**Note:** When used in runners, `__salt__` references other runner modules, and not execution modules.

### 17.8.3 __grains__

#### Available in

- Execution Modules
- State Modules
- Returners
- External Pillar

The `__grains__` dictionary contains the grains data generated by the minion that is currently being worked with. In execution modules, state modules and returners this is the grains of the minion running the calls, when generating the external pillar the `__grains__` is the grains data from the minion that the pillar is being generated for.

### 17.8.4 __pillar__

#### Available in

- Execution Modules
- State Modules
- Returners

The `__pillar__` dictionary contains the pillar for the respective minion.

### 17.8.5 __context__

`__context__` exists in state modules and execution modules.

During a state run the `__context__` dictionary persists across all states that are run and then is destroyed when the state ends.

When running an execution module `__context__` persists across all module executions until the modules are refreshed; such as when *`saltutil.sync_all`* or `state.apply` are executed.

A great place to see how to use `__context__` is in the cp.py module in salt/modules/cp.py. The fileclient authenticates with the master when it is instantiated and then is used to copy files to the minion. Rather than create a new fileclient for each file that is to be copied down, one instance of the fileclient is instantiated in the `__context__` dictionary and is reused for each file. Here is an example from salt/modules/cp.py:

```
if not 'cp.fileclient' in __context__:
    __context__['cp.fileclient'] = salt.fileclient.get_file_client(__opts__)
```

**Note:** Because __context__ may or may not have been destroyed, always be sure to check for the existence of the key in __context__ and generate the key before using it.

## 17.9 External Pillars

Salt provides a mechanism for generating pillar data by calling external pillar interfaces. This document will describe an outline of an ext_pillar module.

### 17.9.1 Location

Salt expects to find your `ext_pillar` module in the same location where it looks for other python modules. If the `extension_modules` option in your Salt master configuration is set, Salt will look for a `pillar` directory under there and load all the modules it finds. Otherwise, it will look in your Python site-packages `salt/pillar` directory.

### 17.9.2 Configuration

The external pillars that are called when a minion refreshes its pillars is controlled by the `ext_pillar` option in the Salt master configuration. You can pass a single argument, a list of arguments or a dictionary of arguments to your pillar:

```
ext_pillar:
  - example_a: some argument
  - example_b:
    - argumentA
    - argumentB
  - example_c:
      keyA: valueA
      keyB: valueB
```

### 17.9.3 The Module

### 17.9.4 Imports and Logging

Import modules your external pillar module needs. You should first include generic modules that come with stock Python:

```
import logging
```

And then start logging. This is an idiomatic way of setting up logging in Salt:

```
log = logging.getLogger(__name__)
```

Finally, load modules that are specific to what you are doing. You should catch import errors and set a flag that the `__virtual__` function can use later.

```
try:
    import weird_thing
    EXAMPLE_A_LOADED = True
except ImportError:
    EXAMPLE_A_LOADED = False
```

### 17.9.5 Options

If you define an `__opts__` dictionary, it will be merged into the `__opts__` dictionary handed to the `ext_pillar` function later. This is a good place to put default configuration items. The convention is to name things `module_name.option`.

```
__opts__ = { 'example_a.someconfig': 137 }
```

### 17.9.6 Initialization

If you define an `__init__` function, it will be called with the following signature:

```
def __init__( __opts__ ):
    # Do init work here
```

**Note**: The `__init__` function is ran every time a particular minion causes the external pillar to be called, so don't put heavy initialization code here. The `__init__` functionality is a side-effect of the Salt loader, so it may not be as useful in pillars as it is in other Salt items.

### 17.9.7 __virtual__

If you define a `__virtual__` function, you can control whether or not this module is visible. If it returns `False` then Salt ignores this module. If it returns a string, then that string will be how Salt identifies this external pillar in its `ext_pillar` configuration. If you're not renaming the module, simply return `True` in the `__virtual__` function, which is the same as if this function did not exist, then, the name Salt's `ext_pillar` will use to identify this module is its conventional name in Python.

This is useful to write modules that can be installed on all Salt masters, but will only be visible if a particular piece of software your module requires is installed.

```
# This external pillar will be known as `example_a`
def __virtual__():
    if EXAMPLE_A_LOADED:
        return True
    return False
```

```
# This external pillar will be known as `something_else`
__virtualname__ = 'something_else'

def __virtual__():
    if EXAMPLE_A_LOADED:
        return __virtualname__
    return False
```

### 17.9.8 ext_pillar

This is where the real work of an external pillar is done. If this module is active and has a function called `ext_pillar`, whenever a minion updates its pillar this function is called.

How it is called depends on how it is configured in the Salt master configuration. The first argument is always the current pillar dictionary, this contains pillar items that have already been added, starting with the data from `pillar_roots`, and then from any already-ran external pillars.

Using our example above:

```
ext_pillar( id, pillar, 'some argument' )                    # example_a
ext_pillar( id, pillar, 'argumentA', 'argumentB' )           # example_b
ext_pillar( id, pillar, keyA='valueA', keyB='valueB' } )     # example_c
```

In the `example_a` case, `pillar` will contain the items from the `pillar_roots`, in `example_b` `pillar` will contain that plus the items added by `example_a`, and in `example_c` `pillar` will contain that plus the items added by `example_b`. In all three cases, `id` will contain the ID of the minion making the pillar request.

This function should return a dictionary, the contents of which are merged in with all of the other pillars and returned to the minion. **Note**: this function is called once for each minion that fetches its pillar data.

```
def ext_pillar( minion_id, pillar, *args, **kwargs ):

    my_pillar = {'external_pillar': {}}

    my_pillar['external_pillar'] = get_external_pillar_dictionary()

    return my_pillar
```

You can call pillar with the dictionary's top name to retrieve its data. From above example, `external_pillar' is the top dictionary name. Therefore:

```
salt-call '*' pillar.get external_pillar
```

You shouldn't just add items to `pillar` and return that, since that will cause Salt to merge data that already exists. Rather, just return the items you are adding or changing. You could, however, use `pillar` in your module to make some decision based on pillar data that already exists.

This function has access to some useful globals:

**__opts__** A dictionary of mostly Salt configuration options. If you had an `__opts__` dictionary defined in your module, those values will be included.

**__salt__** A dictionary of Salt module functions, useful so you don't have to duplicate functions that already exist. E.g. `__salt__['cmd.run']( 'ls -l' )` **Note**, runs on the *master*

**__grains__** A dictionary of the grains of the minion making this pillar call.

### 17.9.9 Example configuration

As an example, if you wanted to add external pillar via the `cmd_json` external pillar, add something like this to your master config:

```
ext_pillar:
  - cmd_json: 'echo {\"arg\":\"value\"}'
```

### 17.9.10 Reminder

Just as with traditional pillars, external pillars must be refreshed in order for minions to see any fresh data:

```
salt '*' saltutil.refresh_pillar
```

## 17.10 Installing Salt for development

Clone the repository using:

```
git clone https://github.com/saltstack/salt
```

---

**Note**: tags

Just cloning the repository is enough to work with Salt and make contributions. However, fetching additional tags from git is required to have Salt report the correct version for itself. To do this, first add the git repository as an upstream source:

```
git remote add upstream https://github.com/saltstack/salt
```

Fetching tags is done with the git `fetch' utility:

```
git fetch --tags upstream
```

---

Create a new virtualenv:

```
virtualenv /path/to/your/virtualenv
```

Avoid making your *virtualenv path too long*.

On Arch Linux, where Python 3 is the default installation of Python, use the `virtualenv2` command instead of `virtualenv`.

On Gentoo you must use `--system-site-packages` to enable pkg and portage_config functionality

---

**Note**: Using system Python modules in the virtualenv

To use already-installed python modules in virtualenv (instead of having pip download and compile new ones), run `virtualenv --system-site-packages` Using this method eliminates the requirement to install the salt dependencies again, although it does assume that the listed modules are all installed in the system PYTHONPATH at the time of virtualenv creation.

---

**Note:** Python development package

Be sure to install python devel package in order to install required Python modules. In Debian/Ubuntu run `sudo apt-get install -y python-dev`. In RedHat based system install `python-devel`

Activate the virtualenv:

```
source /path/to/your/virtualenv/bin/activate
```

Install Salt (and dependencies) into the virtualenv:

```
pip install M2Crypto    # Don't install on Debian/Ubuntu (see below)
pip install pyzmq PyYAML pycrypto msgpack-python jinja2 psutil futures tornado
pip install -e ./salt   # the path to the salt git clone from above
```

**Note:** Installing M2Crypto

`swig` and `libssl-dev` are required to build M2Crypto. To fix the error `command 'swig' failed with exit status 1` while installing M2Crypto, try installing it with the following command:

```
env SWIG_FEATURES="-cpperraswarn -includeall -D__`uname -m`__ -I/usr/include/openssl"
 ↪pip install M2Crypto
```

Debian and Ubuntu systems have modified openssl libraries and mandate that a patched version of M2Crypto be installed. This means that M2Crypto needs to be installed via apt:

```
apt-get install python-m2crypto
```

This also means that pulling in the M2Crypto installed using apt requires using `--system-site-packages` when creating the virtualenv.

If you're using a platform other than Debian or Ubuntu, and you are installing M2Crypto via pip instead of a system package, then you will also need the `gcc` compiler.

**Note:** Installing psutil

Python header files are required to build this module, otherwise the pip install will fail. If your distribution separates binaries and headers into separate packages, make sure that you have the headers installed. In most Linux distributions which split the headers into their own package, this can be done by installing the `python-dev` or `python-devel` package. For other platforms, the package will likely be similarly named.

**Note:** Installing dependencies on OS X.

You can install needed dependencies on OS X using homebrew or macports. See *OS X Installation*

**Warning:** Installing on RedHat-based Distros

If installing from pip (or from source using `setup.py install`), be advised that the `yum-utils` package is needed for Salt to manage packages on RedHat-based systems.

### 17.10.1 Running a self-contained development version

During development it is easiest to be able to run the Salt master and minion that are installed in the virtualenv you created above, and also to have all the configuration, log, and cache files contained in the virtualenv as well.

Copy the master and minion config files into your virtualenv:

```
mkdir -p /path/to/your/virtualenv/etc/salt
cp ./salt/conf/master ./salt/conf/minion /path/to/your/virtualenv/etc/salt/
```

Edit the master config file:

1. Uncomment and change the `user: root` value to your own user.
2. Uncomment and change the `root_dir: /` value to point to `/path/to/your/virtualenv`.
3. If you are running version 0.11.1 or older, uncomment, and change the `pidfile: /var/run/salt-master.pid` value to point to `/path/to/your/virtualenv/salt-master.pid`.
4. If you are also running a non-development version of Salt you will have to change the `publish_port` and `ret_port` values as well.

Edit the minion config file:

1. Repeat the edits you made in the master config for the `user` and `root_dir` values as well as any port changes.
2. If you are running version 0.11.1 or older, uncomment, and change the `pidfile: /var/run/salt-minion.pid` value to point to `/path/to/your/virtualenv/salt-minion.pid`.
3. Uncomment and change the `master: salt` value to point at `localhost`.
4. Uncomment and change the `id:` value to something descriptive like ``saltdev''. This isn't strictly necessary but it will serve as a reminder of which Salt installation you are working with.
5. If you changed the `ret_port` value in the master config because you are also running a non-development version of Salt, then you will have to change the `master_port` value in the minion config to match.

---

**Note**: Using *salt-call* with a *Standalone Minion*

If you plan to run *salt-call* with this self-contained development environment in a masterless setup, you should invoke *salt-call* with `-c /path/to/your/virtualenv/etc/salt` so that salt can find the minion config file. Without the `-c` option, Salt finds its config files in */etc/salt*.

---

Start the master and minion, accept the minion's key, and verify your local Salt installation is working:

```
cd /path/to/your/virtualenv
salt-master -c ./etc/salt -d
salt-minion -c ./etc/salt -d
salt-key -c ./etc/salt -L
salt-key -c ./etc/salt -A
salt -c ./etc/salt '*' test.ping
```

Running the master and minion in debug mode can be helpful when developing. To do this, add `-l debug` to the calls to `salt-master` and `salt-minion`. If you would like to log to the console instead of to the log file, remove the `-d`.

---

**Note**: Too long socket path?

Once the minion starts, you may see an error like the following:

```
zmq.core.error.ZMQError: ipc path "/path/to/your/virtualenv/
var/run/salt/minion/minion_event_7824dcbcfd7a8f6755939af70b96249f_pub.ipc"
is longer than 107 characters (sizeof(sockaddr_un.sun_path)).
```

This means that the path to the socket the minion is using is too long. This is a system limitation, so the only workaround is to reduce the length of this path. This can be done in a couple different ways:

1. Create your virtualenv in a path that is short enough.
2. Edit the *sock_dir* minion config variable and reduce its length. Remember that this path is relative to the value you set in *root_dir*.

NOTE: The socket path is limited to 107 characters on Solaris and Linux, and 103 characters on BSD-based systems.

---

**Note**: File descriptor limits

Ensure that the system open file limit is raised to at least 2047:

```
# check your current limit
ulimit -n

# raise the limit. persists only until reboot
# use 'limit descriptors 2047' for c-shell
ulimit -n 2047
```

To set file descriptors on OSX, refer to the *OS X Installation* instructions.

---

### Changing Default Paths

Instead of updating your configuration files to point to the new root directory and having to pass the new configuration directory path to all of Salt's CLI tools, you can explicitly tweak the default system paths that Salt expects:

```
GENERATE_SALT_SYSPATHS=1 pip install --global-option='--salt-root-dir=/path/to/your/
↪virtualenv/' \
    -e ./salt   # the path to the salt git clone from above
```

You can now call all of Salt's CLI tools without explicitly passing the configuration directory.

### Additional Options

If you want to distribute your virtualenv, you probably don't want to include Salt's clone `.git/` directory, and, without it, Salt won't report the accurate version. You can tell `setup.py` to generate the hardcoded version information which is distributable:

```
GENERATE_SALT_SYSPATHS=1 WRITE_SALT_VERSION=1 pip install --global-option='--salt-root-
↪dir=/path/to/your/virtualenv/' \
    -e ./salt   # the path to the salt git clone from above
```

Instead of passing those two environmental variables, you can just pass a single one which will trigger the other two:

```
MIMIC_SALT_INSTALL=1 pip install --global-option='--salt-root-dir=/path/to/your/
↪virtualenv/' \
   -e ./salt   # the path to the salt git clone from above
```

This last one will grant you an editable salt installation with hardcoded system paths and version information.

### 17.10.2 Installing Salt from the Python Package Index

If you are installing using `easy_install`, you will need to define a **USE_SETUPTOOLS** environment variable, otherwise dependencies will not be installed:

```
USE_SETUPTOOLS=1 easy_install salt
```

### 17.10.3 Editing and previewing the documentation

You need `sphinx-build` command to build the docs. In Debian/Ubuntu this is provided in the `python-sphinx` package. Sphinx can also be installed to a virtualenv using pip:

```
pip install Sphinx==1.3.1
```

Change to salt documentation directory, then:

```
cd doc; make html
```

- This will build the HTML docs. Run `make` without any arguments to see the available make targets, which include **html**, **man**, and **text**.
- The docs then are built within the **docs/_build/** folder. To update the docs after making changes, run `make` again.
- The docs use reStructuredText for markup. See a live demo at http://rst.ninjs.org/.
- The help information on each module or state is culled from the python code that runs for that piece. Find them in `salt/modules/` or `salt/states/`.
- To build the docs on Arch Linux, the **python2-sphinx** package is required. Additionally, it is necessary to tell **make** where to find the proper **sphinx-build** binary, like so:

```
make SPHINXBUILD=sphinx-build2 html
```

- To build the docs on RHEL/CentOS 6, the **python-sphinx10** package must be installed from EPEL, and the following make command must be used:

```
make SPHINXBUILD=sphinx-build html
```

Once you've updated the documentation, you can run the following command to launch a simple Python HTTP server to see your changes:

```
cd _build/html; python -m SimpleHTTPServer
```

### 17.10.4 Running unit and integration tests

Run the test suite with following command:

```
./setup.py test
```

See *here* for more information regarding the test suite.

### 17.10.5 Issue and Pull Request Labeling System

SaltStack uses several labeling schemes to help facilitate code contributions and bug resolution. See the *Labels and Milestones* documentation for more information.

## 17.11 GitHub Labels and Milestones

SaltStack uses several label categories, as well as milestones, to triage incoming issues and pull requests in the GitHub issue tracker. Labels are used to sort issues by type, priority, severity, status, functional area, functional group, and targeted release and pull requests by status, functional area, functional group, type of change, and test status. Milestones are used to indicate whether an issue is fully triaged or is scheduled to be fixed by SaltStack in an upcoming sprint.

### 17.11.1 Milestones

All issues are assigned to a milestone, whereas pull requests are almost never assigned to a milestone as the mean lifetime of pull requests is short enough that there is no need to track them temporally.

SaltStack uses milestones to indicate which issues are blocked on submitter or upstream actions, are approved, or are scheduled to be fixed or implemented in an upcoming sprint. If an issue is not attached to a sprint milestone, you are welcome to work on it at your own desire and convenience. If it is attached to a sprint milestone and you have already begun working on it or have a solution in mind or have other ideas related to the issue, you are encouraged to coordinate with the assignee via the GitHub issue tracker to create the best possible solution or implementation.

**`Approved`** The issue has been validated and has all necessary information.

**`Blocked`** The issue is waiting on actions by parties outside of SaltStack, such as receiving more information from the submitter or resolution of an upstream issue. This milestone is usually applied in conjunction with the labels `Info Needed`, `Question`, `Expected Behavior`, `Won't Fix For Now`, or `Upstream Bug`.

**`Under Review`** The issue is having further validation done by a SaltStack engineer.

**`<Sprint>`** The issue is being actively worked on by a SaltStack engineer. Sprint milestones names are constructed from the chemical symbol of the next release's codename and the number of sprints until that release is made. For example, if the next release codename is `Neon` and there are five sprints until that release, the corresponding sprint milestone will be called `Ne 5`. See <version-numbers> for a discussion of Salt's release codenames.

### 17.11.2 Labels

Labels are used to sort and describe issues and pull requests. Some labels are usually reserved for one or the other, though most labels may be applied to both.

New issues will receive at least one label and a milestone, and new pull requests will receive at least one label. Except for the *functional area* and *functional group* label categories, issues will generally receive only up to one label per category.

### Type

Issues are categorized into one of several types. Type labels are almost never used for pull requests. GitHub treats pull requests like issues in many ways, so a pull request could be considered an issue with an implicit `Pull Request` type label applied.

**`Feature`** The issue is a request for new functionality including changes, enhancements, refactors, etc.

**`Bug`** The issue documents broken, incorrect, or confusing behavior. This label is always accompanied by a *severity label*.

**`Duplicate`** The issue is a duplicate of another feature request or bug report.

**`Upstream Bug`** The issue is a result of an upstream issue.

**`Question`** The issue is more of a question than a request for new features or a report of broken features, but can sometimes lead to further discussion or changes of confusing or incongruous behavior or documentation.

**`Expected Behavior`** The issue is a bug report of intended functionality.

### Priority

An issue's priority is relative to its *functional area*. If a bug report, for example, about `gitfs` indicates that all users of `gitfs` will encounter this bug, then a `P1` label will be applied, even though users who are not using `gitfs` will not encounter the bug. If a feature is requested by many users, it may be given a high priority.

**`P1`** The issue will be seen by all users.

**`P2`** The issue will be seen by most users.

**`P3`** The issue will be seen by about half of users.

**`P4`** The issue will not be seen by most users. Usually the issue is a very specific use case or corner case.

### Severity

Severity labels are almost always only applied to issues labeled `Bug`.

**`Blocker`** The issue is blocking an impending release.

**`Critical`** The issue causes data loss, crashes or hangs salt processes, makes the system unresponsive, etc.

**`High Severity`** The issue reports incorrect functionality, bad functionality, a confusing user experience, etc.

**`Medium Severity`** The issue reports cosmetic items, formatting, spelling, colors, etc.

### Functional Area

Many major components of Salt have corresponding GitHub labels. These labels are applied to all issues and pull requests as is reasonably appropriate. They are useful in organizing issues and pull requests according to the source code relevant to issues or the source code changed by pull requests.

- `Execution Module`
- `File Servers`
- `Grains`
- `Multi-Master`
- `Packaging` Related to packaging of Salt, not Salt's support for package management.

- `Pillar`
- `RAET`
- `Returners`
- `Runners`
- `SPM`
- `Salt-API`
- `Salt-Cloud`
- `Salt-SSH`
- `Salt-Syndic`
- `State Module`
- `Tests`
- `Transport`
- `Windows`
- `ZMQ`

### Functional Group

These labels sort issues and pull requests according to the internal SaltStack engineering teams.

**`Core`** The issue or pull request relates to code that is central or existential to Salt itself.

**`Platform`** The issue or pull request relates to support and integration with various platforms like traditional operating systems as well as containers, platform-based utilities like filesystems, command schedulers, etc., and system-based applications like webservers, databases, etc.

**`RIoT`** The issue or pull request relates to support and integration with various abstract systems like cloud providers, hypervisors, API-based services, etc.

**`Console`** The issue or pull request relates to the SaltStack enterprise console.

**`Documentation`** The issue or pull request relates to documentation.

### Status

Status labels are used to define and track the state of issues and pull requests. Not all potential statuses correspond to a label, but some statuses are common enough that labels have been created for them. If an issue has not been moved beyond the `Blocked` milestone, it is very likely that it will only have a status label.

**`Bugfix -back-port`** The pull request needs to be back-ported to an older release branch. This is done by *recreating the pull request* against that branch. Once the back-port is completed, this label is replaced with a `Bugfix -[Done] back-ported` label. Normally, new features should go into the develop and bug fixes into the oldest supported release branch, see <which-salt-branch>.

**`Bugfix -[Done] back-ported`** The pull request has been back-ported to an older branch.

**`Cannot Reproduce`** The issue is a bug and has been reviewed by a SaltStack engineer, but it cannot be replicated with the provided information and context. Those involved with the bug will need to work through additional ideas until the bug can be isolated and verified.

**`Confirmed`** The issue is a bug and has been confirmed by a SaltStack engineer, who often documents a minimal working example that reproduces the bug.

**Fixed Pending Verification** The issue is a bug and has been fixed by one or more pull requests, which should link to the issue. Closure of the issue is contingent upon confirmation of resolution from the submitter. If the submitter reports a negative confirmation, this label is removed. If no response is given after a few weeks, then the issue will be assumed fixed and closed.

**Info Needed** The issue needs more information before it can be verified and resolved. For a feature request this may include a description of the use cases. Almost all bug reports need to include at least the versions of salt and its dependencies, the system type and version, commands used, debug logs, error messages, and relevant configs.

**Pending Changes** The pull request needs additional changes before it can be merged.

**Pending Discussion** The issue or pull request needs more discussion before it can be closed or merged. The status of the issue or pull request is not clear or apparent enough for definite action to be taken, or additional input from SaltStack, the submitter, or another party has been requested.

If the issue is not a pull request, once the discussion has arrived at a cogent conclusion, this label will be removed and the issue will be accepted. If it is a pull request, the results of the discussion may require additional changes and thus, a `Pending Changes` label.

**Won't Fix for Now** The issue is legitimate, but it is not something the SaltStack team is currently able or willing to fix or implement. Issues having this label may be revisited in the future.

### Type of Change

Every pull request should receive a change label. These labels measure the quantity of change as well as the significance of the change. The amount of change and the importance of the code area changed are considered, but often the depth of secondary code review required and the potential repercussions of the change may also advise the label choice.

Core code areas include: state compiler, crypto engine, master and minion and syndic daemons, transport, pillar rendering, loader, transport layer, event system, salt.utils, client, cli, logging, netapi, runner engine, templating engine, top file compilation, file client, file server, mine, salt-ssh, test runner, etc.

Non-core code usually constitutes the specific set of plugins for each of the several plugin layers of Salt: execution modules, states, runners, returners, clouds, etc.

**Minor Change**

- Less than 64 lines changed, or
- Less than 8 core lines changed

**Medium Change**

- Less than 256 lines changed, or
- Less than 64 core lines changed

**Master Change**

- More than 256 lines changed, or
- More than 64 core lines changed

**Expert Change**

- Needs specialized, in-depth review

#### Test Status

These labels relate to the status of the automated tests that run on pull requests. If the tests on a pull request fail and are not overridden by one of these labels, the pull request submitter needs to update the code and/or tests so that the tests pass and the pull request can be merged.

**`Lint`** The pull request has passed all tests except for the code lint checker.

**`Tests Passed`** The pull request has passed all tests even though some test results are negative. Sometimes the automated testing infrastructure will encounter internal errors unrelated to the code change in the pull request that cause test runs to fail. These errors can be caused by cloud host and network issues and also Jenkins issues like erroneously accumulating workspace artifacts, resource exhaustion, and bugs that arise from long running Jenkins processes.

#### Other

These labels indicate miscellaneous issue types or statuses that are common or important enough to be tracked and sorted with labels.

**`Awesome`** The pull request implements an especially well crafted solution, or a very difficult but necessary change.

**`Help Wanted`** The issue appears to have a simple solution. Issues having this label should be a good starting place for new contributors to Salt.

**`Needs Testcase`** The issue or pull request relates to a feature that needs test coverage. The pull request containing the tests should reference the issue or pull request having this label, whereupon the label should be removed.

**`Regression`** The issue is a bug that breaks functionality known to work in previous releases.

**`Story`** The issue is used by a SaltStack engineer to track progress on multiple related issues in a single place.

**`Stretch`** The issue is an optional goal for the current sprint but may not be delivered.

**`ZD`** The issue is related to a Zendesk customer support ticket.

**`<Release>`** The issue is scheduled to be implemented by `<Release>`. See <version-numbers> for a discussion of Salt's release codenames.

## 17.12 Logging Internals

TODO

## 17.13 Modular Systems

When first working with Salt, it is not always clear where all of the modular components are and what they do. Salt comes loaded with more modular systems than many users are aware of, making Salt very easy to extend in many places.

The most commonly used modular systems are execution modules and states. But the modular systems extend well beyond the more easily exposed components and are often added to Salt to make the complete system more flexible.

### 17.13.1 Execution Modules

Execution modules make up the core of the functionality used by Salt to interact with client systems. The execution modules create the core system management library used by all Salt systems, including states, which interact with minion systems.

Execution modules are completely open ended in their execution. They can be used to do anything required on a minion, from installing packages to detecting information about the system. The only restraint in execution modules is that the defined functions always return a JSON serializable object.

For a list of all built in execution modules, click *here*

For information on writing execution modules, see *this page*.

### 17.13.2 Interactive Debugging

Sometimes debugging with `print()` and extra logs sprinkled everywhere is not the best strategy.

IPython is a helpful debug tool that has an interactive python environment which can be embedded in python programs.

First the system will require IPython to be installed.

```
# Debian
apt-get install ipython

# Arch Linux
pacman -Syu ipython2

# RHEL/CentOS (via EPEL)
yum install python-ipython
```

Now, in the troubling python module, add the following line at a location where the debugger should be started:

```
test = 'test123'
import IPython; IPython.embed_kernel()
```

After running a Salt command that hits that line, the following will show up in the log file:

```
[CRITICAL] To connect another client to this kernel, use:
[IPKernelApp] --existing kernel-31271.json
```

Now on the system that invoked `embed_kernel`, run the following command from a shell:

```
# NOTE: use ipython2 instead of ipython for Arch Linux
ipython console --existing
```

This provides a console that has access to all the vars and functions, and even supports tab-completion.

```
print(test)
test123
```

To exit IPython and continue running Salt, press `Ctrl-d` to logout.

### 17.13.3 State Modules

State modules are used to define the state interfaces used by Salt States. These modules are restrictive in that they must follow a number of rules to function properly.

---

**Note:** State modules define the available routines in sls files. If calling an execution module directly is desired, take a look at the *module* state.

---

### 17.13.4 Auth

The auth module system allows for external authentication routines to be easily added into Salt. The *auth* function needs to be implemented to satisfy the requirements of an auth module. Use the `pam` module as an example.

### 17.13.5 Fileserver

The fileserver module system is used to create fileserver backends used by the Salt Master. These modules need to implement the functions used in the fileserver subsystem. Use the `gitfs` module as an example.

### 17.13.6 Grains

Grain modules define extra routines to populate grains data. All defined public functions will be executed and MUST return a Python dict object. The dict keys will be added to the grains made available to the minion.

### 17.13.7 Output

The output modules supply the outputter system with routines to display data in the terminal. These modules are very simple and only require the *output* function to execute. The default system outputter is the `nested` module.

### 17.13.8 Pillar

Used to define optional external pillar systems. The pillar generated via the filesystem pillar is passed into external pillars. This is commonly used as a bridge to database data for pillar, but is also the backend to the libvirt state used to generate and sign libvirt certificates on the fly.

### 17.13.9 Renderers

Renderers are the system used to render sls files into salt highdata for the state compiler. They can be as simple as the `py` renderer and as complex as `stateconf` and `pydsl`.

### 17.13.10 Returners

Returners are used to send data from minions to external sources, commonly databases. A full returner will implement all routines to be supported as an external job cache. Use the `redis` returner as an example.

### 17.13.11 Runners

Runners are purely master-side execution sequences.

### 17.13.12 Tops

Tops modules are used to convert external data sources into top file data for the state system.

### 17.13.13 Wheel

The wheel system is used to manage master side management routines. These routines are primarily intended for the API to enable master configuration.

## 17.14 Package Providers

This page contains guidelines for writing package providers.

### 17.14.1 Package Functions

One of the most important features of Salt is package management. There is no shortage of package managers, so in the interest of providing a consistent experience in *pkg* states, there are certain functions that should be present in a package provider. Note that these are subject to change as new features are added or existing features are enhanced.

#### list_pkgs

This function should declare an empty dict, and then add packages to it by calling *pkg_resource.add_pkg*, like so:

```
__salt__['pkg_resource.add_pkg'](ret, name, version)
```

The last thing that should be done before returning is to execute *pkg_resource.sort_pkglist*. This function does not presently do anything to the return dict, but will be used in future versions of Salt.

```
__salt__['pkg_resource.sort_pkglist'](ret)
```

`list_pkgs` returns a dictionary of installed packages, with the keys being the package names and the values being the version installed. Example return data:

```
{'foo': '1.2.3-4',
 'bar': '5.6.7-8'}
```

#### latest_version

Accepts an arbitrary number of arguments. Each argument is a package name. The return value for a package will be an empty string if the package is not found or if the package is up-to-date. The only case in which a non-empty string is returned is if the package is available for new installation (i.e. not already installed) or if there is an upgrade available.

If only one argument was passed, this function return a string, otherwise a dict of name/version pairs is returned.

This function must also accept `**kwargs`, in order to receive the `fromrepo` and `repo` keyword arguments from pkg states. Where supported, these arguments should be used to find the install/upgrade candidate in the specified repository. The `fromrepo` kwarg takes precedence over `repo`, so if both of those kwargs are present, the repository specified in `fromrepo` should be used. However, if `repo` is used instead of `fromrepo`, it should still work, to preserve backwards compatibility with older versions of Salt.

#### version

Like `latest_version`, accepts an arbitrary number of arguments and returns a string if a single package name was passed, or a dict of name/value pairs if more than one was passed. The only difference is that the return values are the currently-installed versions of whatever packages are passed. If the package is not installed, an empty string is returned for that package.

#### upgrade_available

Deprecated and destined to be removed. For now, should just do the following:

```
return __salt__['pkg.latest_version'](name) != ''
```

#### install

The following arguments are required and should default to `None`:

1. name (for single-package pkg states)
2. pkgs (for multiple-package pkg states)
3. sources (for binary package file installation)

The first thing that this function should do is call *pkg_resource.parse_targets* (see below). This function will convert the SLS input into a more easily parsed data structure. *pkg_resource.parse_targets* may need to be modified to support your new package provider, as it does things like parsing package metadata which cannot be done for every package management system.

```
pkg_params, pkg_type = __salt__['pkg_resource.parse_targets'](name,
                                                              pkgs,
                                                              sources)
```

Two values will be returned to the **install** function. The first of them will be a dictionary. The keys of this dictionary will be package names, though the values will differ depending on what kind of installation is being done:

- If **name** was provided (and **pkgs** was not), then there will be a single key in the dictionary, and its value will be `None`. Once the data has been returned, if the **version** keyword argument was provided, then it should replace the `None` value in the dictionary.
- If **pkgs** was provided, then **name** is ignored, and the dictionary will contain one entry for each package in the **pkgs** list. The values in the dictionary will be `None` if a version was not specified for the package, and the desired version if specified. See the **Multiple Package Installation Options** section of the *pkg.installed* state for more info.
- If **sources** was provided, then **name** is ignored, and the dictionary values will be the path/URI for the package.

The second return value will be a string with two possible values: `repository` or `file`. The **install** function can use this value (if necessary) to build the proper command to install the targeted package(s).

Both before and after the installing the target(s), you should run **list_pkgs** to obtain a list of the installed packages. You should then return the output of `salt.utils.compare_dicts()`

```
return salt.utils.compare_dicts(old, new)
```

#### remove

Removes the passed package and return a list of the packages removed.

### 17.14.2 Package Repo Functions

There are some functions provided by pkg which are specific to package repositories, and not to packages themselves. When writing modules for new package managers, these functions should be made available as stated below, in order to provide compatibility with the pkgrepo state.

All repo functions should accept a basedir option, which defines which directory repository configuration should be found in. The default for this is dictated by the repo manager that is being used, and rarely needs to be changed.

```
basedir = '/etc/yum.repos.d'
__salt__['pkg.list_repos'](basedir)
```

#### list_repos

Lists the repositories that are currently configured on this system.

```
__salt__['pkg.list_repos']()
```

Returns a dictionary, in the following format:

```
{'reponame': 'config_key_1': 'config value 1',
             'config_key_2': 'config value 2',
             'config_key_3': ['list item 1 (when appropriate)',
                              'list item 2 (when appropriate)]}
```

#### get_repo

Displays all local configuration for a specific repository.

```
__salt__['pkg.get_repo'](repo='myrepo')
```

The information is formatted in much the same way as list_repos, but is specific to only one repo.

```
{'config_key_1': 'config value 1',
 'config_key_2': 'config value 2',
 'config_key_3': ['list item 1 (when appropriate)',
                  'list item 2 (when appropriate)]}
```

#### del_repo

Removes the local configuration for a specific repository. Requires a *repo* argument, which must match the locally configured name. This function returns a string, which informs the user as to whether or not the operation was a success.

```
__salt__['pkg.del_repo'](repo='myrepo')
```

#### mod_repo

Modify the local configuration for one or more option for a configured repo. This is also the way to create new repository configuration on the local system; if a repo is specified which does not yet exist, it will be created.

The options specified for this function are specific to the system; please refer to the documentation for your specific repo manager for specifics.

```
__salt__['pkg.mod_repo'](repo='myrepo', url='http://myurl.com/repo')
```

### 17.14.3 Low-Package Functions

In general, the standard package functions as describes above will meet your needs. These functions use the system's native repo manager (for instance, yum or the apt tools). In most cases, the repo manager is actually separate from the package manager. For instance, yum is usually a front-end for rpm, and apt is usually a front-end for dpkg. When possible, the package functions that use those package managers directly should do so through the low package functions.

It is normal and sane for `pkg` to make calls to `lowpkgs`, but `lowpkg` must never make calls to `pkg`. This is affects functions which are required by both `pkg` and `lowpkg`, but the technique in `pkg` is more performant than what is available to `lowpkg`. When this is the case, the `lowpkg` function that requires that technique must still use the `lowpkg` version.

#### list_pkgs

Returns a dict of packages installed, including the package name and version. Can accept a list of packages; if none are specified, then all installed packages will be listed.

```
installed = __salt__['lowpkg.list_pkgs']('foo', 'bar')
```

Example output:

```
{'foo': '1.2.3-4',
 'bar': '5.6.7-8'}
```

#### verify

Many (but not all) package management systems provide a way to verify that the files installed by the package manager have or have not changed. This function accepts a list of packages; if none are specified, all packages will be included.

```
installed = __salt__['lowpkg.verify']('httpd')
```

Example output:

```
{'/etc/httpd/conf/httpd.conf': {'mismatch': ['size', 'md5sum', 'mtime'],
                                'type': 'config'}}
```

#### file_list

Lists all of the files installed by all packages specified. If not packages are specified, then all files for all known packages are returned.

```
installed = __salt__['lowpkg.file_list']('httpd', 'apache')
```

This function does not return which files belong to which packages; all files are returned as one giant list (hence the *file_list* function name. However, This information is still returned inside of a dict, so that it can provide any errors to the user in a sane manner.

```
{'errors': ['package apache is not installed'],
  'files': ['/etc/httpd',
            '/etc/httpd/conf',
            '/etc/httpd/conf.d',
            '...SNIP...']}
```

#### file_dict

Lists all of the files installed by all packages specified. If not packages are specified, then all files for all known packages are returned.

```
installed = __salt__['lowpkg.file_dict']('httpd', 'apache', 'kernel')
```

Unlike *file_list*, this function will break down which files belong to which packages. It will also return errors in the same manner as *file_list*.

```
{'errors': ['package apache is not installed'],
 'packages': {'httpd': ['/etc/httpd',
                        '/etc/httpd/conf',
                        '...SNIP...'],
              'kernel': ['/boot/.vmlinuz-2.6.32-279.el6.x86_64.hmac',
                         '/boot/System.map-2.6.32-279.el6.x86_64',
                         '...SNIP...']}}
```

## 17.15 Reporting Bugs

Salt uses GitHub to track open issues and feature requests.

To file a bug, please navigate to the new issue page for the Salt project.

In an issue report, please include the following information:

- The output of `salt --versions-report` from the relevant machines. This can also be gathered remotely by using `salt <my_tgt> test.versions_report`.
- A description of the problem including steps taken to cause the issue to occur and the expected behaviour.
- Any steps taken to attempt to remediate the problem.
- Any configuration options set in a configuration file that may be relevant.
- A reproduceable test case. This may be as simple as an SLS file that illustrates a problem or it may be a link to a repository that contains a number of SLS files that can be used together to re-produce

a problem. If the problem is transitory, any information that can be used to try and reproduce the problem is helpful.

- [Optional] The output of each salt component (master/minion/CLI) running with the `-ldebug` flag set.

---

**Note:** Please be certain to scrub any logs or SLS files for sensitive data!

---

## 17.16 Salt Topology

Salt is based on a powerful, asynchronous, network topology using ZeroMQ. Many ZeroMQ systems are in place to enable communication. The central idea is to have the fastest communication possible.

### 17.16.1 Servers

The Salt Master runs 2 network services. First is the ZeroMQ PUB system. This service by default runs on port `4505` and can be configured via the `publish_port` option in the master configuration.

Second is the ZeroMQ REP system. This is a separate interface used for all bi-directional communication with minions. By default this system binds to port `4506` and can be configured via the `ret_port` option in the master.

### 17.16.2 PUB/SUB

The commands sent out via the salt client are broadcast out to the minions via ZeroMQ PUB/SUB. This is done by allowing the minions to maintain a connection back to the Salt Master and then all connections are informed to download the command data at once. The command data is kept extremely small (usually less than 1K) so it is not a burden on the network.

### 17.16.3 Return

The PUB/SUB system is a one way communication, so once a publish is sent out the PUB interface on the master has no further communication with the minion. The minion, after running the command, then sends the command's return data back to the master via the `ret_port`.

## 17.17 Translating Documentation

If you wish to help translate the Salt documentation to your language, please head over to the Transifex website and signup for an account.

Once registered, head over to the Salt Translation Project, and either click on **Request Language** if you can't find yours, or, select the language for which you wish to contribute and click **Join Team**.

Transifex provides some useful reading resources on their support domain, namely, some useful articles directed to translators.

### 17.17.1 Building A Localized Version of the Documentation

While you're working on your translation on Transifex, you might want to have a look at how it's rendering.

#### Install The Transifex Client

To interact with the Transifex web service you will need to install the transifex-client:

```
pip install transifex-client
```

#### Configure The Transifex Client

Once installed, you will need to set it up on your computer. We created a script to help you with that:

```
.scripts/setup-transifex-config
```

#### Download Remote Translations

There's a little script which simplifies the download process of the translations(which isn't that complicated in the first place). So, let's assume you're translating `pt_PT`, Portuguese(Portugal). To download the translations, execute from the `doc/` directory of your Salt checkout:

```
make download-translations SPHINXLANG=pt_PT
```

To download `pt_PT`, Portuguese(Portugal), and `nl`, Dutch, you can use the helper script directly:

```
.scripts/download-translation-catalog pt_PT nl
```

#### Build Localized Documentation

After the download process finishes, which might take a while, the next step is to build a localized version of the documentation. Following the `pt_PT` example above:

```
make html SPHINXLANG=pt_PT
```

#### View Localized Documentation

Open your browser, point it to the local documentation path and check the localized output you've just build.

## 17.18 Developing Salt Tutorial

This tutorial assumes you have:

- a web browser
- a GitHub account (`<my_account>`)
- a command line (CLI)
- git
- a text editor

### 17.18.1 Fork

In your browser, navigate to the `saltstack/salt` GitHub repository.

Click on `Fork` (https://github.com/saltstack/salt/#fork-destination-box).

---

**Note:** If you have more than one GitHub presence, for example if you are a member of a team, GitHub will ask you into which area to clone Salt. If you don't know where, then select your personal GitHub account.

---

### 17.18.2 Clone

In your CLI, navigate to the directory into which you want clone the Salt codebase and submit the following command:

```
$ git clone https://github.com/<my_account>/salt.git
```

where `<my_account>` is the name of your GitHub account. After the clone has completed, add SaltStack as a second remote and fetch any changes from `upstream`.

```
$ cd salt
$ git remote add upstream https://github.com/saltstack/salt.git
$ git fetch upstream
```

For this tutorial, we will be working off from the `develop` branch, which is the default branch for the SaltStack GitHub project. This branch needs to track `upstream/develop` so that we will get all upstream changes when they happen.

```
$ git checkout develop
$ git branch --set-upstream-to upstream/develop
```

### 17.18.3 Fetch

Fetch any `upstream` changes on the `develop` branch and sync them to your local copy of the branch with a single command:

```
$ git pull --rebase
```

---

**Note:** For an explanation on `pull` vs `pull --rebase` and other excellent points, see this article by Mislav Marohnić.

---

### 17.18.4 Branch

Now we are ready to get to work. Consult the sprint beginner bug list and select an execution module whose `__virtual__` function needs to be updated. I'll select the `alternatives` module.

Create a new branch off from `develop`. Be sure to name it something short and descriptive.

```
$ git checkout -b virt_ret
```

### 17.18.5 Edit

Edit the file you have selected, and verify that the changes are correct.

```
$ vim salt/modules/alternatives.py
$ git diff
diff --git a/salt/modules/alternatives.py b/salt/modules/alternatives.py
index 1653e5f..30c0a59 100644
--- a/salt/modules/alternatives.py
+++ b/salt/modules/alternatives.py
@@ -30,7 +30,7 @@ def __virtual__():
         '''
         if os.path.isdir('/etc/alternatives'):
                 return True
-        return False
+        return (False, 'Cannot load alternatives module: /etc/alternatives dir not
 ↪found')


 def _get_cmd():
```

### 17.18.6 Commit

Stage and commit the changes. Write a descriptive commit summary, but try to keep it less than 50 characters. Review your commit.

```
$ git add salt/modules/alternatives.py
$ git commit -m 'modules.alternatives: __virtual__ return err msg'
$ git show
```

**Note:** If you need more room to describe the changes in your commit, run `git commit` (without the `-m`, message, option) and you will be presented with an editor. The first line is the commit summary and should still be 50 characters or less. The following paragraphs you create are free form and will be preserved as part of the commit.

### 17.18.7 Push

Push your branch to your GitHub account. You will likely need to enter your GitHub username and password.

```
$ git push origin virt_ret
Username for 'https://github.com': <my_account>
Password for 'https://<my_account>@github.com':
```

**Note:** If authentication over https does not work, you can alternatively setup ssh keys. Once you have done this, you may need add the keys to your git repository configuration

```
$ git config ssh.key ~/.ssh/<key_name>
```

where `<key_name>` is the file name of the private key you created.

### 17.18.8 Merge

In your browser, navigate to the new pull request page on the `saltstack/salt` GitHub repository and click on `compare across forks`. Select `<my_account>` from the list of head forks and the branch you are wanting to merge into `develop` (`virt_ret` in this case).

When you have finished reviewing the changes, click `Create pull request`.

If your pull request contains only a single commit, the title and comment will be taken from that commit's summary and message, otherwise the branch name is used for the title. Edit these fields as necessary and click `Create pull request`.

---

**Note:** Although these instructions seem to be the official pull request procedure on github's website, here are two alternative methods that are simpler.

- If you navigate to your clone of salt, `https://github.com/<my_account>/salt`, depending on how old your branch is or how recently you pushed updates on it, you may be presented with a button to create a pull request with your branch.
- I find it easiest to edit the following URL:

  `https://github.com/saltstack/salt/compare/develop...<my_account>:virt_ret`

---

### 17.18.9 Resources

GitHub offers many great tutorials on various aspects of the git- and GitHub-centric development workflow:

https://help.github.com/

There are many topics covered by the Salt Developer documentation:

https://docs.saltstack.com/en/latest/topics/development/index.html

The contributing documentation presents more details on specific contributing topics:

https://docs.saltstack.com/en/latest/topics/development/contributing.html

## 17.19 Salt's Test Suite

Salt comes with a powerful integration and unit test suite allowing for the fully automated run of integration and/or unit tests from a single interface.

To learn the basics of how Salt's test suite works, be sure to check out the *Salt's Test Suite: An Introduction* tutorial.

### 17.19.1 Test Directory Structure

Salt's test suite is located in the `tests` directory in the root of Salt's codebase. The test suite is divided into two main groups:

- Integration Tests
- Unit Tests

Within each of these groups, the directory structure roughly mirrors the structure of Salt's own codebase. Notice that there are directories for `states`, `modules`, `runners`, `output`, and more in each testing group.

The files that are housed in the `modules` directory of either the unit or the integration testing factions contain respective integration or unit test files for Salt execution modules.

#### Integration Tests

The Integration section of Salt's test suite start up a number of Salt daemons to test functionality in a live environment. These daemons include two Salt Masters, one Syndic, and two Minions. This allows the Syndic interface to be tested and Master/Minion communication to be verified. All of the integration tests are executed as live Salt commands sent through the started daemons.

Integration tests are particularly good at testing modules, states, and shell commands, among other segments of Salt's ecosystem. By utilizing the integration test daemons, integration tests are easy to write. They are also SaltStack's generally preferred method of adding new tests.

The discussion in the *Integration vs. Unit* section of the *testing tutorial* is beneficial in learning why you might want to write integration tests vs. unit tests. Both testing arenas add value to Salt's test suite and you should consider adding both types of tests if possible and appropriate when contributing to Salt.

- Integration Test Documentation

#### Unit Tests

Unit tests do not spin up any Salt daemons, but instead find their value in testing singular implementations of individual functions. Instead of testing against specific interactions, unit tests should be used to test a function's logic as well as any `return` or `raises` statements. Unit tests also rely heavily on mocking external resources.

The discussion in the *Integration vs. Unit* section of the *testing tutorial* is useful in determining when you should consider writing unit tests instead of, or in addition to, integration tests when contributing to Salt.

- Unit Test Documentation

### 17.19.2 Running The Tests

There are requirements, in addition to Salt's requirements, which need to be installed in order to run the test suite. Install one of the lines below, depending on the relevant Python version:

```
pip install -r requirements/dev_python26.txt
pip install -r requirements/dev_python27.txt
```

To be able to run integration tests which utilizes ZeroMQ transport, you also need to install additional requirements for it. Make sure you have installed the C/C++ compiler and development libraries and header files needed for your Python version.

This is an example for RedHat-based operating systems:

```
yum install gcc gcc-c++ python-devel
pip install -r requirements/zeromq.txt
```

On Debian, Ubuntu or their derivatives run the following commands:

```
apt-get install build-essential python-dev
pip install -r requirements/zeromq.txt
```

This will install the latest `pycrypto` and `pyzmq` (with bundled `libzmq`) Python modules required for running integration tests suite.

Once all requirements are installed, use `runtests.py` script to run all of the tests included in Salt's test suite:

```
python tests/runtests.py
```

For more information about options you can pass the test runner, see the `--help` option:

```
python tests/runtests.py --help
```

An alternative way of invoking the test suite is available in `setup.py`:

```
./setup.py test
```

### Running Test Subsections

Instead of running the entire test suite all at once, which can take a long time, there are several ways to run only specific groups of tests or individual tests:

- Run *unit tests only*: `python tests/runtests.py --unit-tests`
- Run unit and integration tests for states: `python tests/runtests.py --state`
- Run integration tests for an individual module: `python tests/runtests.py -n integration.modules.virt`
- Run unit tests for an individual module: `python tests/runtests.py -n unit.modules.virt_test`
- Run an individual test by using the class and test name (this example is for the `test_default_kvm_profile` test in the `integration.module.virt`): `python tests/runtests.py -n integration.module.virt.VirtTest.test_default_kvm_profile`

For more specific examples of how to run various test subsections or individual tests, please see the *Test Selection Options* documentation or the *Running Specific Tests* section of the *Salt's Test Suite: An Introduction* tutorial.

### Running Unit Tests Without Integration Test Daemons

Since the unit tests do not require a master or minion to execute, it is often useful to be able to run unit tests individually, or as a whole group, without having to start up the integration testing daemons. Starting up the master, minion, and syndic daemons takes a lot of time before the tests can even start running and is unnecessary to run unit tests. To run unit tests without invoking the integration test daemons, simply run the `runtests.py` script with `--unit` argument:

```
python tests/runtests.py --unit
```

All of the other options to run individual tests, entire classes of tests, or entire test modules still apply.

### Running Destructive Integration Tests

Salt is used to change the settings and behavior of systems. In order to effectively test Salt's functionality, some integration tests are written to make actual changes to the underlying system. These tests are referred to as ``destructive tests''. Some examples of destructive tests are changes may be testing the addition of a user or installing packages. By default, destructive tests are disabled and will be skipped.

Generally, destructive tests should clean up after themselves by attempting to restore the system to its original state. For instance, if a new user is created during a test, the user should be deleted after the related test(s) have completed. However, no guarantees are made that test clean-up will complete successfully. Therefore, running destructive tests should be done with caution.

**Note**: Running destructive tests will change the underlying system. Use caution when running destructive tests.

To run tests marked as destructive, set the `--run-destructive` flag:

```
python tests/runtests.py --run-destructive
```

### Running Cloud Provider Tests

Salt's testing suite also includes integration tests to assess the successful creation and deletion of cloud instances using *Salt-Cloud* for providers supported by Salt-Cloud.

The cloud provider tests are off by default and run on sample configuration files provided in `tests/integration/files/conf/cloud.providers.d/`. In order to run the cloud provider tests, valid credentials, which differ per provider, must be supplied. Each credential item that must be supplied is indicated by an empty string value and should be edited by the user before running the tests. For example, DigitalOcean requires a client key and an api key to operate. Therefore, the default cloud provider configuration file for DigitalOcean looks like this:

```
digitalocean-config:
  driver: digital_ocean
  client_key: ''
  api_key: ''
  location: New York 1
```

As indicated by the empty string values, the `client_key` and the `api_key` must be provided:

```
digitalocean-config:
  driver: digital_ocean
  client_key: wFGEwgregeqw3435gDger
  api_key: GDE43t43REGTrkilg43934t34qT43t4dgegerGEgg
  location: New York 1
```

**Note**: When providing credential information in cloud provider configuration files, do not include the single quotes.

Once all of the valid credentials for the cloud provider have been supplied, the cloud provider tests can be run by setting the `--cloud-provider-tests` flag:

```
./tests/runtests.py --cloud-provider-tests
```

### Running The Tests In A Docker Container

The test suite can be executed under a docker container using the `--docked` option flag. The docker container must be properly configured on the system invoking the tests and the container must have access to the internet.

Here's a simple usage example:

```
python tests/runtests.py --docked=ubuntu-12.04 -v
```

The full docker container repository can also be provided:

```
python tests/runtests.py --docked=salttest/ubuntu-12.04 -v
```

The SaltStack team is creating some containers which will have the necessary dependencies pre-installed. Running the test suite on a container allows destructive tests to run without making changes to the main system. It also enables the test suite to run under a different distribution than the one the main system is currently using.

The current list of test suite images is on Salt's docker repository.

Custom docker containers can be provided by submitting a pull request against Salt's docker Salt test containers repository.

### 17.19.3 Automated Test Runs

SaltStack maintains a Jenkins server to allow for the execution of tests across supported platforms. The tests executed from Salt's Jenkins server create fresh virtual machines for each test run, then execute destructive tests on the new, clean virtual machine.

SaltStack's Jenkins server continuously runs the entire test suite, including destructive tests, on an array of various supported operating systems throughout the day. Each actively supported branch of Salt's repository runs the tests located in the respective branch's code. Each set of branch tests also includes a pylint run. These branch tests help ensure the viability of Salt code at any given point in time as pull requests are merged into branches throughout the day.

In addition to branch tests, SaltStack's Jenkins server also runs tests on pull requests. These pull request tests include a smaller set of virtual machines that run on the branch tests. The pull request tests, like the branch tests, include a pylint test as well.

When a pull request is submitted to Salt's repository on GitHub, the suite of pull request tests are started by Jenkins. These tests are used to gauge the pull request's viability to merge into Salt's codebase. If these initial tests pass, the pull request can then merged into the Salt branch by one of Salt's core developers, pending their discretion. If the initial tests fail, core developers may request changes to the pull request. If the failure is unrelated to the changes in question, core developers may merge the pull request despite the initial failure.

As soon as the pull request is merged, the changes will be added to the next branch test run on Jenkins.

For a full list of currently running test environments, go to http://jenkins.saltstack.com.

#### Using Salt-Cloud on Jenkins

For testing Salt on Jenkins, SaltStack uses *Salt-Cloud* to spin up virtual machines. The script using Salt-Cloud to accomplish this is open source and can be found here: https://github.com/saltstack/salt/blob/develop/tests/jenkins.py

### 17.19.4 Writing Tests

The salt testing infrastructure is divided into two classes of tests, integration tests and unit tests. These terms may be defined differently in other contexts, but for Salt they are defined this way:

- Unit Test: Tests which validate isolated code blocks and do not require external interfaces such as `salt-call` or any of the salt daemons.
- Integration Test: Tests which validate externally accessible features.

Salt testing uses unittest2 from the python standard library and MagicMock.

- Writing integration tests
- Writing unit tests

### Naming Conventions

Any function in either integration test files or unit test files that is doing the actual testing, such as functions containing assertions, must start with `test_`:

```
def test_user_present(self):
```

When functions in test files are not prepended with `test_`, the function acts as a normal, helper function and is not run as a test by the test suite.

### Submitting New Tests

Which branch of the Salt codebase should new tests be written against? The location of where new tests should be submitted depends largely on the reason you're writing the tests.

### Tests for New Features

If you are adding new functionality to Salt, please write the tests for this new feature in the same pull request as the new feature. New features should always be submitted to the `develop` branch.

If you have already submitted the new feature, but did not write tests in the original pull request that has already been merged, please feel free to submit a new pull request containing tests. If the feature was recently added to Salt's `develop` branch, then the tests should be added there as well. However, if the feature was added to `develop` some time ago and is already present in one or more release branches, please refer to the *Tests for Entire Files or Functions* section below for more details about where to submit tests for functions or files that do not already have tests.

### Tests to Accompany a Bugfix

If you are writing tests for code that fixes a bug in Salt, please write the test in the same pull request as the bugfix. If you're unsure of where to submit your bugfix and accompanying test, please review the *Which Salt Branch?* documentation in Salt's *Contributing* guide.

### Tests for Entire Files or Functions

Sometimes entire files in Salt are completely untested. If you are writing tests for a file that doesn't have any tests written for it, write your test against the earliest supported release branch that contains the file or function you're testing.

Once your tests are submitted in a pull request and is merged into the branch in question, the tests you wrote will be merged-forward by SaltStack core engineers and the new tests will propagate to the newer release branches. That way the tests you wrote will apply to all current and relevant release branches, and not just the `develop` branch, for example. This methodology will help protect against regressions on older files in Salt's codebase.

There may be times when the tests you write against an older branch fail in the merge-forward process because functionality has changed in newer release branches. In these cases, a Salt core developer may reach out to you for advice on the tests in question if the path forward is unclear.

**Note:** If tests are written against a file in an older release branch and then merged forward, there may be new functionality in the file that is present in the new release branch that is untested.It would be wise to see if new functionality could use additional testing once the test file has propagated to newer release branches.

## 17.20 raet

# RAET # Reliable Asynchronous Event Transport Protocol

**See also:**

*RAET Overview*

### 17.20.1 Protocol

Layering:

OSI Layers

7: Application: Format: Data (Stack to Application interface buffering etc) 6: Presentation: Format: Data (Encrypt-Decrypt convert to machine independent format) 5: Session: Format: Data (Interhost communications. Authentication. Groups) 4: Transport: Format: Segments (Reliable delivery of Message, Transactions, Segmentation, Error checking) 3: Network: Format: Packets/Datagrams (Addressing Routing) 2: Link: Format: Frames ( Reliable per frame communications connection, Media access controller ) 1: Physical: Bits (Transceiver communication connection not reliable)

Link is hidden from Raet Network is IP host address and Udp Port Transport is Raet transactions, service kind, tail error checking, Could include header signing as part of transport reliable delivery serialization of header Session is session id key exchange for signing. Grouping is Road (like 852 channel) Presentation is Encrypt Decrypt body Serialize Deserialize Body Application is body data dictionary

Header signing spans both the Transport and Session layers.

### 17.20.2 Header

JSON Header (Tradeoff some processing speed for extensibility, ease of use, readability)

Body initially JSON but support for ``packed'' binary body

### 17.20.3 Packet

Header ASCII Safe JSON Header termination: Empty line given by double pair of carriage return linefeed /r/n/r/n 10 13 10 13 ADAD 1010 1101 1010 1101

In json carriage return and newline characters cannot appear in a json encoded string unless they are escaped with backslash, so the 4 byte combination is illegal in valid json that does not have multi-byte unicode characters.

These means the header must be ascii safe so no multibyte utf-8 strings allowed in header.

Following Header Terminator is variable length signature block. This is binary and the length is provided in the header.

Following the signature block is the packet body or data. This may either be JSON or packed binary. The format is given in the json header

Finally is an optional tail block for error checking or encryption details

### 17.20.4 Header Fields

In UDP header

sh = source host sp = source port dh = destination host dp = destination port

In RAET Header

hk = header kind hl = header length

vn = version number

sd = Source Device ID dd = Destination Device ID cf = Corresponder Flag mf = Multicast Flag

si = Session ID ti = Transaction ID

sk = Service Kind pk = Packet Kind bf = Burst Flag (Send all Segments or Ordered packets without interleaved acks)

oi = Order Index dt = DateTime Stamp

sn = Segment Number sc = Segment Count

pf = Pending Segment Flag af = All Flag (Resent all Segments not just one)

nk = Auth header kind nl = Auth header length

bk = body kind bl = body length

tk = tail kind tl = tail length

**fg = flags packed (Flags) Default `00' hex string** 2 byte Hex string with bits (0, 0, af, pf, 0, bf, mf, cf) Zeros are TBD flags

### 17.20.5 Session Bootstrap

Minion sends packet with SID of Zero with public key of minions Public Private Key pair Master acks packet with SID of Zero to let minion know it received the request

Some time later Master sends packet with SID of zero that accepts the Minion

Minion

### 17.20.6 Session

Session is important for security. Want one session opened and then multiple transactions within session.

Session ID SID sid

GUID hash to guarantee uniqueness since no guarantee of nonvolatile storage or require file storage to keep last session ID used.

### 17.20.7 Service Types or Modular Services

Four Service Types

1. One or more maybe (unacknowledged repeat) maybe means no guarantee

2. **Exactly one at most (ack with retries) (duplicate detection idempotent)** at most means fixed number of retries has finite probability of failing B1) finite retries B2) infinite retries with exponential back-off up to a maximum delay
3. **Exactly one of sequence at most (sequence numbered)** Receiver requests retry of missing packet with same B1 or B2 retry type
4. **End to End (Application layer Request Response)** This is two B sub transactions

Initially unicast messaging Eventually support for Multicast

The use case for C) is to fragment large packets as once a UDP packet exceeds the frame size its reliability goes way down So its more reliable to fragment large packets.

Better approach might be to have more modularity. Services Levels

1. **Maybe one or more**
    (a) **Fire and forget** no transaction either side
    (b) **Repeat, no ack, no dupdet** repeat counter send side, no transaction on receive side
    (c) **Repeat, no Ack, dupdet** repeat counter send side, dup detection transaction receive side
2. **More or Less Once**
    (a) **retry finite, ack no dupdet** retry timer send side, finite number of retires ack receive side no dupdet
3. **At most Once**
    (a) **retry finite, ack, dupdet** retry timer send side, finite number of retires ack receive side dupdet
4. **Exactly once**
    (a) **ack retry** retry timer send side, ack and duplicate detection receive side Infinite retries with exponential backoff
5. **Sequential sequence number**
    (a) reorder escrow
    (b) Segmented packets
6. request response to application layer

Service Features

1. repeats
2. ack retry transaction id
3. sequence number duplicate detection out of order detection sequencing
4. rep-req

Always include transaction id since multiple transactions on same port So get duplicate detection for free if keep transaction alive but if use

A) Maybe one or more B1) At Least One B2) Exactly One C) One of sequence D) End to End

A) Sender creates transaction id for number of repeats but receiver does not keep transaction alive

B1) Sender creates transaction id keeps it for retries. Receiver keeps it to send ack then kills so retry could be duplicate not detected

B2) Sender creates transaction id keeps for retries Receiver keeps tid for acks on any retires so no duplicates.

C) Sender creates TID and Sequence Number. Receiver checks for out of order sequence and can request retry.

D) Application layer sends response. So question is do we keep transaction open or have response be new transaction. No because then we need a rep-req ID so might as well use the same transaction id. Just keep alive until get response.

Little advantage to B1 vs B2 not having duplicates.

So 4 service types

1. Maybe one or more (unacknowledged repeat)
2. Exactly One (At most one) (ack with retry) (duplicate detection idempotent)
3. One of Sequence (sequence numbered)
4. End to End

Also multicast or unicast

Modular Transaction Table

**Sender Side**: Transaction ID plus transaction source sender or receiver generated transaction id Repeat Counter Retry Timer Retry Counter (finite retries) Redo Timer (infinite redos with exponential backoff) Sequence number without acks (look for resend requests) Sequence with ack (wait for ack before sending next in sequence) Segmentation

**Receiver Side**: Nothing just accept packet Acknowledge (can delete transaction after acknowledge) No duplicate detection Transaction timeout (keep transaction until timeout) Duplicate detection save transaction id duplicate detection timeout Request resend of missing packet in sequence Sequence reordering with escrow timeout wait escrow before requesting resend Unsegmentation (request resends of missing segment)

## 17.21 SaltStack Git Policy

The SaltStack team follows a git policy to maintain stability and consistency with the repository.

The git policy has been developed to encourage contributions and make contributing to Salt as easy as possible. Code contributors to SaltStack projects DO NOT NEED TO READ THIS DOCUMENT, because all contributions come into SaltStack via a single gateway to make it as easy as possible for contributors to give us code.

The primary rule of git management in SaltStack is to make life easy on contributors and developers to send in code. Simplicity is always a goal!

### 17.21.1 New Code Entry

All new SaltStack code should be submitted against either the `develop` branch or a point release branch, depending on the nature of the submission. Please see the *Which Salt Branch?* section of Salt's *Contributing* documentation or the Release Branching section section below for more information.

### 17.21.2 Release Branching

SaltStack maintains two types of releases, `Feature Releases` and `Point Releases` (also commonly referred to as `Bugfix Releases`. A feature release is managed by incrementing the first or second release point number, so 2015.5.5 -> 2015.8.0 signifies a feature release and 2015.8.0 -> 2015.8.1 signifies a point release.

#### Feature Release Branching

Each feature release is maintained in a dedicated git branch derived from the last applicable release commit on develop. All file changes relevant to the feature release will be completed in the develop branch prior to the creation of the feature release branch. The feature release branch will be named after the relevant numbers to the feature release, which constitute the first two numbers. This means that the release branch for the 2015.8.0 series is named 2015.8.

A feature release branch is created with the following command:

```
# git checkout -b 2015.8 # From the develop branch
# git push origin 2015.8
```

#### Point Releases

Each point release is derived from its parent release branch. Constructing point releases is a critical aspect of Salt development and is managed by members of the core development team. Point releases comprise bug and security fixes. Bug fixes can be made against a point release branch in one of two ways: the bug fix can be submitted directly against the point release branch, or an attempt can be made to back-port the fix to the point release branch.

Bug fixes should be made against the earliest supported release branch on which the bug is present. The Salt development team regularly merges older point release branches forward into newer point release branches. That way, the bug fixes that are submitted to older release branches can cascade up through all related release branches.

For more information, please see the *Which Salt Branch?* section of Salt's *Contributing* documentation.

Determining when a point release is going to be made is up to the project leader (Thomas Hatch). Generally point releases are made every 2-4 weeks or if there is a security fix they can be made sooner.

The point release is only designated by tagging the commit on the release branch with a release number using the existing convention (version 2015.8.1 is tagged with v2015.8.1). From the tag point a new source tarball is generated and published to PyPI, and a release announcement is made.

## 17.22 Salt Conventions

### 17.22.1 Writing Salt Documentation

Salt's documentation is built using the Sphinx documentation system. It can be built in a large variety of output formats including HTML, PDF, ePub, and manpage.

All the documentation is contained in the main Salt repository. Speaking broadly, most of the narrative documentation is contained within the https://github.com/saltstack/salt/blob/develop/doc subdirectory and most of the reference and API documentation is written inline with Salt's Python code and extracted using a Sphinx extension.

#### Style

The Salt project recommends the IEEE style guide as a general reference for writing guidelines. Those guidelines are not strictly enforced but rather serve as an excellent resource for technical writing questions. The NCBI style guide is another very approachable resource.

### Point-of-view

Use third-person perspective and avoid ``I'', ``we'', ``you'' forms of address. Identify the addressee specifically e.g., ``users should'', ``the compiler does'', etc.

### Active voice

Use active voice and present-tense. Avoid filler words.

### Title capitalization

Document titles and section titles within a page should follow normal sentence capitalization rules. Words that are capitalized as part of a regular sentence should be capitalized in a title and otherwise left as lowercase. Punctuation can be omitted unless it aids the intent of the title (e.g., exclamation points or question marks).

For example:

```
This is a main heading
======================

Paragraph.

This is an exciting sub-heading!
--------------------------------

Paragraph.
```

### Serial Commas

According to Wikipedia: In English punctuation, a serial comma or series comma (also called Oxford comma and Harvard comma) is a comma placed immediately before the coordinating conjunction (usually ``and'', ``or'', or ``nor'') in a series of three or more terms. For example, a list of three countries might be punctuated either as ``France, Italy, and Spain'' (with the serial comma), or as ``France, Italy and Spain'' (without the serial comma).''

When writing a list that includes three or more items, the serial comma should always be used.

### Documenting modules

Documentation for Salt's various module types is inline in the code. During the documentation build process it is extracted and formatted into the final HTML, PDF, etc format.

### Inline documentation

Python has special multi-line strings called docstrings as the first element in a function or class. These strings allow documentation to live alongside the code and can contain special formatting. For example:

```
def my_function(value):
    '''
    Upper-case the given value

    Usage:
```

```
    .. code-block:: python

        val = 'a string'
        new_val = myfunction(val)
        print(new_val) # 'A STRING'

    :param value: a string
    :return: a copy of ``value`` that has been upper-cased
    '''
    return value.upper()
```

### Specify a release for additions or changes

New functions or changes to existing functions should include a marker that denotes what Salt release will be affected. For example:

```
def my_function(value):
    '''
    Upper-case the given value

    .. versionadded:: 2014.7.0

    <...snip...>
    '''
    return value.upper()
```

For changes to a function:

```
def my_function(value, strip=False):
    '''
    Upper-case the given value

    .. versionchanged:: 2016.3.0
        Added a flag to also strip whitespace from the string.

    <...snip...>
    '''
    if strip:
        return value.upper().strip()
    return value.upper()
```

### Adding module documentation to the index

Each module type has an index listing all modules of that type. For example: all-salt.modules, *state modules*, *renderer modules*. New modules must be added to the index manually.

1. Edit the file for the module type: execution modules, state modules, renderer modules, etc.
2. Add the new module to the alphebetized list.
3. *Build the documentation* which will generate an `.rst` file for the new module in the same directory as the `index.rst`.
4. Commit the changes to `index.rst` and the new `.rst` file and send a pull request.

### Cross-references

The Sphinx documentation system contains a wide variety of cross-referencing capabilities.

### Glossary entries

Link to glossary entries using the term role. A cross-reference should be added the first time a Salt-specific term is used in a document.

```
A common way to encapsulate master-side functionality is by writing a
custom :term:`Runner Function`. Custom Runner Functions are easy to write.
```

### Index entries

Sphinx automatically generates many kinds of index entries, but it is occasionally useful to manually add items to the index.

One method is to use the index directive above the document or section that should appear in the index.

```
.. index:: ! Event, event bus, event system
    see: Reactor; Event
```

Another method is to use the index role inline with the text that should appear in the index. The index entry is created and the target text is left otherwise intact.

```
Information about the :index:`Salt Reactor`
-------------------------------------------

Paragraph.
```

### Documents and sections

Each document should contain a unique top-level label of the form:

```
.. _my-page:

My page
=======

Paragraph.
```

Unique labels can be linked using the ref role. This allows cross-references to survive document renames or movement.

```
For more information see :ref:`my-page`.
```

Note, the `:doc:` role should *not* be used to link documents together.

### Modules

Cross-references to Salt modules can be added using Sphinx's Python domain roles. For example, to create a link to the *test.ping* function:

```
A useful execution module to test active communication with a minion is the
:py:func:`test.ping <salt.modules.test.ping>` function.
```

Salt modules can be referenced as well:

```
The :py:mod:`test module <salt.modules.test>` contains many useful
functions for inspecting an active Salt connection.
```

The same syntax works for all modules types:

```
One of the workhorse state module functions in Salt is the
:py:func:`file.managed <salt.states.file.managed>` function.
```

### Settings

Individual settings in the Salt Master or Salt Minion configuration files are cross-referenced using two custom roles, `conf_master`, and `conf_minion`.

```
The :conf_minion:`minion ID <id>` setting is a unique identifier for a
single minion.
```

### Documentation Changes and Fixes

Documentation changes and fixes should be made against the earliest supported release branch that the update applies to. The practice of updating a release branch instead of making all documentation changes against Salt's main, default branch, `develop`, is necessary in order for the docs to be as up-to-date as possible when the docs are built.

The workflow mentioned above is also in line with the recommendations outlined in Salt's *Contributing* page. You can read more about how to choose where to submit documentation fixes by reading the *Which Salt branch?* section.

For an explanation of how to submit changes against various branches, see the *Sending a GitHub pull request* section. Specifically, see the section describing how to `Create a new branch` and the steps that follow.

### Building the documentation

1. Install Sphinx using a system package manager or pip. The package name is often of the form `python-sphinx`. There are no other dependencies.
2. Build the documentation using the provided Makefile or `.bat` file on Windows.

   ```
   cd /path/to/salt/doc
   make html
   ```

3. The generated documentation will be written to the `doc/_build/<format>` directory.
4. A useful method of viewing the HTML documentation locally is to start Python's built-in HTTP server:

   ```
   cd /path/to/salt/doc/_build/html
   python -m SimpleHTTPServer
   ```

   Then pull up the documentation in a web browser at http://localhost:8000/.

### 17.22.2 Salt Formulas

Formulas are pre-written Salt States. They are as open-ended as Salt States themselves and can be used for tasks such as installing a package, configuring, and starting a service, setting up users or permissions, and many other common tasks.

All official Salt Formulas are found as separate Git repositories in the ``saltstack-formulas'' organization on GitHub:

https://github.com/saltstack-formulas

As a simple example, to install the popular Apache web server (using the normal defaults for the underlying distro) simply include the apache-formula from a top file:

```
base:
  'web*':
    - apache
```

#### Installation

Each Salt Formula is an individual Git repository designed as a drop-in addition to an existing Salt State tree. Formulas can be installed in the following ways.

#### Adding a Formula as a GitFS remote

One design goal of Salt's GitFS fileserver backend was to facilitate reusable States. GitFS is a quick and natural way to use Formulas.

1. *Install and configure GitFS*.
2. Add one or more Formula repository URLs as remotes in the `gitfs_remotes` list in the Salt Master configuration file:

   ```
   gitfs_remotes:
     - https://github.com/saltstack-formulas/apache-formula
     - https://github.com/saltstack-formulas/memcached-formula
   ```

   **We strongly recommend forking a formula repository** into your own GitHub account to avoid unexpected changes to your infrastructure.

   Many Salt Formulas are highly active repositories so pull new changes with care. Plus any additions you make to your fork can be easily sent back upstream with a quick pull request!
3. Restart the Salt master.

#### Adding a Formula directory manually

Formulas are simply directories that can be copied onto the local file system by using Git to clone the repository or by downloading and expanding a tarball or zip file of the repository. The directory structure is designed to work with `file_roots` in the Salt master configuration.

1. Clone or download the repository into a directory:

   ```
   mkdir -p /srv/formulas
   cd /srv/formulas
   git clone https://github.com/saltstack-formulas/apache-formula.git
   ```

```
# or

mkdir -p /srv/formulas
cd /srv/formulas
wget https://github.com/saltstack-formulas/apache-formula/archive/master.tar.gz
tar xf apache-formula-master.tar.gz
```

2. Add the new directory to *file_roots*:

```
file_roots:
  base:
    - /srv/salt
    - /srv/formulas/apache-formula
```

3. Restart the Salt Master.

### Usage

Each Formula is intended to be immediately usable with sane defaults without any additional configuration. Many formulas are also configurable by including data in Pillar; see the `pillar.example` file in each Formula repository for available options.

### Including a Formula in an existing State tree

Formula may be included in an existing `sls` file. This is often useful when a state you are writing needs to `require` or `extend` a state defined in the formula.

Here is an example of a state that uses the epel-formula in a `require` declaration which directs Salt to not install the `python26` package until after the EPEL repository has also been installed:

```
include:
  - epel

python26:
  pkg.installed:
    - require:
      - pkg: epel
```

### Including a Formula from a Top File

Some Formula perform completely standalone installations that are not referenced from other state files. It is usually cleanest to include these Formula directly from a Top File.

For example the easiest way to set up an OpenStack deployment on a single machine is to include the openstack-standalone-formula directly from a `top.sls` file:

```
base:
  'myopenstackmaster':
    - openstack
```

Quickly deploying OpenStack across several dedicated machines could also be done directly from a Top File and may look something like this:

```
base:
  'controller':
    - openstack.horizon
    - openstack.keystone
  'hyper-*':
    - openstack.nova
    - openstack.glance
  'storage-*':
    - openstack.swift
```

### Configuring Formula using Pillar

Salt Formulas are designed to work out of the box with no additional configuration. However, many Formula support additional configuration and customization through *Pillar*. Examples of available options can be found in a file named `pillar.example` in the root directory of each Formula repository.

### Using Formula with your own states

Remember that Formula are regular Salt States and can be used with all Salt's normal state mechanisms. Formula can be required from other States with *require* declarations, they can be modified using `extend`, they can made to watch other states with *The _in versions of requisites*.

The following example uses the stock apache-formula alongside a custom state to create a vhost on a Debian/Ubuntu system and to reload the Apache service whenever the vhost is changed.

```
# Include the stock, upstream apache formula.
include:
  - apache

# Use the watch_in requisite to cause the apache service state to reload
# apache whenever the my-example-com-vhost state changes.
my-example-com-vhost:
  file:
    - managed
    - name: /etc/apache2/sites-available/my-example-com
    - watch_in:
      - service: apache
```

Don't be shy to read through the source for each Formula!

### Reporting problems & making additions

Each Formula is a separate repository on GitHub. If you encounter a bug with a Formula please file an issue in the respective repository! Send fixes and additions as a pull request. Add tips and tricks to the repository wiki.

### Writing Formulas

Each Formula is a separate repository in the saltstack-formulas organization on GitHub.

---

**Note**: Get involved creating new Formulas

The best way to create new Formula repositories for now is to create a repository in your own account on GitHub and notify a SaltStack employee when it is ready. We will add you to the contributors team on the saltstack-formulas organization and help you transfer the repository over. Ping a SaltStack employee on IRC (`#salt` on Freenode) or send an email to the salt-users mailing list.

There are a lot of repositories in that organization! Team members can manage which repositories they are subscribed to on GitHub's watching page: https://github.com/watching.

### Style

Maintainability, readability, and reusability are all marks of a good Salt sls file. This section contains several suggestions and examples.

```
# Deploy the stable master branch unless version overridden by passing
# Pillar at the CLI or via the Reactor.

deploy_myapp:
  git.latest:
    - name: git@github.com/myco/myapp.git
    - version: {{ salt.pillar.get('myapp:version', 'master') }}
```

### Use a descriptive State ID

The ID of a state is used as a unique identifier that may be referenced via other states in *requisites*. It must be unique across the whole state tree (*it is a key in a dictionary*, after all).

In addition a state ID should be descriptive and serve as a high-level hint of what it will do, or manage, or change. For example, `deploy_webapp`, or `apache`, or `reload_firewall`.

### Use `module.function` notation

So-called ``short-declaration'' notation is preferred for referencing state modules and state functions. It provides a consistent pattern of `module.function` shared between Salt States, the Reactor, Salt Mine, the Scheduler, as well as with the CLI.

```
# Do
apache:
  pkg.installed:
    - name: httpd

# Don't
apache:
  pkg:
    - installed
    - name: httpd
```

Salt's state compiler will transform ``short-decs'' into the longer format *when compiling the human-friendly highstate structure into the machine-friendly lowstate structure*.

### Specify the `name` parameter

Use a unique and permanent identifier for the state ID and reserve `name` for data with variability.

The *name declaration* is a required parameter for all state functions. The state ID will implicitly be used as `name` if it is not explicitly set in the state.

In many state functions the `name` parameter is used for data that varies such as OS-specific package names, OS-specific file system paths, repository addresses, etc. Any time the ID of a state changes all references to that ID must also be changed. Use a permanent ID when writing a state the first time to future-proof that state and allow for easier refactors down the road.

### Comment state files

YAML allows comments at varying indentation levels. It is a good practice to comment state files. Use vertical whitespace to visually separate different concepts or actions.

```
# Start with a high-level description of the current sls file.
# Explain the scope of what it will do or manage.

# Comment individual states as necessary.
update_a_config_file:
  # Provide details on why an unusual choice was made. For example:
  #
  # This template is fetched from a third-party and does not fit our
  # company norm of using Jinja. This must be processed using Mako.
  file.managed:
    - name: /path/to/file.cfg
    - source: salt://path/to/file.cfg.template
    - template: mako

  # Provide a description or explanation that did not fit within the state
  # ID. For example:
  #
  # Update the application's last-deployed timestamp.
  # This is a workaround until Bob configures Jenkins to automate RPM
  # builds of the app.
  cmd.run:
    # FIXME: Joe needs this to run on Windows by next quarter. Switch these
    # from shell commands to Salt's file.managed and file.replace state
    # modules.
    - name: |
        touch /path/to/file_last_updated
        sed -e 's/foo/bar/g' /path/to/file_environment
    - onchanges:
      - file: a_config_file
```

Be careful to use Jinja comments for commenting Jinja code and YAML comments for commenting YAML code.

```
# BAD EXAMPLE
# The Jinja in this YAML comment is still executed!
# {% set apache_is_installed = 'apache' in salt.pkg.list_pkgs() %}

# GOOD EXAMPLE
# The Jinja in this Jinja comment will not be executed.
{# {% set apache_is_installed = 'apache' in salt.pkg.list_pkgs() %} #}
```

### Easy on the Jinja!

Jinja templating provides vast flexibility and power when building Salt sls files. It can also create an unmaintainable tangle of logic and data. Speaking broadly, Jinja is best used when kept apart from the states (as much as is possible).

Below are guidelines and examples of how Jinja can be used effectively.

### Know the evaluation and execution order

High-level knowledge of how Salt states are compiled and run is useful when writing states.

The default `renderer` setting in Salt is Jinja piped to YAML. Each is a separate step. Each step is not aware of the previous or following step. Jinja is not YAML aware, YAML is not Jinja aware; they cannot share variables or interact.

- Whatever the Jinja step produces must be valid YAML.
- Whatever the YAML step produces must be a valid *highstate data structure*. (This is also true of the final step for *any of the alternate renderers* in Salt.)
- Highstate can be thought of as a human-friendly data structure; easy to write and easy to read.
- Salt's state compiler validates the *highstate* and compiles it to low state.
- Low state can be thought of as a machine-friendly data structure. It is a list of dictionaries that each map directly to a function call.
- Salt's state system finally starts and executes on each ``chunk'' in the low state. Remember that requisites are evaluated at runtime.
- The return for each function call is added to the ``running'' dictionary which is the final output at the end of the state run.

The full evaluation and execution order:

```
Jinja -> YAML -> Highstate -> low state -> execution
```

### Avoid changing the underlying system with Jinja

Avoid calling commands from Jinja that change the underlying system. Commands run via Jinja do not respect Salt's dry-run mode (`test=True`)! This is usually in conflict with the idempotent nature of Salt states unless the command being run is also idempotent.

### Inspect the local system

A common use for Jinja in Salt states is to gather information about the underlying system. The `grains` dictionary available in the Jinja context is a great example of common data points that Salt itself has already gathered. Less common values are often found by running commands. For example:

```
{% set is_selinux_enabled = salt.cmd.run('sestatus') == '1' %}
```

This is usually best done with a variable assignment in order to separate the data from the state that will make use of the data.

### Gather external data

One of the most common uses for Jinja is to pull external data into the state file. External data can come from anywhere like API calls or database queries, but it most commonly comes from flat files on the file system or Pillar data from the Salt Master. For example:

```
{% set some_data = salt.pillar.get('some_data', {'sane default': True}) %}

{# or #}

{% import_yaml 'path/to/file.yaml' as some_data %}

{# or #}

{% import_json 'path/to/file.json' as some_data %}

{# or #}

{% import_text 'path/to/ssh_key.pub' as ssh_pub_key %}

{# or #}

{% from 'path/to/other_file.jinja' import some_data with context %}
```

This is usually best done with a variable assignment in order to separate the data from the state that will make use of the data.

### Light conditionals and looping

Jinja is extremely powerful for programmatically generating Salt states. It is also easy to overuse. As a rule of thumb, if it is hard to read it will be hard to maintain!

Separate Jinja control-flow statements from the states as much as is possible to create readable states. Limit Jinja within states to simple variable lookups.

Below is a simple example of a readable loop:

```
{% for user in salt.pillar.get('list_of_users', []) %}

{# Ensure unique state IDs when looping. #}
{{ user.name }}-{{ loop.index }}:
  user.present:
    - name: {{ user.name }}
    - shell: {{ user.shell }}

{% endfor %}
```

Avoid putting a Jinja conditionals within Salt states where possible. Readability suffers and the correct YAML indentation is difficult to see in the surrounding visual noise. Parametrization (discussed below) and variables are both useful techniques to avoid this. For example:

```
{# ---- Bad example ---- #}

apache:
  pkg.installed:
    {% if grains.os_family == 'RedHat' %}
    - name: httpd
```

```
    {% elif grains.os_family == 'Debian' %}
    - name: apache2
    {% endif %}

{# ---- Better example ---- #}

{% if grains.os_family == 'RedHat' %}
{% set name = 'httpd' %}
{% elif grains.os_family == 'Debian' %}
{% set name = 'apache2' %}
{% endif %}

 apache:
  pkg.installed:
    - name: {{ name }}

{# ---- Good example ---- #}

{% set name = {
    'RedHat': 'httpd',
    'Debian': 'apache2',
}.get(grains.os_family) %}

 apache:
  pkg.installed:
    - name: {{ name }}
```

Dictionaries are useful to effectively ``namespace'' a collection of variables. This is useful with parametrization (discussed below). Dictionaries are also easily combined and merged. And they can be directly serialized into YAML which is often easier than trying to create valid YAML through templating. For example:

```
{# ---- Bad example ---- #}

haproxy_conf:
  file.managed:
    - name: /etc/haproxy/haproxy.cfg
    - template: jinja
    {% if 'external_loadbalancer' in grains.roles %}
    - source: salt://haproxy/external_haproxy.cfg
    {% elif 'internal_loadbalancer' in grains.roles %}
    - source: salt://haproxy/internal_haproxy.cfg
    {% endif %}
    - context:
        {% if 'external_loadbalancer' in grains.roles %}
        ssl_termination: True
        {% elif 'internal_loadbalancer' in grains.roles %}
        ssl_termination: False
        {% endif %}

{# ---- Better example ---- #}

{% load_yaml as haproxy_defaults %}
common_settings:
  bind_port: 80

internal_loadbalancer:
  source: salt://haproxy/internal_haproxy.cfg
  settings:
```

```
    bind_port: 8080
    ssl_termination: False

external_loadbalancer:
  source: salt://haproxy/external_haproxy.cfg
  settings:
    ssl_termination: True
{% endload %}

{% if 'external_loadbalancer' in grains.roles %}
{% set haproxy = haproxy_defaults['external_loadbalancer'] %}
{% elif 'internal_loadbalancer' in grains.roles %}
{% set haproxy = haproxy_defaults['internal_loadbalancer'] %}
{% endif %}

{% do haproxy.settings.update(haproxy_defaults.common_settings) %}

haproxy_conf:
  file.managed:
    - name: /etc/haproxy/haproxy.cfg
    - template: jinja
    - source: {{ haproxy.source }}
    - context: {{ haproxy.settings | yaml() }}
```

There is still room for improvement in the above example. For example, extracting into an external file or replacing the if-elif conditional with a function call to filter the correct data more succinctly. However, the state itself is simple and legible, the data is separate and also simple and legible. And those suggested improvements can be made at some future date without altering the state at all!

### Avoid heavy logic and programming

Jinja is not Python. It was made by Python programmers and shares many semantics and some syntax but it does not allow for abitrary Python function calls or Python imports. Jinja is a fast and efficient templating language but the syntax can be verbose and visually noisy.

Once Jinja use within an sls file becomes slightly complicated -- long chains of if-elif-elif-else statements, nested conditionals, complicated dictionary merges, wanting to use sets -- instead consider using a different Salt renderer, such as the Python renderer. As a rule of thumb, if it is hard to read it will be hard to maintain -- switch to a format that is easier to read.

Using alternate renderers is very simple to do using Salt's ``she-bang'' syntax at the top of the file. The Python renderer must simply return the correct *highstate data structure*. The following example is a state tree of two sls files, one simple and one complicated.

`/srv/salt/top.sls`:

```
base:
  '*':
    - common_configuration
    - roles_configuration
```

`/srv/salt/common_configuration.sls`:

```
common_users:
  user.present:
    - names: [larry, curly, moe]
```

/srv/salt/roles_configuration:

```
#!py
def run():
    list_of_roles = set()

    # This example has the minion id in the form 'web-03-dev'.
    # Easily access the grains dictionary:
    try:
        app, instance_number, environment = __grains__['id'].split('-')
        instance_number = int(instance_number)
    except ValueError:
        app, instance_number, environment = ['Unknown', 0, 'dev']

    list_of_roles.add(app)

    if app == 'web' and environment == 'dev':
        list_of_roles.add('primary')
        list_of_roles.add('secondary')
    elif app == 'web' and environment == 'staging':
        if instance_number == 0:
            list_of_roles.add('primary')
        else:
            list_of_roles.add('secondary')

    # Easily cross-call Salt execution modules:
    if __salt__['myutils.query_valid_ec2_instance']():
        list_of_roles.add('is_ec2_instance')

    return {
        'set_roles_grains': {
            'grains.present': [
                {'name': 'roles'},
                {'value': list(list_of_roles)},
            ],
        },
    }
```

### Jinja Macros

In Salt sls files Jinja macros are useful for one thing and one thing only: creating mini templates that can be reused and rendered on demand. Do not fall into the trap of thinking of macros as functions; Jinja is not Python (see above).

Macros are useful for creating reusable, parameterized states. For example:

```
{% macro user_state(state_id, user_name, shell='/bin/bash', groups=[]) %}
{{ state_id }}:
  user.present:
    - name: {{ user_name }}
    - shell: {{ shell }}
    - groups: {{ groups | json() }}
{% endmacro %}

{% for user_info in salt.pillar.get('my_users', []) %}
{{ user_state('user_number_' ~ loop.index, **user_info) }}
{% endfor %}
```

Macros are also useful for creating one-off ``serializers'' that can accept a data structure and write that out as a domain-specific configuration file. For example, the following macro could be used to write a php.ini config file:

`/srv/salt/php.sls`:

```
php_ini:
  file.managed:
    - name: /etc/php.ini
    - source: salt://php.ini.tmpl
    - template: jinja
    - context:
        php_ini_settings: {{ salt.pillar.get('php_ini', {}) | json() }}
```

`/srv/pillar/php.sls`:

```
php_ini:
  PHP:
    engine: 'On'
    short_open_tag: 'Off'
    error_reporting: 'E_ALL & ~E_DEPRECATED & ~E_STRICT'
```

`/srv/salt/php.ini.tmpl`:

```
{% macro php_ini_serializer(data) %}
{% for section_name, name_val_pairs in data.items() %}
[{{ section_name }}]
{% for name, val in name_val_pairs.items() -%}
{{ name }} = "{{ val }}"
{% endfor %}
{% endfor %}
{% endmacro %}

; File managed by Salt at <{{ source }}>.
; Your changes will be overwritten.

{{ php_ini_serializer(php_ini_settings) }}
```

### Abstracting static defaults into a lookup table

Separate data that a state uses from the state itself to increases the flexibility and reusability of a state.

An obvious and common example of this is platform-specific package names and file system paths. Another example is sane defaults for an application, or common settings within a company or organization. Organizing such data as a dictionary (aka hash map, lookup table, associative array) often provides a lightweight namespacing and allows for quick and easy lookups. In addition, using a dictionary allows for easily merging and overriding static values within a lookup table with dynamic values fetched from Pillar.

A strong convention in Salt Formulas is to place platform-specific data, such as package names and file system paths, into a file named `map.jinja` that is placed alongside the state files.

The following is an example from the MySQL Formula. The *`grains.filter_by`* function performs a lookup on that table using the `os_family` grain (by default).

The result is that the `mysql` variable is assigned to a *subset* of the lookup table for the current platform. This allows states to reference, for example, the name of a package without worrying about the underlying OS. The syntax for referencing a value is a normal dictionary lookup in Jinja, such as `{{ mysql['service'] }}` or the shorthand `{{ mysql.service }}`.

`map.jinja`:

```
{% set mysql = salt['grains.filter_by']({
    'Debian': {
        'server': 'mysql-server',
        'client': 'mysql-client',
        'service': 'mysql',
        'config': '/etc/mysql/my.cnf',
        'python': 'python-mysqldb',
    },
    'RedHat': {
        'server': 'mysql-server',
        'client': 'mysql',
        'service': 'mysqld',
        'config': '/etc/my.cnf',
        'python': 'MySQL-python',
    },
    'Gentoo': {
        'server': 'dev-db/mysql',
        'client': 'dev-db/mysql',
        'service': 'mysql',
        'config': '/etc/mysql/my.cnf',
        'python': 'dev-python/mysql-python',
    },
}, merge=salt['pillar.get']('mysql:lookup')) %}
```

Values defined in the map file can be fetched for the current platform in any state file using the following syntax:

```
{% from "mysql/map.jinja" import mysql with context %}

mysql-server:
  pkg.installed:
    - name: {{ mysql.server }}
  service.running:
    - name: {{ mysql.service }}
```

### Organizing Pillar data

It is considered a best practice to make formulas expect **all** formula-related parameters to be placed under second-level `lookup` key, within a main namespace designated for holding data for particular service/software/etc, managed by the formula:

```

```

**mysql**:

**lookup**: version: 5.7.11 ...

### Collecting common values

Common values can be collected into a *base* dictionary. This minimizes repetition of identical values in each of the `lookup_dict` sub-dictionaries. Now only the values that are different from the base must be specified of the alternates:

`map.jinja`:

```
{% set mysql = salt['grains.filter_by']({
    'default': {
        'server': 'mysql-server',
        'client': 'mysql-client',
        'service': 'mysql',
        'config': '/etc/mysql/my.cnf',
        'python': 'python-mysqldb',
    },
    'Debian': {
    },
    'RedHat': {
        'client': 'mysql',
        'service': 'mysqld',
        'config': '/etc/my.cnf',
        'python': 'MySQL-python',
    },
    'Gentoo': {
        'server': 'dev-db/mysql',
        'client': 'dev-db/mysql',
        'python': 'dev-python/mysql-python',
    },
},
merge=salt['pillar.get']('mysql:lookup', default='default') %}
```

### Overriding values in the lookup table

Allow static values within lookup tables to be overridden. This is a simple pattern which once again increases flexibility and reusability for state files.

The `merge` argument in *`filter_by`* specifies the location of a dictionary in Pillar that can be used to override values returned from the lookup table. If the value exists in Pillar it will take precedence.

This is useful when software or configuration files is installed to non-standard locations or on unsupported platforms. For example, the following Pillar would replace the `config` value from the call above.

```
mysql:
  lookup:
    config: /usr/local/etc/mysql/my.cnf
```

---

**Note**: Protecting Expansion of Content with Special Characters

When templating keep in mind that YAML does have special characters for quoting, flows, and other special structure and content. When a Jinja substitution may have special characters that will be incorrectly parsed by YAML care must be taken. It is a good policy to use the `yaml_encode` or the `yaml_dquote` Jinja filters:

```
{%- set foo = 7.7 %}
{%- set bar = none %}
{%- set baz = true %}
{%- set zap = 'The word of the day is "salty".' %}
{%- set zip = '"The quick brown fox . . ."' %}

foo: {{ foo|yaml_encode }}
bar: {{ bar|yaml_encode }}
baz: {{ baz|yaml_encode }}
zap: {{ zap|yaml_encode }}
zip: {{ zip|yaml_dquote }}
```

The above will be rendered as below:

```
foo: 7.7
bar: null
baz: true
zap: "The word of the day is \"salty\"."
zip: "\"The quick brown fox . . .\""
```

The *filter_by* function performs a simple dictionary lookup but also allows for fetching data from Pillar and overriding data stored in the lookup table. That same workflow can be easily performed without using `filter_by`; other dictionaries besides data from Pillar can also be used.

```
{% set lookup_table = {...} %}
{% do lookup_table.update(salt.pillar.get('my:custom:data')) %}
```

### When to use lookup tables

The `map.jinja` file is only a convention within Salt Formulas. This greater pattern is useful for a wide variety of data in a wide variety of workflows. This pattern is not limited to pulling data from a single file or data source. This pattern is useful in States, Pillar and the Reactor, for example.

Working with a data structure instead of, say, a config file allows the data to be cobbled together from multiple sources (local files, remote Pillar, database queries, etc), combined, overridden, and searched.

Below are a few examples of what lookup tables may be useful for and how they may be used and represented.

### Platform-specific information

An obvious pattern and one used heavily in Salt Formulas is extracting platform-specific information such as package names and file system paths in a file named `map.jinja`. The pattern is explained in detail above.

### Sane defaults

Application settings can be a good fit for this pattern. Store default settings along with the states themselves and keep overrides and sensitive settings in Pillar. Combine both into a single dictionary and then write the application config or settings file.

The example below stores most of the Apache Tomcat `server.xml` file alongside the Tomcat states and then allows values to be updated or augmented via Pillar. (This example uses the BadgerFish format for transforming JSON to XML.)

`/srv/salt/tomcat/defaults.yaml`:

```
Server:
  '@port': '8005'
  '@shutdown': SHUTDOWN
  GlobalNamingResources:
    Resource:
      '@auth': Container
      '@description': User database that can be updated and saved
      '@factory': org.apache.catalina.users.MemoryUserDatabaseFactory
      '@name': UserDatabase
```

```
      '@pathname': conf/tomcat-users.xml
      '@type': org.apache.catalina.UserDatabase
  # <...snip...>
```

/srv/pillar/tomcat.sls:

```
appX:
  server_xml_overrides:
    Server:
      Service:
        '@name': Catalina
        Connector:
          '@port': '8009'
          '@protocol': AJP/1.3
          '@redirectPort': '8443'
          # <...snip...>
```

/srv/salt/tomcat/server_xml.sls:

```
{% import_yaml 'tomcat/defaults.yaml' as server_xml_defaults %}
{% set server_xml_final_values = salt.pillar.get(
    'appX:server_xml_overrides',
    default=server_xml_defaults,
    merge=True)
%}

appX_server_xml:
  file.serialize:
    - name: /etc/tomcat/server.xml
    - dataset: {{ server_xml_final_values | json() }}
    - formatter: xml_badgerfish
```

The *file.serialize* state can provide a shorthand for creating some files from data structures. There are also many examples within Salt Formulas of creating one-off ``serializers'' (often as Jinja macros) that reformat a data structure to a specific config file format. For example, **`Nginx vhosts`__** or the **`php.ini`__**

__: https://github.com/saltstack-formulas/nginx-formula/blob/5cad4512/nginx/ng/vhosts_config.sls __: https://github.com/saltstack-formulas/php-formula/blob/82e2cd3a/php/ng/files/php.ini

### Environment specific information

A single state can be reused when it is parameterized as described in the section below, by separating the data the state will use from the state that performs the work. This can be the difference between deploying *Application X* and *Application Y*, or the difference between production and development. For example:

/srv/salt/app/deploy.sls:

```
{# Load the map file. #}
{% import_yaml 'app/defaults.yaml' as app_defaults %}

{# Extract the relevant subset for the app configured on the current
   machine (configured via a grain in this example). #}
{% app = app_defaults.get(salt.grains.get('role') %}

{# Allow values from Pillar to (optionally) update values from the lookup
   table. #}
{% do app_defaults.update(salt.pillar.get('myapp', {}) %}
```

```
deploy_application:
  git.latest:
    - name: {{ app.repo_url }}
    - version: {{ app.version }}
    - target: {{ app.deploy_dir }}

myco/myapp/deployed:
  event.send:
    - data:
        version: {{ app.version }}
    - onchanges:
      - git: deploy_application
```

`/srv/salt/app/defaults.yaml`:

```
appX:
  repo_url: git@github.com/myco/appX.git
  target: /var/www/appX
  version: master
appY:
  repo_url: git@github.com/myco/appY.git
  target: /var/www/appY
  version: v1.2.3.4
```

### Single-purpose SLS files

Each sls file in a Formula should strive to do a single thing. This increases the reusability of this file by keeping unrelated tasks from getting coupled together.

As an example, the base Apache formula should only install the Apache httpd server and start the httpd service. This is the basic, expected behavior when installing Apache. It should not perform additional changes such as set the Apache configuration file or create vhosts.

If a formula is single-purpose as in the example above, other formulas, and also other states can `include` and use that formula with *Requisites and Other Global State Arguments* without also including undesirable or unintended side-effects.

The following is a best-practice example for a reusable Apache formula. (This skips platform-specific options for brevity. See the full apache-formula for more.)

```
# apache/init.sls
apache:
  pkg.installed:
    [...]
  service.running:
    [...]

# apache/mod_wsgi.sls
include:
  - apache

mod_wsgi:
  pkg.installed:
    [...]
    - require:
      - pkg: apache
```

```
# apache/conf.sls
include:
  - apache

apache_conf:
  file.managed:
    [...]
    - watch_in:
      - service: apache
```

To illustrate a bad example, say the above Apache formula installed Apache and also created a default vhost. The mod_wsgi state would not be able to include the Apache formula to create that dependency tree without also installing the unneeded default vhost.

*Formulas should be reusable.* Avoid coupling unrelated actions together.

### Parameterization

*Parameterization is a key feature of Salt Formulas* and also for Salt States. Parameterization allows a single Formula to be reused across many operating systems; to be reused across production, development, or staging environments; and to be reused by many people all with varying goals.

Writing states, specifying ordering and dependencies is the part that takes the longest to write and to test. Filling those states out with data such as users or package names or file locations is the easy part. How many users, what those users are named, or where the files live are all implementation details that **should be parameterized**. This separation between a state and the data that populates a state creates a reusable formula.

In the example below the data that populates the state can come from anywhere -- it can be hard-coded at the top of the state, it can come from an external file, it can come from Pillar, it can come from an execution function call, or it can come from a database query. The state itself doesn't change regardless of where the data comes from. Production data will vary from development data will vary from data from one company to another, however the state itself stays the same.

```
{% set user_list = [
    {'name': 'larry', 'shell': 'bash'},
    {'name': 'curly', 'shell': 'bash'},
    {'name': 'moe', 'shell': 'zsh'},
] %}

{# or #}

{% set user_list = salt['pillar.get']('user_list') %}

{# or #}

{% load_json "default_users.json" as user_list %}

{# or #}

{% set user_list = salt['acme_utils.get_user_list']() %}

{% for user in list_list %}
{{ user.name }}:
  user.present:
    - name: {{ user.name }}
```

```
    - shell: {{ user.shell }}
{% endfor %}
```

### Configuration

Formulas should strive to use the defaults of the underlying platform, followed by defaults from the upstream project, followed by sane defaults for the formula itself.

As an example, a formula to install Apache **should not** change the default Apache configuration file installed by the OS package. However, the Apache formula **should** include a state to change or override the default configuration file.

### Pillar overrides

Pillar lookups must use the safe *get()* and must provide a default value. Create local variables using the Jinja `set` construct to increase redability and to avoid potentially hundreds or thousands of function calls across a large state tree.

```
{% from "apache/map.jinja" import apache with context %}
{% set settings = salt['pillar.get']('apache', {}) %}

mod_status:
  file.managed:
    - name: {{ apache.conf_dir }}
    - source: {{ settings.get('mod_status_conf', 'salt://apache/mod_status.conf') }}
    - template: {{ settings.get('template_engine', 'jinja') }}
```

Any default values used in the Formula must also be documented in the `pillar.example` file in the root of the repository. Comments should be used liberally to explain the intent of each configuration value. In addition, users should be able copy-and-paste the contents of this file into their own Pillar to make any desired changes.

### Scripting

Remember that both State files and Pillar files can easily call out to Salt execution modules and have access to all the system grains as well.

```
{% if '/storage' in salt['mount.active']() %}
/usr/local/etc/myfile.conf:
  file:
    - symlink
    - target: /storage/myfile.conf
{% endif %}
```

Jinja macros to encapsulate logic or conditionals are discouraged in favor of *writing custom execution modules* in Python.

### Repository structure

A basic Formula repository should have the following layout:

```
foo-formula
|-- foo/
|   |-- map.jinja
|   |-- init.sls
|   `-- bar.sls
|-- CHANGELOG.rst
|-- LICENSE
|-- pillar.example
|-- README.rst
`-- VERSION
```

**See also:**

template-formula

The template-formula repository has a pre-built layout that serves as the basic structure for a new formula repository. Just copy the files from there and edit them.

### README.rst

The README should detail each available `.sls` file by explaining what it does, whether it has any dependencies on other formulas, whether it has a target platform, and any other installation or usage instructions or tips.

A sample skeleton for the `README.rst` file:

```
===
foo
===

Install and configure the FOO service.

.. note::

    See the full `Salt Formulas installation and usage instructions
    <http://docs.saltstack.com/en/latest/topics/development/conventions/formulas.html>
 ↪`_.

Available states
================

.. contents::
    :local:

``foo``
-------

Install the ``foo`` package and enable the service.

``foo.bar``
-----------

Install the ``bar`` package.
```

#### CHANGELOG.rst

The CHANGELOG.rst file should detail the individual versions, their release date and a set of bullet points for each version highlighting the overall changes in a given version of the formula.

A sample skeleton for the *CHANGELOG.rst* file:

CHANGELOG.rst:

```
foo formula
===========

0.0.2 (2013-01-01)

- Re-organized formula file layout
- Fixed filename used for upstart logger template
- Allow for pillar message to have default if none specified
```

#### Versioning

Formula are versioned according to Semantic Versioning, http://semver.org/.

---

**Note:** Given a version number MAJOR.MINOR.PATCH, increment the:

1. MAJOR version when you make incompatible API changes,
2. MINOR version when you add functionality in a backwards-compatible manner, and
3. PATCH version when you make backwards-compatible bug fixes.

Additional labels for pre-release and build metadata are available as extensions to the MAJOR.MINOR.PATCH format.

---

Formula versions are tracked using Git tags as well as the VERSION file in the formula repository. The VERSION file should contain the currently released version of the particular formula.

#### Testing Formulas

A smoke-test for invalid Jinja, invalid YAML, or an invalid Salt state structure can be performed by with the *state.show_sls* function:

```
salt '*' state.show_sls apache
```

Salt Formulas can then be tested by running each .sls file via state.apply and checking the output for the success or failure of each state in the Formula. This should be done for each supported platform.

### 17.22.3 SaltStack Packaging Guide

Since Salt provides a powerful toolkit for system management and automation, the package can be spit into a number of sub-tools. While packaging Salt as a single package containing all components is perfectly acceptable, the split packages should follow this convention.

### Patching Salt For Distributions

The occasion may arise where Salt source and default configurations may need to be patched. It is preferable if Salt is only patched to include platform specific additions or to fix release time bugs. It is preferable that configuration settings and operations remain in the default state, as changes here lowers the user experience for users moving across distributions.

In the event where a packager finds a need to change the default configuration it is advised to add the files to the master.d or minion.d directories.

### Source Files

Release packages should always be built from the source tarball distributed via pypi. Release packages should *NEVER* use a git checkout as the source for distribution.

### Single Package

Shipping Salt as a single package, where the minion, master, and all tools are together is perfectly acceptable and practiced by distributions such as FreeBSD.

### Split Package

Salt Should always be split in a standard way, with standard dependencies, this lowers cross distribution confusion about what components are going to be shipped with specific packages. These packages can be defined from the Salt Source as of Salt 2014.1.0:

### Salt Common

The *salt-common* or *salt* package should contain the files provided by the salt python package, or all files distributed from the `salt/` directory in the source distribution packages. The documentation contained under the `doc/` directory can be a part of this package but splitting out a doc package is preferred. Since salt-call is the entry point to utilize the libs and is useful for all salt packages it is included in the salt-common package.

#### Name

- *salt* OR *salt-common*

#### Files

- *salt/**
- *man/salt.7*
- *scripts/salt-call*
- *tests/**
- *man/salt-call.1*

### Depends

- *Python 2.6-2.7*
- *PyYAML*
- *Jinja2*

### Salt Master

The *salt-master* package contains the applicable scripts, related man pages and init information for the given platform.

### Name

- *salt-master*

### Files

- *scripts/salt-master*
- *scripts/salt*
- *scripts/salt-run*
- *scripts/salt-key*
- *scripts/salt-cp*
- *pkg/<master init data>*
- *man/salt.1*
- *man/salt-master.1*
- *man/salt-run.1*
- *man/salt-key.1*
- *man/salt-cp.1*
- *conf/master*

### Depends

- *Salt Common*
- *ZeroMQ* >= 3.2
- *PyZMQ* >= 2.10
- *PyCrypto*
- *M2Crypto*
- *Python MessagePack* (Messagepack C lib, or msgpack-pure)

### Salt Syndic

The Salt Syndic package can be rolled completely into the Salt Master package. Platforms which start services as part of the package deployment need to maintain a separate *salt-syndic* package (primarily Debian based platforms).

The Syndic may optionally not depend on the anything more than the Salt Master since the master will bring in all needed dependencies, but fall back to the platform specific packaging guidelines.

#### Name

- *salt-syndic*

#### Files

- *scripts/salt-syndic*
- *pkg/<syndic init data>*
- *man/salt-syndic.1*

#### Depends

- *Salt Common*
- *Salt Master*
- *ZeroMQ* >= 3.2
- *PyZMQ* >= 2.10
- *PyCrypto*
- *M2Crypto*
- *Python MessagePack* (Messagepack C lib, or msgpack-pure)

### Salt Minion

The Minion is a standalone package and should not be split beyond the *salt-minion* and *salt-common* packages.

#### Name

- *salt-minion*

#### Files

- *scripts/salt-minion*
- *pkg/<minion init data>*
- *man/salt-minion.1*
- *conf/minion*

#### Depends

- *Salt Common*
- *ZeroMQ* >= 3.2
- *PyZMQ* >= 2.10
- *PyCrypto*
- *M2Crypto*
- *Python MessagePack* (Messagepack C lib, or msgpack-pure)

### Salt SSH

Since Salt SSH does not require the same dependencies as the minion and master, it should be split out.

#### Name

- *salt-ssh*

#### Files

- *scripts/salt-ssh*
- *man/salt-ssh.1*
- *conf/cloud**

#### Depends

- *Salt Common*
- *Python MessagePack* (Messagepack C lib, or msgpack-pure)

### Salt Cloud

As of Salt 2014.1.0 Salt Cloud is included in the same repo as Salt. This can be split out into a separate package or it can be included in the salt-master package.

#### Name

- *salt-cloud*

#### Files

- *scripts/salt-cloud*
- *man/salt-cloud.1*

#### Depends

- *Salt Common*
- *apache libcloud* >= 0.14.0

#### Salt Doc

The documentation package is very distribution optional. A completely split package will split out the documentation, but some platform conventions do not prefer this. If the documentation is not split out, it should be included with the *Salt Common* package.

#### Name

- *salt-doc*

#### Files

- *doc/**

#### Optional Depends

- *Salt Common*
- *Python Sphinx*
- *Make*

### 17.22.4 Salt Release Process

The goal for Salt projects is to cut a new feature release every four to six months. This document outlines the process for these releases, and the subsequent bug fix releases which follow.

#### Feature Release Process

When a new release is ready to be cut, the person responsible for cutting the release will follow the following steps (written using the 0.16 release as an example):

1. All open issues on the release milestone should be moved to the next release milestone. (e.g. from the `0.16` milestone to the `0.17` milestone)
2. Release notes should be created documenting the major new features and bugfixes in the release.
3. Create an annotated tag with only the major and minor version numbers, preceded by the letter `v`. (e.g. `v0.16`) This tag will reside on the `develop` branch.
4. Create a branch for the new release, using only the major and minor version numbers. (e.g. `0.16`)
5. On this new branch, create an annotated tag for the first revision release, which is generally a release candidate. It should be preceded by the letter `v`. (e.g. `v0.16.0rc1`)
6. The release should be packaged from this annotated tag and uploaded to PyPI as well as the GitHub releases page for this tag.

7. The packagers should be notified on the salt-packagers mailing list so they can create packages for all the major operating systems. (note that release candidates should go in the testing repositories)
8. After the packagers have been given a few days to compile the packages, the release is announced on the salt-users mailing list.
9. Log into RTD and add the new release there. (Have to do it manually)

#### Maintenance and Bugfix Releases

Once a feature release branch has been cut from `develop`, the branch moves into a ``feature freeze'' state. The new release branch enters the `merge-forward` chain and only bugfixes should be applied against the new branch. Once major bugs have been fixed, a bugfix release can be cut:

1. On the release branch (i.e. `0.16`), create an annotated tag for the revision release. It should be preceded by the letter `v`. (e.g. `v0.16.2`) Release candidates are unnecessary for bugfix releases.
2. The release should be packaged from this annotated tag and uploaded to PyPI.
3. The packagers should be notified on the salt-packagers mailing list so they can create packages for all the major operating systems.
4. After the packagers have been given a few days to compile the packages, the release is announced on the salt-users mailing list.

For more information about the difference between the `develop` branch and bugfix release branches, please refer to the *Which Salt Branch?* section of Salt's *Contributing* documentation.

### 17.22.5 Salt Coding Style

Salt is developed with a certain coding style, while the style is dominantly PEP 8 it is not completely PEP 8. It is also noteworthy that a few development techniques are also employed which should be adhered to. In the end, the code is made to be ``Salty''.

Most importantly though, we will accept code that violates the coding style and KINDLY ask the contributor to fix it, or go ahead and fix the code on behalf of the contributor. Coding style is NEVER grounds to reject code contributions, and is never grounds to talk down to another member of the community (There are no grounds to treat others without respect, especially people working to improve Salt)!!

#### Linting

Most Salt style conventions are codified in Salt's `.pylintrc` file. Salt's pylint file has two dependencies: pylint and saltpylint. You can install these dependencies with `pip`:

```
pip install pylint
pip install saltpylint
```

The `.pylintrc` file is found in the root of the Salt project and can be passed as an argument to the pylint program as follows:

```
pylint --rcfile=/path/to/salt/.pylintrc salt/dir/to/lint
```

### Variables

Variables should be a minimum of three characters and should provide an easy-to-understand name of the object being represented.

When keys and values are iterated over, descriptive names should be used to represent the temporary variables.

Multi-word variables should be separated by an underscore.

Variables which are two-letter words should have an underscore appended to them to pad them to three characters.

### Strings

Salt follows a few rules when formatting strings:

### Single Quotes

In Salt, all strings use single quotes unless there is a good reason not to. This means that docstrings use single quotes, standard strings use single quotes etc.:

```
def foo():
    '''
    A function that does things
    '''
    name = 'A name'
    return name
```

### Formatting Strings

All strings which require formatting should use the *.format* string method:

```
data = 'some text'
more = '{0} and then some'.format(data)
```

Make sure to use indices or identifiers in the format brackets, since empty brackets are not supported by python 2.6.

Please do NOT use printf formatting.

### Docstring Conventions

Docstrings should always add a newline, docutils takes care of the new line and it makes the code cleaner and more vertical:

*GOOD*:

```
def bar():
    '''
    Here lies a docstring with a newline after the quotes and is the salty
    way to handle it! Vertical code is the way to go!
    '''
    return
```

*BAD*:

```
def baz():
    '''This is not ok!'''
    return
```

When adding a new function or state, where possible try to use a `versionadded` directive to denote when the function or state was added.

```
def new_func(msg=''):
    '''
    .. versionadded:: 0.16.0

    Prints what was passed to the function.

    msg : None
        The string to be printed.
    '''
    print msg
```

If you are uncertain what version should be used, either consult a core developer in IRC or bring this up when opening your *pull request* and a core developer will add the proper version once your pull request has been merged. Bugfixes will be available in a bugfix release (i.e. 0.17.1, the first bugfix release for 0.17.0), while new features are held for feature releases, and this will affect what version number should be used in the `versionadded` directive.

Similar to the above, when an existing function or state is modified (for example, when an argument is added), then under the explanation of that new argument a `versionadded` directive should be used to note the version in which the new argument was added. If an argument's function changes significantly, the `versionchanged` directive can be used to clarify this:

```
def new_func(msg='', signature=''):
    '''
    .. versionadded:: 0.16.0

    Prints what was passed to the function.

    msg : None
        The string to be printed. Will be prepended with 'Greetings! '.

    .. versionchanged:: 0.17.1

    signature : None
        An optional signature.

    .. versionadded 0.17.0
    '''
    print 'Greetings! {0}\n\n{1}'.format(msg, signature)
```

### Dictionaries

Dictionaries should be initialized using *{}* instead of *dict()*.

See here for an in-depth discussion of this topic.

### Imports

Salt code prefers importing modules and not explicit functions. This is both a style and functional preference. The functional preference originates around the fact that the module import system used by pluggable modules will

include callable objects (functions) that exist in the direct module namespace. This is not only messy, but may unintentionally expose code python libs to the Salt interface and pose a security problem.

To say this more directly with an example, this is *GOOD*:

```
import os

def minion_path():
    path = os.path.join(self.opts['cachedir'], 'minions')
    return path
```

This on the other hand is *DISCOURAGED*:

```
from os.path import join

def minion_path():
    path = join(self.opts['cachedir'], 'minions')
    return path
```

The time when this is changed is for importing exceptions, generally directly importing exceptions is preferred:

This is a good way to import exceptions:

```
from salt.exceptions import CommandExecutionError
```

### Absolute Imports

Although absolute imports seems like an awesome idea, please do not use it. Extra care would be necessary all over salt's code in order for absolute imports to work as supposed. Believe it, it has been tried before and, as a tried example, by renaming `salt.modules.sysmod` to `salt.modules.sys`, all other salt modules which needed to import `sys` would have to also import `absolute_import`, which should be avoided.

---

**Note:** An exception to this rule is the `absolute_import` from `__future__` at the top of each file within the Salt project. This import is necessary for Py3 compatibility. This particular import looks like this:

```
from __future__ import absolute_import
```

This import is required for all new Salt files and is a good idea to add to any custom states or modules. However, the practice of avoiding absolute imports still applies to all other cases as to avoid a name conflict.

---

### Vertical is Better

When writing Salt code, vertical code is generally preferred. This is not a hard rule but more of a guideline. As PEP 8 specifies, Salt code should not exceed 79 characters on a line, but it is preferred to separate code out into more newlines in some cases for better readability:

```
import os

os.chmod(
        os.path.join(self.opts['sock_dir'],
            'minion_event_pub.ipc'),
        448
        )
```

Where there are more line breaks, this is also apparent when constructing a function with many arguments, something very common in state functions for instance:

```
def managed(name,
        source=None,
        source_hash='',
        user=None,
        group=None,
        mode=None,
        template=None,
        makedirs=False,
        context=None,
        replace=True,
        defaults=None,
        env=None,
        backup='',
        **kwargs):
```

**Note:** Making function and class definitions vertical is only required if the arguments are longer then 80 characters. Otherwise, the formatting is optional and both are acceptable.

### Line Length

For function definitions and function calls, Salt adheres to the PEP-8 specification of at most 80 characters per line.

Non function definitions or function calls, please adopt a soft limit of 120 characters per line. If breaking the line reduces the code readability, don't break it. Still, try to avoid passing that 120 characters limit and remember, **vertical is better... unless it isn't**

### Indenting

Some confusion exists in the python world about indenting things like function calls, the above examples use 8 spaces when indenting comma-delimited constructs.

The confusion arises because the pep8 program INCORRECTLY flags this as wrong, where PEP 8, the document, cites only using 4 spaces here as wrong, as it doesn't differentiate from a new indent level.

Right:

```
def managed(name,
        source=None,
        source_hash='',
        user=None)
```

WRONG:

```
def managed(name,
    source=None,
    source_hash='',
    user=None)
```

Lining up the indent is also correct:

```
def managed(name,
            source=None,
            source_hash='',
            user=None)
```

This also applies to function calls and other hanging indents.

pep8 and Flake8 (and, by extension, the vim plugin Syntastic) will complain about the double indent for hanging indents. This is a known conflict between pep8 (the script) and the actual PEP 8 standard. It is recommended that this particular warning be ignored with the following lines in `~/.config/flake8`:

```
[flake8]
ignore = E226,E241,E242,E126
```

Make sure your Flake8/pep8 are up to date. The first three errors are ignored by default and are present here to keep the behavior the same. This will also work for pep8 without the Flake8 wrapper -- just replace all instances of `flake8' with `pep8', including the filename.

#### Code Churn

Many pull requests have been submitted that only churn code in the name of PEP 8. Code churn is a leading source of bugs and is strongly discouraged. While style fixes are encouraged they should be isolated to a single file per commit, and the changes should be legitimate, if there are any questions about whether a style change is legitimate please reference this document and the official PEP 8 (http://legacy.python.org/dev/peps/pep-0008/) document before changing code. Many claims that a change is PEP 8 have been invalid, please double check before committing fixes.

## 17.23 Salt code and internals

Reference documentation on Salt's internal code.

### 17.23.1 Contents

#### salt.aggregation

#### salt.utils.aggregation

This library makes it possible to introspect dataset and aggregate nodes when it is instructed.

---

**Note**: The following examples with be expressed in YAML for convenience's sake:

- !aggr-scalar will refer to Scalar python function
- !aggr-map will refer to Map python object
- !aggr-seq will refer for Sequence python object

---

#### How to instructs merging

This yaml document has duplicate keys:

```
foo: !aggr-scalar first
foo: !aggr-scalar second
bar: !aggr-map {first: foo}
bar: !aggr-map {second: bar}
baz: !aggr-scalar 42
```

but tagged values instruct Salt that overlapping values they can be merged together:

```
foo: !aggr-seq [first, second]
bar: !aggr-map {first: foo, second: bar}
baz: !aggr-seq [42]
```

#### Default merge strategy is keep untouched

For example, this yaml document still has duplicate keys, but does not instruct aggregation:

```
foo: first
foo: second
bar: {first: foo}
bar: {second: bar}
baz: 42
```

So the late found values prevail:

```
foo: second
bar: {second: bar}
baz: 42
```

#### Limitations

Aggregation is permitted between tagged objects that share the same type. If not, the default merge strategy prevails.

For example, these examples:

```
foo: {first: value}
foo: !aggr-map {second: value}

bar: !aggr-map {first: value}
bar: 42

baz: !aggr-seq [42]
baz: [fail]

qux: 42
qux: !aggr-scalar fail
```

are interpreted like this:

```
foo: !aggr-map{second: value}

bar: 42

baz: [fail]

qux: !aggr-seq [fail]
```

### Introspection

TODO: write this part

salt.utils.aggregation.**aggregate**(*obj_a*, *obj_b*, *level=False*, *map_class=<class `salt.utils.aggregation.Map'>*, *sequence_class=<class `salt.utils.aggregation.Sequence'>*)

Merge obj_b into obj_a.

```
>>> aggregate('first', 'second', True) == ['first', 'second']
True
```

**class** salt.utils.aggregation.**Aggregate**

Aggregation base.

**class** salt.utils.aggregation.**Map**(**args*, ***kwds*)

Map aggregation.

salt.utils.aggregation.**Scalar**(*obj*)

Shortcut for Sequence creation

```
>>> Scalar('foo') == Sequence(['foo'])
True
```

**class** salt.utils.aggregation.**Sequence**

Sequence aggregation.

### Exceptions

Salt-specific exceptions should be thrown as often as possible so the various interfaces to Salt (CLI, API, etc) can handle those errors appropriately and display error messages appropriately.

| | |
|---|---|
| *salt.exceptions* | This module is a central location for all salt exceptions |

### salt.exceptions

This module is a central location for all salt exceptions

**exception** salt.exceptions.**AuthenticationError**(*message=''*)

If sha256 signature fails during decryption

**exception** salt.exceptions.**AuthorizationError**(*message=''*)

Thrown when runner or wheel execution fails due to permissions

**exception** salt.exceptions.**CommandExecutionError**(*message=''*, *info=None*)

Used when a module runs a command which returns an error and wants to show the user the output gracefully instead of dying

**exception** salt.exceptions.**CommandNotFoundError**(*message=''*)

Used in modules or grains when a required binary is not available

**exception** salt.exceptions.**EauthAuthenticationError**(*message=''*)

Thrown when eauth authentication fails

**exception** salt.exceptions.**FileLockError**(*msg*, *time_start=None*, **args*, ***kwargs*)

Used when an error occurs obtaining a file lock

**exception** salt.exceptions.**FileserverConfigError**(*message=''*)
Used when invalid fileserver settings are detected

**exception** salt.exceptions.**GitLockError**(*errno*, *strerror*, **args*, ***kwargs*)
Raised when an uncaught error occurs in the midst of obtaining an update/checkout lock in salt.utils.gitfs.

NOTE: While this uses the errno param similar to an OSError, this exception class is *not* as subclass of OSError. This is done intentionally, so that this exception class can be caught in a try/except without being caught as an OSError.

**exception** salt.exceptions.**LoaderError**(*message=''*)
Problems loading the right renderer

**exception** salt.exceptions.**MasterExit**
Rise when the master exits

**exception** salt.exceptions.**MinionError**(*message=''*)
Minion problems reading uris such as salt:// or http://

**exception** salt.exceptions.**NotImplemented**(*message=''*)
Used when a module runs a command which returns an error and wants to show the user the output gracefully instead of dying

**exception** salt.exceptions.**PkgParseError**(*message=''*)
Used when of the pkg modules cannot correctly parse the output from the CLI tool (pacman, yum, apt, aptitude, etc)

**exception** salt.exceptions.**PublishError**(*message=''*)
Problems encountered when trying to publish a command

**exception** salt.exceptions.**SaltCacheError**(*message=''*)
Thrown when a problem was encountered trying to read or write from the salt cache

**exception** salt.exceptions.**SaltClientError**(*message=''*)
Problem reading the master root key

**exception** salt.exceptions.**SaltClientTimeout**(*msg*, *jid=None*, **args*, ***kwargs*)
Thrown when a job sent through one of the Client interfaces times out

Takes the `jid` as a parameter

**exception** salt.exceptions.**SaltCloudConfigError**(*message=''*)
Raised when a configuration setting is not found and should exist.

**exception** salt.exceptions.**SaltCloudException**(*message=''*)
Generic Salt Cloud Exception

**exception** salt.exceptions.**SaltCloudExecutionFailure**(*message=''*)
Raised when too much failures have occurred while querying/waiting for data.

**exception** salt.exceptions.**SaltCloudExecutionTimeout**(*message=''*)
Raised when too much time has passed while querying/waiting for data.

**exception** salt.exceptions.**SaltCloudNotFound**(*message=''*)
Raised when some cloud provider function cannot find what's being searched.

**exception** salt.exceptions.**SaltCloudPasswordError**(*message=''*)
Raise when virtual terminal password input failed

**exception** salt.exceptions.**SaltCloudSystemExit**(*message*, *exit_code=1*)
This exception is raised when the execution should be stopped.

**exception** salt.exceptions.**SaltConfigurationError**(*message=''*)
Configuration error

**exception** salt.exceptions.**SaltDaemonNotRunning**(*message=''*)
Throw when a running master/minion/syndic is not running but is needed to perform the requested operation (e.g., eauth).

**exception** salt.exceptions.**SaltException**(*message=''*)
Base exception class; all Salt-specific exceptions should subclass this

**pack**()
Pack this exception into a serializable dictionary that is safe for transport via msgpack

**exception** salt.exceptions.**SaltInvocationError**(*message=''*)
Used when the wrong number of arguments are sent to modules or invalid arguments are specified on the command line

**exception** salt.exceptions.**SaltMasterError**(*message=''*)
Problem reading the master root key

**exception** salt.exceptions.**SaltNoMinionsFound**(*message=''*)
An attempt to retrieve a list of minions failed

**exception** salt.exceptions.**SaltRenderError**(*message*, *line_num=None*, *buf=''*, *marker='<======================'*, *trace=None*)
Used when a renderer needs to raise an explicit error. If a line number and buffer string are passed, get_context will be invoked to get the location of the error.

**exception** salt.exceptions.**SaltReqTimeoutError**(*message=''*)
Thrown when a salt master request call fails to return within the timeout

**exception** salt.exceptions.**SaltRunnerError**(*message=''*)
Problem in runner

**exception** salt.exceptions.**SaltSyndicMasterError**(*message=''*)
Problem while proxying a request in the syndication master

**exception** salt.exceptions.**SaltSystemExit**(*code=0*, *msg=None*)
This exception is raised when an unsolvable problem is found. There's nothing else to do, salt should just exit.

**exception** salt.exceptions.**SaltWheelError**(*message=''*)
Problem in wheel

**exception** salt.exceptions.**TimedProcTimeoutError**(*message=''*)
Thrown when a timed subprocess does not terminate within the timeout, or if the specified timeout is not an int or a float

**exception** salt.exceptions.**TokenAuthenticationError**(*message=''*)
Thrown when token authentication fails

salt.exceptions.**get_error_message**(*error*)
Get human readable message from Python Exception

### Salt opts dictionary

It is very common in the Salt codebase to see *opts* referred to in a number of contexts.

For example, it can be seen as *__opts__* in certain cases, or simply as *opts* as an argument to a function in others.

Simply put, this data structure is a dictionary of Salt's runtime configuration information that's passed around in order for functions to know how Salt is configured.

When writing Python code to use specific parts of Salt, it may become necessary to initialize a copy of *opts* from scratch in order to have it available for a given function.

To do so, use the utility functions available in *salt.config*.

As an example, here is how one might generate and print an options dictionary for a minion instance:

```
import salt.config
opts = salt.config.minion_config('/etc/salt/minion')
print(opts)
```

To generate and display *opts* for a master, the process is similar:

```
import salt.config
opts = salt.config.master_config('/etc/salt/master')
print(opts)
```

## 17.24 Salt Community Projects

This page contains links to Salt-related projects created by community members. If you come across a useful project please add it to the list!

### 17.24.1 Hubblestack

Hubble is a modular, open-source security compliance framework built on top of SaltStack. The project provides on-demand profile-based auditing, real-time security event notifications, automated remediation, alerting and reporting.

http://hubblestack.io/

### 17.24.2 alkali

alkali is a collections of SaltStack states and pillar data that provide just the basics for provisioning Linux instances that may be built upon. alkali is a starter kit of sorts, to help new users to SaltStack get up-and-running quickly with the most commonly used, core packages.

https://github.com/zulily/alkali

### 17.24.3 buoyant

buoyant leverages docker to provide an alternative to VM-centric SaltStack development environments. buoyant containers may be spun up nearly instantly, once an initial docker image has been built.

https://github.com/zulily/buoyant

### 17.24.4 Salt Sandbox

Salt Sandbox is a multi-VM Vagrant-based Salt development environment used for creating and testing new Salt state modules outside of your production environment. It's also a great way to learn firsthand about Salt and its remote execution capabilities.

https://github.com/elasticdog/salt-sandbox

### 17.24.5 Salt Vagrant Demo

A Salt Demo using Vagrant.

https://github.com/UtahDave/salt-vagrant-demo

## 17.25 Salt's Test Suite: An Introduction

**Note:** This tutorial makes a couple of assumptions. The first assumption is that you have a basic knowledge of Salt. To get up to speed, check out the Salt Walkthrough.

The second assumption is that your Salt development environment is already configured and that you have a basic understanding of contributing to the Salt codebase. If you're unfamiliar with either of these topics, please refer to the *Installing Salt for Development* and the *Contributing* pages, respectively.

Salt comes with a powerful integration and unit test suite. The test suite allows for the fully automated run of integration and/or unit tests from a single interface.

Salt's test suite is located under the `tests` directory in the root of Salt's code base and is divided into two main types of tests: *unit tests and integration tests*. The `unit` and `integration` sub-test-suites are located in the `tests` directory, which is where the majority of Salt's test cases are housed.

### 17.25.1 Getting Set Up For Tests

There are a couple of requirements, in addition to Salt's requirements, that need to be installed in order to run Salt's test suite. You can install these additional requirements using the files located in the `salt/requirements` directory, depending on your relevant version of Python:

```
pip install -r requirements/dev_python26.txt
pip install -r requirements/dev_python27.txt
```

To be able to run integration tests which utilizes ZeroMQ transport, you also need to install additional requirements for it. Make sure you have installed the C/C++ compiler and development libraries and header files needed for your Python version.

This is an example for RedHat-based operating systems:

```
yum install gcc gcc-c++ python-devel
pip install -r requirements/zeromq.txt
```

On Debian, Ubuntu or their derivatives run the following commands:

```
apt-get install build-essential python-dev
pip install -r requirements/zeromq.txt
```

This will install the latest `pycrypto` and `pyzmq` (with bundled `libzmq`) Python modules required for running integration tests suite.

### 17.25.2 Test Directory Structure

As noted in the introduction to this tutorial, Salt's test suite is located in the `tests` directory in the root of Salt's code base. From there, the tests are divided into two groups `integration` and `unit`. Within each of these directories,

the directory structure roughly mirrors the directory structure of Salt's own codebase. For example, the files inside `tests/integration/modules` contains tests for the files located within `salt/modules`.

**Note:** `tests/integration` and `tests/unit` are the only directories discussed in this tutorial. With the exception of the `tests/runtests.py` file, which is used below in the *Running the Test Suite* section, the other directories and files located in `tests` are outside the scope of this tutorial.

#### Integration vs. Unit

Given that Salt's test suite contains two powerful, though very different, testing approaches, when should you write integration tests and when should you write unit tests?

Integration tests use Salt masters, minions, and a syndic to test salt functionality directly and focus on testing the interaction of these components. Salt's integration test runner includes functionality to run Salt execution modules, runners, states, shell commands, salt-ssh commands, salt-api commands, and more. This provides a tremendous ability to use Salt to test itself and makes writing such tests a breeze. Integration tests are the preferred method of testing Salt functionality when possible.

Unit tests do not spin up any Salt daemons, but instead find their value in testing singular implementations of individual functions. Instead of testing against specific interactions, unit tests should be used to test a function's logic. Unit tests should be used to test a function's exit point(s) such as any `return` or `raises` statements.

Unit tests are also useful in cases where writing an integration test might not be possible. While the integration test suite is extremely powerful, unfortunately at this time, it does not cover all functional areas of Salt's ecosystem. For example, at the time of this writing, there is not a way to write integration tests for Proxy Minions. Since the test runner will need to be adjusted to account for Proxy Minion processes, unit tests can still provide some testing support in the interim by testing the logic contained inside Proxy Minion functions.

### 17.25.3 Running the Test Suite

Once all of the *requirements* are installed, the `runtests.py` file in the `salt/tests` directory is used to instantiate Salt's test suite:

```
python tests/runtests.py [OPTIONS]
```

The command above, if executed without any options, will run the entire suite of integration and unit tests. Some tests require certain flags to run, such as destructive tests. If these flags are not included, then the test suite will only perform the tests that don't require special attention.

At the end of the test run, you will see a summary output of the tests that passed, failed, or were skipped.

The test runner also includes a `--help` option that lists all of the various command line options:

```
python tests/runtests.py --help
```

You can also call the test runner as an executable:

```
./tests/runtests.py --help
```

#### Running Integration Tests

Salt's set of integration tests use Salt to test itself. The integration portion of the test suite includes some built-in Salt daemons that will spin up in preparation of the test run. This list of Salt daemon processes includes:

- 2 Salt Masters
- 2 Salt Minions
- 1 Salt Syndic

These various daemons are used to execute Salt commands and functionality within the test suite, allowing you to write tests to assert against expected or unexpected behaviors.

A simple example of a test utilizing a typical master/minion execution module command is the test for the `test_ping` function in the `tests/integration/modules/test.py` file:

```
def test_ping(self):
    '''
    test.ping
    '''
    self.assertTrue(self.run_function('test.ping'))
```

The test above is a very simple example where the `test.ping` function is executed by Salt's test suite runner and is asserting that the minion returned with a `True` response.

### Test Selection Options

If you look in the output of the `--help` command of the test runner, you will see a section called `Tests Selection Options`. The options under this section contain various subsections of the integration test suite such as `--modules`, `--ssh`, or `--states`. By selecting any one of these options, the test daemons will spin up and the integration tests in the named subsection will run.

```
./tests/runtests.py --modules
```

---

**Note:** The testing subsections listed in the `Tests Selection Options` of the `--help` output *only* apply to the integration tests. They do not run unit tests.

---

### Running Unit Tests

While `./tests/runtests.py` executes the *entire* test suite (barring any tests requiring special flags), the `--unit` flag can be used to run *only* Salt's unit tests. Salt's unit tests include the tests located in the `tests/unit` directory.

The unit tests do not spin up any Salt testing daemons as the integration tests do and execute very quickly compared to the integration tests.

```
./tests/runtests.py --unit
```

### Running Specific Tests

There are times when a specific test file, test class, or even a single, individual test need to be executed, such as when writing new tests. In these situations, the `--name` option should be used.

For running a single test file, such as the pillar module test file in the integration test directory, you must provide the file path using `.` instead of `/` as separators and no file extension:

```
./tests/runtests.py --name=integration.modules.pillar
./tests/runtests.py -n integration.modules.pillar
```

Some test files contain only one test class while other test files contain multiple test classes. To run a specific test class within the file, append the name of the test class to the end of the file path:

```
./tests/runtests.py --name=integration.modules.pillar.PillarModuleTest
./tests/runtests.py -n integration.modules.pillar.PillarModuleTest
```

To run a single test within a file, append both the name of the test class the individual test belongs to, as well as the name of the test itself:

```
./tests/runtests.py --name=integration.modules.pillar.PillarModuleTest.test_data
./tests/runtests.py -n integration.modules.pillar.PillarModuleTest.test_data
```

The `--name` and `-n` options can be used for unit tests as well as integration tests. The following command is an example of how to execute a single test found in the `tests/unit/modules/cp_test.py` file:

```
./tests/runtests.py -n unit.modules.cp_test.CpTestCase.test_get_template_success
```

### 17.25.4 Writing Tests for Salt

Once you're comfortable running tests, you can now start writing them! Be sure to review the *Integration vs. Unit* section of this tutorial to determine what type of test makes the most sense for the code you're testing.

---

**Note**: There are many decorators, naming conventions, and code specifications required for Salt test files. We will not be covering all of the these specifics in this tutorial. Please refer to the testing documentation links listed below in the *Additional Testing Documentation* section to learn more about these requirements.

In the following sections, the test examples assume the ``new'' test is added to a test file that is already present and regularly running in the test suite and is written with the correct requirements.

---

#### Writing Integration Tests

Since integration tests validate against a running environment, as explained in the *Running Integration Tests* section of this tutorial, integration tests are very easy to write and are generally the preferred method of writing Salt tests.

The following integration test is an example taken from the `test.py` file in the `tests/integration/modules` directory. This test uses the `run_function` method to test the functionality of a traditional execution module command.

The `run_function` method uses the integration test daemons to execute a `module.function` command as you would with Salt. The minion runs the function and returns. The test also uses Python's Assert Functions to test that the minion's return is expected.

```
def test_ping(self):
    '''
    test.ping
    '''
    self.assertTrue(self.run_function('test.ping'))
```

Args can be passed in to the `run_function` method as well:

```
def test_echo(self):
    '''
    test.echo
    '''
    self.assertEqual(self.run_function('test.echo', ['text']), 'text')
```

The next example is taken from the `tests/integration/modules/aliases.py` file and demonstrates how to pass kwargs to the `run_function` call. Also note that this test uses another salt function to ensure the correct data is present (via the `aliases.set_target` call) before attempting to assert what the `aliases.get_target` call should return.

```
def test_set_target(self):
    '''
    aliases.set_target and aliases.get_target
    '''
    set_ret = self.run_function(
            'aliases.set_target',
            alias='fred',
            target='bob')
    self.assertTrue(set_ret)
    tgt_ret = self.run_function(
            'aliases.get_target',
            alias='fred')
    self.assertEqual(tgt_ret, 'bob')
```

Using multiple Salt commands in this manner provides two useful benefits. The first is that it provides some additional coverage for the `aliases.set_target` function. The second benefit is the call to `aliases.get_target` is not dependent on the presence of any aliases set outside of this test. Tests should not be dependent on the previous execution, success, or failure of other tests. They should be isolated from other tests as much as possible.

While it might be tempting to build out a test file where tests depend on one another before running, this should be avoided. SaltStack recommends that each test should test a single functionality and not rely on other tests. Therefore, when possible, individual tests should also be broken up into singular pieces. These are not hard-and-fast rules, but serve more as recommendations to keep the test suite simple. This helps with debugging code and related tests when failures occur and problems are exposed. There may be instances where large tests use many asserts to set up a use case that protects against potential regressions.

---

**Note:** The examples above all use the `run_function` option to test execution module functions in a traditional master/minion environment. To see examples of how to test other common Salt components such as runners, salt-api, and more, please refer to the Integration Test Class Examples documentation.

---

### Destructive vs Non-destructive Tests

Since Salt is used to change the settings and behavior of systems, often, the best approach to run tests is to make actual changes to an underlying system. This is where the concept of destructive integration tests comes into play. Tests can be written to alter the system they are running on. This capability is what fills in the gap needed to properly test aspects of system management like package installation.

To write a destructive test, import and use the `destructiveTest` decorator for the test method:

```
import integration
from salttesting.helpers import destructiveTest
```

```
class PkgTest(integration.ModuleCase):
    @destructiveTest
    def test_pkg_install(self):
        ret = self.run_function('pkg.install', name='finch')
        self.assertSaltTrueReturn(ret)
        ret = self.run_function('pkg.purge', name='finch')
        self.assertSaltTrueReturn(ret)
```

### Writing Unit Tests

As explained in the *Integration vs. Unit* section above, unit tests should be written to test the *logic* of a function. This includes focusing on testing `return` and `raises` statements. Substantial effort should be made to mock external resources that are used in the code being tested.

External resources that should be mocked include, but are not limited to, APIs, function calls, external data either globally available or passed in through function arguments, file data, etc. This practice helps to isolate unit tests to test Salt logic. One handy way to think about writing unit tests is to ``block all of the exits''. More information about how to properly mock external resources can be found in Salt's Unit Test documentation.

Salt's unit tests utilize Python's mock class as well as MagicMock. The `@patch` decorator is also heavily used when ``blocking all the exits''.

A simple example of a unit test currently in use in Salt is the `test_get_file_not_found` test in the `tests/unit/modules/cp_test.py` file. This test uses the `@patch` decorator and `MagicMock` to mock the return of the call to Salt's `cp.hash_file` execution module function. This ensures that we're testing the `cp.get_file` function directly, instead of inadvertently testing the call to `cp.hash_file`, which is used in `cp.get_file`.

```
@patch('salt.modules.cp.hash_file', MagicMock(return_value=False))
def test_get_file_not_found(self):
    '''
    Test if get_file can't find the file.
    '''
    path = 'salt://saltines'
    dest = '/srv/salt/cheese'
    ret = ''
    self.assertEqual(cp.get_file(path, dest), ret)
```

Note that Salt's `cp` module is imported at the top of the file, along with all of the other necessary testing imports. The `get_file` function is then called directed in the testing function, instead of using the `run_function` method as the integration test examples do above.

The call to `cp.get_file` returns an empty string when a `hash_file` isn't found. Therefore, the example above is a good illustration of a unit test ``blocking the exits'' via the `@patch` decorator, as well as testing logic via asserting against the `return` statement in the `if` clause.

There are more examples of writing unit tests of varying complexities available in the following docs:

- Simple Unit Test Example
- Complete Unit Test Example
- Complex Unit Test Example

---

**Note**: Considerable care should be made to ensure that you're testing something useful in your test functions. It is very easy to fall into a situation where you have mocked so much of the original function that the test results in

only asserting against the data you have provided. This results in a poor and fragile unit test.

### 17.25.5 Automated Test Runs

SaltStack maintains a Jenkins server which can be viewed at https://jenkins.saltstack.com. The tests executed from this Jenkins server create fresh virtual machines for each test run, then execute the destructive tests on the new, clean virtual machine. This allows for the execution of tests across supported platforms.

### 17.25.6 Additional Testing Documentation

In addition to this tutorial, there are some other helpful resources and documentation that go into more depth on Salt's test runner, writing tests for Salt code, and general Python testing documentation. Please see the follow references for more information:

- *Salt's Test Suite Documentation*
- Integration Tests
- Unit Tests
- MagicMock
- Python Unittest
- Python's Assert Functions

CHAPTER 18

# Release Notes

See the version numbers page for more information about the version numbering scheme.

## 18.1 Latest Branch Release

*Salt 2016.3.5 Release Notes*

## 18.2 Previous Releases

### 18.2.1 Salt 2016.3.0 Release Notes - Codename Boron

#### Known Issues

**Warning: Some Salt Masters may need to apply a patch for Default Job Cache to prevent a possible crash**

An issue exists that prevents the Salt master from cleaning the default job cache. This issue can cause an overconsumption of resources resulting in a crash. 2016.3.0 Salt masters should apply the patch in :PR:`33555`. This issue will be addressed in 2016.3.1.

- issue 33516: When upgrading from 2015.8.10 to 2016.3.0 on centos7/redhat7 salt-minion must be restarted twice.
- issue 33517: SPM does not work on amazon linux 2015 in 2016.3.0.

#### Backwards-incompatible Changes

- The default path for the `extension_modules` master config option has been changed. Prior to this release, the location was a directory named `extmods` in the Salt cachedir. On most platforms, this would put the `extension_modules` directory in `/var/cache/salt/extmods`. It has been moved one directory down, into the master cachedir. On most platforms, this is `/var/cache/salt/master/extmods`. Most users won't have to worry about this, but those who have been manually placing custom runners into `/var/cache/salt/extmods/runners`, or ouputters into `/var/cache/salt/extmods/output`, etc. will be affected by this. To transition, it is recommended not to simply move the extmods directory into `/var/cache/salt/master`, but to copy the custom modules into the salt fileserver under

`salt://_runners`, `salt://_output`, etc. and sync them using the functions in the new *saltutil runner*.

- The `pkg.check_db` function has been removed for yum/dnf.

### Core Changes

- The `onchanges` requisite now fires if **any** watched state changes. issue 19592.
- The `ext_pillar` functions **must** now accept a minion ID as the first argument. This stops the deprecation path started in Salt 0.17.x. Before this minion ID first argument was introduced, the minion ID could be retrieved accessing `__opts__['id']` losing the reference to the master ID initially set in opts. This is no longer the case, `__opts__['id']` will be kept as the master ID.
- Custom types can now be synced to the master using the new *saltutil runner*. Before, these needed to manually be placed under the *extension_modules* directory. This allows custom modules to easily be synced to the master to make them available when compiling Pillar data. Just place custom runners into `salt://_runners`, custom outputters into `salt://_output`, etc. and use the functions from the *saltutil runner* to sync them.
- The `client_acl` configuration options were renamed to `publisher_acl`.
- Added a new `--config-dump` option (issue 26639).
- TCP Transport presence events were updated to work with a NAT (PR 30629).
- A *minion_pillar_cache* setting was added to save rendered pillar data to cachedir for later use when file_client is set to local (PR 30428).
- Added the ability for binary data (such as a license key) to be distributed via pillar using the *file.managed* (issue 9569).
- Scheduled jobs now include `success` and `retcode` (issue 24237).
- The `saltversioninfo` grain was changed from a string to a list to enable reading values by index. (PR 30082).
- A *pillar_merge_lists* option was added to enable recursively merging pillar lists by aggregating them instead of replacing them (PR 30062).
- Grain values reported by Debian 8 (jessie) when lsb-release is installed were updated for consistency (PR 28649).
- A new option for minions called master_tries has been added. This specifies the number of times a minion should attempt to contact a master to attempt a connection. This allows better handling of occasional master downtime in a multi-master topology.
- The default directory for deploying the salt-thin tarball has changed for salt-ssh. It is now /var/tmp instead of /tmp. Users may also wish to delete any directories in /tmp ending with *_salt/*. (issue 32771)

### External Module Packaging

Modules may now be packaged via entry-points in setuptools. See external module packaging tutorial for more information.

### Cloud Changes

- Refactored the OpenNebula driver and added numerous `--function` and `--action` commands to enhance Salt support for image, template, security group, virtual network and virtual machine management in OpenNebula.
- Added execution/state modules to support the deployment of AWS cognito identity pools (PR 31094).
- Added ability to set tags and listener policies on a AWS ELB (PR 27552).

### Platform Changes

- Renamed modules related to OS X. The following module filenames were changed. The virtual name remained unchanged.
- **PR** #30558: renamed osxdesktop.py to mac_desktop.py
- **PR** #30557: renamed macports.py to mac_ports.py
- **PR** #30556: renamed darwin_sysctl.py to mac_sysctl.py
- **PR** #30555: renamed brew.py to mac_brew.py
- **PR** #30552: renamed darwin_pkgutil.py to mac_pkgutil.py

### Package Support

- Ubuntu Xenial: Packages for Ubuntu Xenial (16.04) are available for 2016.3.0 and onwards. See repo.saltstack.com for more information. Note that Xenial comes with Debian's packaged version of Salt 2015.8.8 and official repo.saltstack.com packages are available for 2015.8 releases beginning with Salt 2015.8.11.

### Proxy Minion Changes

The deprecated config option `enumerate_proxy_minions` has been removed.

As mentioned in earlier documentation, the `add_proxymodule_to_opts` configuration variable defaults to `False` in this release. This means if you have proxymodules or other code looking in `__opts__['proxymodule']` you will need to set this variable in your `/etc/salt/proxy` file, or modify your code to use the *__proxy__* injected variable.

The `__proxyenabled__` directive now only applies to grains and proxy modules themselves. Standard execution modules and state modules are not prevented from loading for proxy minions.

Support has been added to Salt's loader allowing custom proxymodules to be placed in `salt://_proxy`. Proxy minions that need these modules will need to be restarted to pick up any changes. A corresponding utility function, `saltutil.sync_proxymodules`, has been added to sync these modules to minions.

Enhancements in grains processing have made the `__proxyenabled__` directive somewhat redundant in dynamic grains code. It is still required, but best practices for the `__virtual__` function in grains files have changed. It is now recommended that the `__virtual__` functions check to make sure they are being loaded for the correct proxytype, example below:

```
def __virtual__():
    '''
    Only work on proxy
    '''
    try:
        if salt.utils.is_proxy() and \
```

```
            __opts__['proxy']['proxytype'] == 'ssh_sample':
             return __virtualname__
    except KeyError:
        pass

    return False
```

The try/except block above exists because grains are processed very early in the proxy minion startup process, sometimes earlier than the proxy key in the `__opts__` dictionary is populated.

Grains are loaded so early in startup that no dunder dictionaries are present, so `__proxy__`, `__salt__`, etc. are not available. Custom grains located in `/srv/salt/_grains` and in the salt install grains directory can now take a single argument, `proxy`, that is identical to `__proxy__`. This enables patterns like

```
def get_ip(proxy):
    '''
    Ask the remote device what IP it has
    '''
    return {'ip':proxy['proxymodulename.get_ip']()}
```

Then the grain `ip` will contain the result of calling the `get_ip()` function in the proxymodule called `proxymodulename`.

Proxy modules now benefit from including a function called `initialized()`. This function should return `True` if the proxy's `init()` function has been successfully called. This is needed to make grains processing easier.

Finally, if there is a function called `grains` in the proxymodule, it will be executed on proxy-minion startup and its contents will be merged with the rest of the proxy's grains. Since older proxy-minions might have used other methods to call such a function and add its results to grains, this is config-gated by a new proxy configuration option called `proxy_merge_grains_in_module`. This defaults to `False` in this release. It will default to True in the release after next. The next release is codenamed **Carbon**, the following is **Nitrogen**.

The example proxy minions `rest_sample` and `ssh_sample` have been updated to reflect these changes.

### Syndic Updates

A major performance and management issue was found and fixed in the syndic. This makes the Salt Syndic substantially more reliable and performant. Please make sure that the syndic and the master of masters which syndics attach to are updated, otherwise the syndic fixes alone can cause minor performance issues with older master of masters. Please update masters first, then syndics. Minions do not need to be updated for this fix to work.

### Module Changes

- *file execution module*: `show_diff` is deprecated in favor of `show_changes`. (PR 30988)
- *reg execution module*:
  - Removed the following deprecated functions from the reg module (PR 30956):
    - read_key
    - set_key
    - create_key
    - delete_key
  - Removed force parameter from reg state module

  - Fixed virtual function in state
  - Improved error information for `reg.delete_value` function

- *jboss7 execution module*: `deployed` function was decoupled from Artifactory by removing Artifactory-specific functionality. Note that the changes in some of the function arguments break existing state files, see issue 30515 and PR 3080 for details.
- *pkg state module*: The `wait` function was removed, the functionality was replaced with the `onchanges` requisite (PR 30297).
- *firewalld state module*: A `permanent` argument was added `add_port`. Note that `permanent` defaults to `True`, which changes previous behavior (PR 30275). A `bind` function was also added that allows binding zones to interfaces and sources (PR 29497).
- *journald beacon module*: The event string was updated to include a tag. Note this this might impact existing reactors based on this beacon. (PR 30116).
- *postgres_privileges state module*: The default value of the `prepend` argument was changed from `None` to `public`.
- *zenoss execution module*: The `add_device` function was updated with a default value of `1000` for `prod_state` to match the documentation (PR 28924).
- The etcd execution module, state module, returner module, and util module were refactor (PR 28599). This refactor changes error returns for several functions (primarily edge cases):
  - get: Used to return `` on key-not-found. Now returns None.
  - set: Used to return `` on issues setting keys. Now returns None.
  - ls: Used to return {path: {}} on key-not-found. Now returns None.
  - Tree: Used to return {} on key-not-found. Now returns None.
- *smartos_virt execution module*: Updated to use most of the new smartos_vmadm (PR 28284).
- *apache_conf state module*, *apache_module state module*, and *apache_site state module*: the `enable` and `disable` functions were renamed to `enabled` and `disabled`, respectively. In PR 33562, these functions were readded and properly deprecated and will be removed in Salt Nitrogen. This fix will be available in 2016.3.1. As a workaround, try

```
apache_module.enable{{ 'd' if grains.saltversioninfo == [2016, 3, 0] else '' }}
```

### New Features

#### Thorium - Provisional New Reactor

The 2016.3 release introduces the new Thorium Reactor. This reactor is an experimental new feature that implements a flow programming interface using the salt state system as the engine. This means that the Thorium reactor uses a classic state tree approach to create a reactor that can aggregate event data from multiple sources and make aggregate decisions about executing reactions.

This feature is both experimental and provisional, it may be removed and APIs may be changed. This system should be considered as ambitious as the Salt State System in that the scope of adding a programmable logic engine of this scale into the event systems is non trivial.

See Thorium Complex Reactor.

### Improved Mac OS Support

### Improved Solaris Support

A lot of work was done to improve support for SmartOS. This work also resulted in improvements for Solaris and illumos as SmartOS.

- rewrite of *vmadm module* (SmartOS)
- rewrite of *imgadm module* (SmartOS)
- deprecation of *virt module* in favor of vmadm (SmartOS)
- implemented *smartos state* (SmartOS)
- improved *zpool module* add SmartOS, illumos and Solaris support
- improved *zfs module* add SmartOS, illumos and Solaris support
- implemented *zpool state*
- implemented *zfs state* implemented *solaris_system* system module to provide better Solaris support (PR 30519)
- other minor fixes to grains, localmod, ...

### Tornado Transport

**Important:** The Tornado Transport wire protocol was changed in 2016.3, making it incompatible with 2015.8 (PR 29339).

### Windows DSC Integration (Experiemental)

### Dimension Data Cloud Support

A SaltStack Cloud driver for Dimension Data Public Cloud, provides the driver functionality to service automation for any of the Dimension Data Public Cloud locations:

- Deploy new virtual machines
- List and query virtual machine images
- Destroy and query virtual machines

Documentation of the Dimension Data SaltStack integration is found on developer.dimensiondata.com

### Minion Blackout

During a blackout, minions will not execute any remote execution commands, except for saltutil.refresh_pillar. Blackouts are enabled using a special pillar key, `minion_blackout` set to `True`.

See *Minion Blackout*.

#### Splunk Returner

A Splunk Returner that uses HTTP Event Collector is now available (PR 30718).

#### SQLCipher Pillar Module

Support was added for retrieving pillar data via queries to SQLCiper databases (PR 29782).

#### New Modules

The following list contains a link to the new modules added in this release.

#### Beacons

- *beacons.adb*
- *beacons.glxinfo*
- *beacons.memusage*
- *beacons.network_settings*
- *beacons.proxy_example*
- *beacons.salt_proxy*

#### Engines

- *engines.docker_events*
- *engines.redis_sentinel*
- *engines.slack*
- *engines.sqs_events*
- *engines.thorium*

#### Execution Modules

- *modules.bcache*
- *modules.beacons*
- *modules.boto_cloudtrail*
- *modules.boto_datapipeline*
- *modules.boto_iot*
- *modules.boto_lambda*
- modules.boto_s3_bucket
- *modules.chronos*
- modules.cytest

- *modules.dockercompose*
- modules.dsc
- *modules.ethtool*
- *modules.github*
- *modules.infoblox*
- *modules.iwtools*
- *modules.jenkins*
- *modules.linux_ip*
- *modules.mac_assistive*
- *modules.mac_brew*
- *modules.mac_defaults*
- *modules.mac_desktop*
- *modules.mac_keychain*
- *modules.mac_pkgutil*
- *modules.mac_ports*
- *modules.mac_power*
- *modules.mac_service*
- *modules.mac_shadow*
- *modules.mac_softwareupdate*
- *modules.mac_sysctl*
- *modules.mac_system*
- *modules.mac_timezone*
- *modules.mac_xattr*
- *modules.marathon*
- *modules.minion*
- *modules.openvswitch*
- *modules.opkg*
- *modules.philips_hue*
- *modules.proxy*
- *modules.pushbullet*
- *modules.restartcheck*
- *modules.s6*
- *modules.salt_proxy*
- *modules.ssh_package*
- *modules.ssh_service*
- *modules.sysfs*

- *modules.vboxmanage*
- *modules.win_certutil*
- *modules.win_dism*
- *modules.win_dism*
- *modules.win_license*
- *modules.win_iis*
- *modules.win_task*
- *modules.zabbix*

#### Pillar

- *pillar.http_yaml*
- *pillar.stack*

#### Proxy

- *proxy.chronos*
- *proxy.junos*
- *proxy.marathon*
- proxy.phillips_hue
- *proxy.ssh_sample*

#### Roster

- *roster.range*

#### States

- *states.apache_conf*
- *states.apache_site*
- *states.boto_cloudtrail*
- *states.boto_datapipeline*
- *states.boto_iot*
- states.boto_lamda
- *states.boto_s3_bucket*
- *states.chocolatey*
- *states.chronos_job*
- *states.firewall*
- *states.github*

- *states.gpg*
- *states.grafana_dashboard*
- *states.grafana_datasource*
- *states.infoblox*
- *states.jenkins*
- *states.mac_assistive*
- *states.mac_defaults*
- *states.mac_keychain*
- *states.mac_xattr*
- *states.marathon_app*
- *states.openvswitch_bridge*
- *states.openvswitch_port*
- *states.postgres_cluster*
- states.proxy
- *states.salt_proxy*
- *states.virt*
- *states.win_certutil*
- *states.win_dism*
- *states.win_license*
- *states.zabbix_host*
- *states.zabbix_hostgroup*
- *states.zabbix_user*
- *states.zabbix_usergroup*

### 18.2.2 Salt 2016.3.1 Release Notes

Version 2016.3.1 is a bugfix release for *2016.3.0*.

**Final Release of Debian 7 Packages**

Regular security support for Debian 7 ended on April 25th 2016. As a result, 2016.3.1 and 2015.8.10 will be the last Salt releases for which Debian 7 packages are created.

#### Changes for v2016.3.0..v2016.3.1

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2016-06-08T22:43:50Z*

Total Merges: **87**

Changes:

- **PR** #33866: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3

- **PR** #33860: (*cachedout*) Allow socket closes when the socket is disconnected
- b183a36 Set master and cloud to log level warning (#33861)
- **PR** #33698: (*opdude*) Vsphere fixes
- **PR** #33771: (*twangboy*) Additional functionality to win_dism.py
- **PR** #33851: (*ticosax*) [dockerng] Add support for edge case when *Cmd* and *Entrypoint* can't be blanked
- **PR** #33821: (*cachedout*) Restore default log level to warning
- **PR** #33767: (*amontalban*) Fix #33604 implementation when `geom disk list' does not output rotat...
- **PR** #33806: (*cachedout*) Work around upstream cherrypy bug
- **PR** #33776: (*danslimmon*) Fixed ACL user comparison. Resolves **`#33754`_**.
- **PR** #33763: (*abednarik*) Insert --no-refresh before install in Zypper.
- **PR** #33764: (*terminalmage*) Merge instead of update pillar overrides
- **PR** #33772: (*danslimmon*) Fixed spelling of ``through''
- **PR** #33651: (*cachedout*) Restore grains context to renderers
- **PR** #33757: (*cachedout*) Reminder not to return non-serializable data from states
- **PR** #33670: (*rallytime*) Handle non-ascii package names in state.format_log
- **PR** #33723: (*rallytime*) Back-port #33641 to 2016.3
- **PR** #33748: (*ticosax*) HostConfig has been introduced by docker api version 1.15
- **PR** #33745: (*eliasp*) Typo (*privilages* → *privileges*)
- **PR** #33562: (*jfindlay*) states.apache_*: readd and deprecate enable and disable
- **PR** #33659: (*danslimmon*) Added test mode to states.dockerng. Resolves **`#33632`_**.
- **PR** #33696: (*clburlison*) Update mac native package for upcoming release
- **PR** #33710: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- e87c310 backport #33599 to 2016.3 (#33682)
- 377556a Undo __repr__() and __str__() parts of d5a7dcc (#33688)
- 778b290 Remove explicit PW column default from mysql_user (#33690)
- **PR** #33680: (*rallytime*) Back-port #32942 to 2016.3
- **PR** #33677: (*twangboy*) Pass kwargs to cmd.run
- **PR** #33648: (*terminalmage*) salt.modules.pkgng: Fix incorrect usage of _pkg()
- **PR** #33646: (*jfindlay*) Fix more tmp paths on MacOS
- **PR** #33656: (*cachedout*) Fix indentation error in minion.py
- **PR** #33637: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- b7230bd Back-port #33613 to 2016.3 (#33638)
- **PR** #33606: (*danslimmon*) Fixed ini.options_absent. Resolves **`#33590`_**.
- **PR** #33604: (*kev009*) Fix **`#33578`_** disks grain
- 259529e Use correct state name in libvirt formula doc (#33631)
- **PR** #33603: (*sjorge*) allow esky packages to be build on base64 2015Q4

- **PR** #33576: (*tomlaredo*) Fix `#33565`_ (typo causes invalid syntax)
- **PR** #33549: (*thatch45*) Fix for `#33530`_
- **PR** #33538: (*anlutro*) Fix a KeyError if group is provided but not user in cmd states
- **PR** #33550: (*jacobhammons*) Fixes display of thorium docs
- **PR** #33509: (*twangboy*) Detect System Architecture for Mac Build
- **PR** #33522: (*jfindlay*) rework modules.mac_brew.latest_version to work around brew version inconsistency
- **PR** #33519: (*jacobhammons*) New doc site layout, 2016.3.0 release note known issue additions
- **PR** #33508: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #33505: (*twangboy*) Fix build script where pip didn't work
- **PR** #33076: (*cachedout*) Avoid second grains load on windows multiprocessing

### 18.2.3 Salt 2016.3.2 Release Notes

Version 2016.3.2 is a bugfix release for *2016.3.0*.

#### Returner Changes

- Any returner which implements a `save_load` function is now required to accept a `minions` keyword argument. All returners which ship with Salt have been modified to do so.

#### Changes for v2016.3.1..2016.3.2

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2016-07-27T15:47:45Z*

Statistics:

- Total Merges: **198**

Changes:

- **PR** #34946: (*anlutro*) Fix virtualenv behavior when requirements files are in subdirectories
- **PR** #34957: (*sjmh*) Don't fall through to checking auth entries
- **PR** #34971: (*cachedout*) Increase timeout for grains test
- **PR** #34951: (*vutny*) Fix #34873
- **PR** #34935: (*rallytime*) Avoid UnboundLocalError in beacons module
- **PR** #34956: (*cachedout*) Increase all run_script timeouts to 30s
- **PR** #34933: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34916: (*cachedout*) Master performance improvement
- **PR** #34911: (*cachedout*) Backport #34906
- **PR** #34906: (*cachedout*) Set timeout for run_salt in test suite
- **PR** #34898: (*hrumph*) Stop multiple refreshes during call to pkg.list_upgrades
- **PR** #34915: (*abednarik*) Update service_rh provider to exclude XenServer >= 7.

- **PR** #34926: (*rallytime*) Lint #34923
- **PR** #34923: (*eliasp*) Handle exception when no Slack API key was provided
- **PR** #34910: (*cachedout*) Fix grains error on proxy minions
- **PR** #34864: (*jmacfar*) Check for version in list of installed versions
- **PR** #34902: (*rallytime*) Back-port #34878 to 2016.3
- **PR** #34878: (*abednarik*) Add VirtuozzoLinux is yumpkg enable list.
- **PR** #34901: (*rallytime*) Add VirtuozzoLinux to the list of enabled distros for rpm.py
- **PR** #34900: (*rallytime*) Add VirtuozzoLinux to enabled platforms list in rh_service.py
- **PR** #34887: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34869: (*terminalmage*) Fail git.latest states with uncommitted changes when force_reset=False
- **PR** #34862: (*thatch45*) Fix salt-ssh cacheing issue
- **PR** #34859: (*cachedout*) Fix wheel test
- **PR** #34632: (*eliasp*) Try to create the log directory when not present yet
- **PR** #34854: (*rallytime*) Remove string_types import from state compiler
- **PR** #34865: (*thatch45*) This needs discussion, since this breaks SUSE
- **PR** #34858: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34847: (*cachedout*) Add an option to skip the verification of client_acl users
- **PR** #34833: (*rallytime*) Back-port #28521 to 2015.8
- **PR** #34828: (*thatch45*) Fix #34648
- **PR** #34827: (*thatch45*) fix beacon list to include all beacons being processed
- **PR** #34823: (*rallytime*) Back-port #25276 to 2015.8
- **PR** #34822: (*thatch45*) Fix salt-ssh state.high and state.low
- **PR** #28521: (*gongled*) SPM: packaging doesn't work in Python 2.6. Fixed.
- **PR** #25276: (*jacobhammons*) copy spm.1 man page during setup
- **PR** #34852: (*rallytime*) Skip GCE unit tests - causes test suite to hang
- **PR** #34844: (*vutny*) Fix getting total available memory without *psutil* installed
- **PR** #34837: (*thatch45*) Fix #34345
- **PR** #34838: (*thatch45*) Check if a valid value is passed to unlyif/unless
- **PR** #34840: (*thatch45*) update the state wrapper to include show_low_sls
- **PR** #34842: (*sjorge*) 2016.3 zpool cleanup and fixes
- **PR** #34770: (*aphor*) zpool state module needs support for disk vdev #34762
- **PR** #34825: (*thatch45*) keep this beacon from stack tracing at the loader
- **PR** #34824: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34818: (*jtand*) Skip mysql state test if mysqladmin is not available
- **PR** #34803: (*junovitch*) salt/state.py: set **`chunk['order'] = 0' with `order: first'; fixes `#24744`_**
- **PR** #34642: (*jtand*) Check that mysqladmin exists before running mysql integration tests

- **PR** #34670: (*isbm*) Add ``osmajorrelease'' grain (2016.3)
- **PR** #34683: (*cachedout*) Fix publisher leak
- **PR** #34791: (*sjorge*) salt.state.zpool tweaks
- **PR** #34784: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34773: (*randomed*) Bugfix: Startup states on minions are not being written to mysql returner
- **PR** #34754: (*cachedout*) Disable test
- **PR** #34751: (*cachedout*) Remove unnedeed config test
- **PR** #34741: (*rallytime*) Back-port #34726 to 2015.8
- **PR** #34726: (*martinhoefling*) Always loop over updated keys in non recursive update
- **PR** #34606: (*isbm*) Bugfix: Exit on configuration read (backport)
- **PR** #34756: (*jacobhammons*) Rebuild man pages
- **PR** #34746: (*rallytime*) Update azure lib dep to match the one in cloud.clouds.msazure
- **PR** #34744: (*jtand*) Test valid docs fix
- **PR** #34740: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34721: (*rallytime*) Add output_file option to master config docs
- **PR** #34607: (*isbm*) Bugfix: Exit on configuration read (backport)
- **PR** #34739: (*cachedout*) Remove unnedeed config test
- **PR** #34607: (*isbm*) Bugfix: Exit on configuration read (backport)
- **PR** #34722: (*rallytime*) Various spelling fixes
- **PR** #34714: (*sjmh*) Fix ldap auth for function matches
- **PR** #34720: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34695: (*isbm*) Bugfix: Zypper *pkg.list_products* returns False on some empty values (2015.8)
- **PR** #34689: (*Azidburn*) fix second run problems with pkg.installed using sources
- **PR** #34682: (*jfindlay*) update 2015.8.11 release notes
- **PR** #34707: (*rallytime*) Add versionadded to ``special'' option in cron.present state
- **PR** #34696: (*isbm*) Bugfix: Zypper *pkg.list_products* returns False on some empty values (2016.3)
- **PR** #34702: (*farcaller*) Fixed dockerng.list_tags
- **PR** #34681: (*rallytime*) Back-port #34549 to 2016.3
- **PR** #34549: (*Inveracity*) fixes multiple values in mof configuration
- **PR** #34679: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34676: (*cachedout*) Revert ``Modify lodaer global test to use populated dunders''
- **PR** #34651: (*rallytime*) Lint 34644
- **PR** #34647: (*cachedout*) Adjust the mine test a little bit to give it a better chance of success
- **PR** #34644: (*cachedout*) Cleanup loader errors
- **PR** #34642: (*jtand*) Check that mysqladmin exists before running mysql integration tests
- **PR** #34618: (*jtand*) Network state integration test test=True

- **PR** #34601: (*lorengordon*) Clarifies the proper way to reference states
- **PR** #34605: (*gtmanfred*) catch error if no dns domains exist
- **PR** #34557: (*jacobweinstock*) handle jboss cli expression type in the parsing of output
- **PR** #34652: (*rallytime*) Spelling fixes found in sqlite3 pillar docs
- **PR** #34565: (*Ch3LL*) add num_cpus grain to freebsd
- **PR** #34621: (*jtand*) Suse Leap doesn't have `man'
- **PR** #34619: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34617: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #34593: (*rallytime*) Back-port #33851 to 2015.8
- **PR** #34592: (*jtand*) Update github IP for ssh state integration tests
- **PR** #34591: (*jtand*) Gate docker unit test to check for docker
- **PR** #34590: (*oeuftete*) [2015.8] dockerng: When sorting list actual_data, make it a list
- **PR** #34584: (*rallytime*) [2015.5] Avoid circular imports when calling salt.utils functions
- **PR** #34560: (*terminalmage*) Add a bunch of documentation on getting files from other environments
- **PR** #34545: (*terminalmage*) Handle cases where Docker Remote API returns an empty ExecutionDriver
- **PR** #34531: (*terminalmage*) Support ignore_epoch argument in version comparisons
- **PR** #33851: (*ticosax*) [dockerng] Add support for edge case when *Cmd* and *Entrypoint* can't be blanked
- **PR** #34585: (*rallytime*) [2016.3] Avoid salt.utils circular imports when using ``from''
- **PR** #34616: (*jacobhammons*) Adds a mock required for the network settings beacon
- **PR** #34553: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34546: (*rallytime*) Rename unit.states.boto_secgroup to unit.states.boto_secgroup_test
- **PR** #34537: (*rallytime*) Rename tests.unit.simple to tests.unit.simple_test
- **PR** #34527: (*rallytime*) [2015.8] Update bootstrap script to latest stable
- **PR** #34521: (*cachedout*) Prevent many errors in the test suite in loader tests
- **PR** #34518: (*terminalmage*) Fix pkg.latest integration test for non-LTS ubuntu
- **PR** #34507: (*AAbouZaid*) Fix wrong order of retention_policy_exists.
- **PR** #34569: (*eliasp*) Minor doc fixes for PostgreSQL states
- **PR** #34524: (*terminalmage*) yumpkg: Avoid spurious logging in pkg.upgrade
- **PR** #34490: (*cachedout*) Fix master crash on ctl-c for long-running job
- **PR** #34520: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34513: (*cachedout*) Lower the log level for modules which cannot be loaded to trace
- **PR** #34505: (*terminalmage*) Improve top file merging documentation
- **PR** #34503: (*rallytime*) Rename some unit test files by adding _test
- **PR** #34498: (*rallytime*) Use -O in the wget example in the bootstrap tutorial for the develop branch
- **PR** #34492: (*zer0def*) Gracefully handle non-XML output in GlusterFS execution module.
- **PR** #34489: (*jtand*) Use skipTest for network state integration test

- **PR** #34488: (*rallytime*) Update dnsmasq.get_config docs to use correct config_file param.
- **PR** #34499: (*gtmanfred*) remove unnecessary block parsing ip addrs for nova
- **PR** #34468: (*twangboy*) Use Python 2.7.12 for Windows Build
- **PR** #34493: (*twangboy*) Use Python 2.7.12 for Mac Build
- **PR** #34486: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34467: (*rallytime*) Back-port #34457 to 2015.8
- **PR** #34462: (*terminalmage*) Use --always when available to git describe
- **PR** #34457: (*ryan-lane*) Only access key metadata if we found key metadata
- **PR** #34455: (*cro*) Forgot reference to inotify
- **PR** #34432: (*twangboy*) Fix file.append
- **PR** #34429: (*terminalmage*) Skip version checking for targeted packages in pkg.latest state
- **PR** #34459: (*terminalmage*) Ignore retcode when formatting highstate output
- **PR** #34463: (*terminalmage*) states/git: pass required cwd parameter to git.describe.
- **PR** #34466: (*rallytime*) Back-port #34436 to 2016.3
- **PR** #34436: (*artxki*) Fix #34395 Nonfunctional default_password in states.postgres_user.present
- **PR** #34453: (*jtand*) Arch linux does not have osrelease or osmajorrelease grains
- **PR** #34456: (*thatch45*) Be more careful when making the SMinion
- **PR** #34452: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34451: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #34435: (*cachedout*) Backport change to integraiton test suite
- **PR** #34426: (*cro*) Document that inotify is Linux only
- **PR** #34401: (*terminalmage*) Use rpmdev-vercmp as a fallback for version comparison on RHEL5
- **PR** #34366: (*steverweber*) Update service.py
- **PR** #34427: (*twangboy*) Automated signing fixes for Ubuntu 16.04, 14.04, 12.04 (for dmurphy)
- **PR** #34400: (*cachedout*) Fix uninitialized value
- **PR** #34404: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34392: (*cro*) Clarify that salt-cloud doesn't get installed by bootstrap
- **PR** #34377: (*terminalmage*) Optimize pkg integration tests and add a couple new tests
- **PR** #34373: (*jtand*) Network state integration test
- **PR** #34292: (*twangboy*) Fix runas function for System Account
- **PR** #34388: (*rallytime*) Back-port #34378 to 2016.3
- **PR** #34378: (*adelcast*) network_settings.py: fix documentation
- **PR** #34352: (*cro*) Esxi dvs
- **PR** #34386: (*rallytime*) Beacon network docs
- **PR** #34376: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34368: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8

- **PR** #34344: (*rallytime*) Back-port #34324 to 2015.8
- **PR** #34342: (*rallytime*) Back-port #34316 to 2015.8
- **PR** #34324: (*cachedout*) Test custom grains matcher
- **PR** #34316: (*edgan*) Making salt-ssh pass proper return codes for jinja rendering errors
- **PR** #34252: (*gtmanfred*) return list of nodes for lxc driver when called directly
- **PR** #34365: (*sjorge*) fixes computenode_* grains on SmartOS compute nodes
- **PR** #34353: (*cro*) Remove proxy check and additional GetConnection--this makes the proxy…
- **PR** #34348: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34339: (*terminalmage*) Revert py3modernize lint changes
- **PR** #34335: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #34325: (*terminalmage*) Remove unnecessarily-disabled sanity check
- **PR** #34323: (*jacobhammons*) Doc clarifications to file modules, addition of new *profile* log lev…
- **PR** #34319: (*rallytime*) Back-port #34244 to 2015.8
- **PR** #34313: (*rallytime*) [2015.5] Update to latest bootstrap script v2016.06.27
- **PR** #34312: (*rallytime*) [2015.8] Update to latest bootstrap script v2016.06.27
- **PR** #34307: (*rallytime*) Fix test example in integration testing docs
- **PR** #34306: (*ghedo*) Fix iptables.flush state: Do not force `filter' table when flushing
- **PR** #34244: (*the-glu*) Typo in dockerio doc
- **PR** #34343: (*rallytime*) Back-port #34256 to 2016.3
- **PR** #34256: (*tmehlinger*) detect running from master in State.event method
- **PR** #34338: (*themalkolm*) Add listen/listen_in support to stateconf.py
- **PR** #34283: (*sjorge*) 2016.3 mount vfstab support
- **PR** #34322: (*Ch3LL*) add osmajorrelease grain for raspbian
- **PR** #34337: (*clinta*) Change merge-if-exists logic to properly report changes
- **PR** #34300: (*vutny*) Make apache.configfile state handle the Options list correctly
- **PR** #34333: (*rallytime*) Back-port #33734 to 2016.3
- **PR** #34304: (*rallytime*) Back-port #33734 to 2016.3
- **PR** #33734: (*glomium*) modules/rabbitmq.py version checking had a logical error
- **PR** #34330: (*clinta*) fix #34329
- **PR** #34318: (*rallytime*) Back-port #32182 to 2016.3
- **PR** #32182: (*dongweiming*) Fix psutil.cpu_times unpack error
- **PR** #34311: (*rallytime*) [2016.3] Update to latest bootstrap script v2016.06.27
- **PR** #34284: (*rallytime*) Don't require `domain' to be present before checking fqdn_ip* grains
- **PR** #34296: (*sjorge*) 2016.3 status module now works on Solaris like platforms
- **PR** #34281: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34274: (*clinta*) Don't escape source before calling managed

- **PR** #34258: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #34257: (*rallytime*) Use `config_dir' setting instead of CONFIG_DIR in gpg renderer
- **PR** #34233: (*thegoodduke*) ipset: fix the comment containing blank
- **PR** #34232: (*thegoodduke*) ipset: fix commont containing blank
- **PR** #34225: (*richardscollin*) Fix win_system.set_system_date_time
- **PR** #34271: (*opdude*) Fixed symlinks on windows where the slashes don't match
- **PR** #34254: (*sjorge*) Fix for #14915
- **PR** #34259: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34136: (*meaksh*) Fixed behavior for SUSE OS grains in 2015.8
- **PR** #34134: (*meaksh*) Fixed behavior for SUSE OS grains in 2016.3
- **PR** #34093: (*terminalmage*) Catch CommandExecutionError in pkg states
- **PR** #33903: (*meaksh*) Fetching grains['os'] from /etc/os-release on SUSE systems if it is possible
- **PR** #34134: (*meaksh*) Fixed behavior for SUSE OS grains in 2016.3
- **PR** #33903: (*meaksh*) Fetching grains['os'] from /etc/os-release on SUSE systems if it is possible
- **PR** #34159: (*christoe*) Fixes to the win_task module
- **PR** #34223: (*peterdemin*) Fixed typo in filtering LDAP's potential_ous
- **PR** #34239: (*vutny*) file.find module: fix handling of broken symlinks
- **PR** #34229: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34218: (*terminalmage*) Fix a pair of gitfs bugs
- **PR** #34208: (*lomeroe*) fix regression from #33681 which causes pulling a list of s3 objects ...
- **PR** #34206: (*terminalmage*) Change target for dockerng assuming default status to Nitrogen release
- **PR** #34188: (*terminalmage*) Clarify pkg.list_repo_pkgs docstring for held packages
- **PR** #34182: (*rallytime*) Handle child PIDs differently depending on the availability of psutils
- **PR** #33942: (*cachedout*) ZD 762
- **PR** #33681: (*rallytime*) Back-port #33599 to 2015.8
- **PR** #33599: (*lomeroe*) Fix s3 large file download
- **PR** #34214: (*rallytime*) Update saltutil.wheel docs to specify remote vs local minion behavior
- **PR** #34209: (*lomeroe*) fix regression in s3.query from #33682
- **PR** #33682: (*lomeroe*) backport #33599 to 2016.3
- **PR** #33599: (*lomeroe*) Fix s3 large file download
- **PR** #34222: (*cachedout*) Lint 34200
- **PR** #34200: (*secumod*) Fix parted module set CLI example
- **PR** #34197: (*eliasp*) Make *module.ssh.recv_known_host()* more resilient against hosts not returning a key
- **PR** #34201: (*DarkKnightCZ*) Suffix temp file with .sr1 and add mandatory argument when executing PowerShell script
- **PR** #34198: (*DarkKnightCZ*) Don't use binary mode for cmdmod.exec_code

- **PR** #34198: (*DarkKnightCZ*) Don't use binary mode for cmdmod.exec_code
- **PR** #34172: (*dmurphy18*) Support for building with local packages on Debian and Ubuntu
- **PR** #34194: (*vutny*) Correct the docstrings formatting in pkgbuild modules and state
- **PR** #34056: (*vutny*) Make rpmbuild module work on non-RPM based GNU/Linux systems
- **PR** #34186: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34184: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #34179: (*terminalmage*) Raise the correct exception when gitfs lockfile is empty
- **PR** #34178: (*terminalmage*) Remove unnecesssary comment
- **PR** #34176: (*rallytime*) Back-port #34103 to 2015.8
- **PR** #34175: (*rallytime*) Back-port #34128 to 2015.8
- **PR** #34174: (*rallytime*) Back-port #34066 to 2015.8
- **PR** #34165: (*mcalmer*) fix salt --summary to count not responding minions correctly
- **PR** #34141: (*jtand*) Fixed boto_vpc_test failure
- **PR** #34128: (*bebehei*) doc: add missing dot
- **PR** #34103: (*morganwillcock*) Fix diskusage beacon
- **PR** #34077: (*rallytime*) Add some grains targeting tests
- **PR** #34066: (*complexsplit*) Typo fix
- **PR** #33474: (*cachedout*) Fix diskusage beacon
- **PR** #34173: (*rallytime*) Update docs to match log_level default
- **PR** #34095: (*rallytime*) Back-port #32396 to 2016.3
- **PR** #32396: (*eradman*) Unbreak cron.file
- **PR** #34108: (*l2ol33rt*) Make dockerng.absent state honor test=true
- **PR** #34133: (*rallytime*) Back-port #34057 to 2016.3
- **PR** #34057: (*ajacoutot*) _active_mounts_openbsd: unbreak output for special filesystems
- **PR** #34156: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34142: (*isbm*) Move log message from INFO to DEBUG.
- **PR** #34100: (*terminalmage*) Update documentation on ``refresh'' behavior in pkg states
- **PR** #34072: (*jfindlay*) modules.pkg int tests: skip refresh_db upon error
- **PR** #34110: (*garethgreenaway*) Fixes to git module & state module related to identity file
- **PR** #34138: (*rallytime*) Update package dep note to systemd-python for RHEL7 install
- **PR** #34166: (*vutny*) Fix YAML indentation in Apache state docstrings
- **PR** #34098: (*terminalmage*) Restore old refresh logic
- **PR** #34087: (*bbinet*) Encourage to report issues to upstream PillarStack project
- **PR** #34075: (*jfindlay*) modules.inspectlib.kiwiproc: import gate lxml
- **PR** #34056: (*vutny*) Make rpmbuild module work on non-RPM based GNU/Linux systems
- **PR** #34073: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3

- **PR** #34069: (*rallytime*) Add a test to check for disconnected minion messaging
- **PR** #34051: (*tegbert*) Fixed a bug in the consul.py module that was preventing services
- **PR** #34048: (*terminalmage*) RFC: proposed fix for multiple fileserver updates in masterless runs
- **PR** #34045: (*jacobhammons*) Updated latest release version
- **PR** #34030: (*vutny*) More YAML indentation fixes in state module examples
- **PR** #34020: (*twangboy*) Always make changes to minion config if set (2015.8)
- **PR** #34018: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #34011: (*rallytime*) Back-port #33948 and #34009 to 2015.8
- **PR** #34009: (*rallytime*) Back-port #33948 to 2016.3 + add log message
- **PR** #34005: (*rallytime*) Lint fix for #34000
- **PR** #34003: (*vutny*) states.file: fix indentation in YAML examples
- **PR** #34002: (*lorengordon*) Remove loader test for pam module
- **PR** #34000: (*cachedout*) Fix incorrectly written test
- **PR** #33990: (*jacobhammons*) Adds links to several current Salt-related projects
- **PR** #33985: (*rallytime*) Write some more simple batch command tests
- **PR** #33984: (*jfindlay*) Add docs and tests to disk state
- **PR** #33983: (*twangboy*) Clarify the *account_exists* parameter
- **PR** #33953: (*whiteinge*) Add loader.utils() example to calling minion_mods
- **PR** #33951: (*jfindlay*) modules.gem int tests: more fixes
- **PR** #33948: (*cachedout*) Save an entire minion cache traversal on each master pub
- **PR** #33904: (*rallytime*) Back-port #33806 to 2015.5
- **PR** #33880: (*terminalmage*) pkg.uptodate: Pass kwargs to pkg.list_upgrades
- **PR** #33806: (*cachedout*) Work around upstream cherrypy bug
- **PR** #33684: (*jfindlay*) add acl unit tests
- **PR** #34010: (*terminalmage*) Do not cache remote files if they are already cached
- **PR** #34009: (*rallytime*) Back-port #33948 to 2016.3 + add log message
- **PR** #33948: (*cachedout*) Save an entire minion cache traversal on each master pub
- **PR** #33941: (*cachedout*) Don't call os.getppid() on Windows
- **PR** #34067: (*jacobhammons*) Fixes doc refresh bug on chrome mobile.
- **PR** #34050: (*rallytime*) Back-port #34026 to 2016.3
- **PR** #34026: (*bensherman*) removed method that doesn't exist
- **PR** #33987: (*isbm*) inspectlib cleanup
- **PR** #34042: (*sjorge*) fix #34038
- **PR** #34025: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34044: (*jacobhammons*) Updated latest release to 2016.3.1
- **PR** #34014: (*jnhmcknight*) fix launch config creation params

- **PR** #34021: (*twangboy*) Always make changes to minion config if set (2016.3)
- **PR** #34031: (*eliasp*) *states.postgres_privileges* expects a real list, not a comma-separated string
- **PR** #33995: (*jacobhammons*) Understanding Jinja topic, Jinja doc issues.
- **PR** #33900: (*amendlik*) Document sudo policy for gitfs post-recieve hook
- **PR** #33980: (*twangboy*) Use full path to python.exe
- **PR** #33993: (*s0undt3ch*) Call *sys.exit()* instead of *exit()*
- **PR** #33976: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #33962: (*jacobhammons*) Adds a ``Generated on <timestamp>'' line to the html footer
- **PR** #33952: (*rallytime*) Add base argument to salt-ssh grains wrapper for filter_by func
- **PR** #33946: (*rallytime*) Back-port #33698 to 2015.8
- **PR** #33942: (*cachedout*) ZD 762
- **PR** #33698: (*opdude*) Vsphere fixes
- **PR** #33912: (*abalashov*) utils/schedule.py:handle_func() - Fix for accessing returner configur…
- **PR** #33945: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #33936: (*rallytime*) Add connecting_settings to boto_elb state attributes list
- **PR** #33917: (*techhat*) Wait for up to a minute for sync_after_install
- **PR** #33888: (*jfindlay*) random.org checks
- **PR** #33877: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #33833: (*terminalmage*) Support syncing pillar modules to masterless minions
- **PR** #33829: (*terminalmage*) Update versionchanged directive
- **PR** #33814: (*terminalmage*) Support extraction of XZ archives in archive.extracted state
- **PR** #33778: (*sodium-chloride*) Fix minor docstring issues
- **PR** #33765: (*cachedout*) Correct issue with ping on rotate with minion cache
- **PR** #33726: (*jtand*) glance.warn_until shouldn't be checked for a doc string
- **PR** #33611: (*rolffokkens*) 2015.5
- **PR** #33960: (*mecarus*) Fix mongo get_load to return full mongo record instead of non-existant `load' key
- **PR** #33961: (*jacobhammons*) 2016.3.0 known issues update
- **PR** #33908: (*ticosax*) [boto_lambda] handle omitted Permissions parameter
- **PR** #33896: (*DmitryKuzmenko*) Don't deep copy context dict values.
- **PR** #33905: (*rallytime*) Back-port #33847 to 2016.3
- **PR** #33910: (*cachedout*) Ensure tht pillar have freshest grains
- **PR** #33870: (*rallytime*) Add note about Xenial packages to 2016.3.0 release notes
- **PR** #33847: (*whiteinge*) Add docs for arg/kwarg eauth matching
- **PR** #33076: (*cachedout*) Avoid second grains load on windows multiprocessing
- **PR** #29153: (*DmitryKuzmenko*) ACL limit args

### 18.2.4 Salt 2016.3.3 Release Notes

Version 2016.3.3 is a bugfix release for *2016.3.0*.

#### Known Issues

issue 36055: Salt Cloud events (`salt/cloud`) are not generated on the master event bus when provisioning cloud systems.

Bootstrap Issue #973: `python-futures` is not installed when installing from a git tag on RedHat-based distributions. `Python futures` is needed when running Salt with the TCP transport. This is fixed on the `develop` branch of the salt-bootstrap repo and the fix will be included in the upcoming release of salt-bootstrap, but is a bug in the bootstrap release that ships with this version of Salt. Please see the salt-bootstrap repo for more information on how to update your bootstrap version.

#### Changes for v2016.3.2..2016.3.3

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2016-08-19T16:17:34Z*

Total Merges: **134**

Changes:

- **PR** #35580: (*twangboy*) Fix mac_service attempts to parse non-plist files
- **PR** #35586: (*hu-dabao*) Fix 35420, add run_on_start in build_schedule_item
- **PR** #35583: (*terminalmage*) Fix localemod tests
- **PR** #35579: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35577: (*terminalmage*) Unit file changes for 2015.8.12, 2016.3.3
- **PR** #35571: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35566: (*rallytime*) Back-port #35545 to 2015.8
- **PR** #35546: (*whiteinge*) Salt api eauth fail gracefully
- **PR** #35545: (*hu-dabao*) fix-35384, fix cmd.run unless
- **PR** #35540: (*rallytime*) Whitespace fix for 2015.8
- **PR** #35525: (*UtahDave*) add missing glob import
- **PR** #35510: (*terminalmage*) Better systemd integration
- **PR** #35492: (*terminalmage*) Clarify config.get docstring
- **PR** #35483: (*gtmanfred*) use __utils__ in salt.cloud
- **PR** #35573: (*rallytime*) Back-port #33337 to 2016.3
- **PR** #33337: (*mzupan*) adding the () to make changes work
- **PR** #35572: (*terminalmage*) Fix poor formatting in pkg state docs
- **PR** #35545: (*hu-dabao*) fix-35384, fix cmd.run unless
- **PR** #35489: (*rallytime*) Back-port #35463 to 2016.3
- **PR** #35463: (*skizunov*) Make *auth_timeout* user configurable again

- **PR** #35538: (*thatch45*) Treat python XML as an optdep
- **PR** #35526: (*thatch45*) Always deploy the thin to /var/tmp
- **PR** #35522: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35513: (*cachedout*) Might be a good idea to be able to download the software we make
- **PR** #35512: (*cachedout*) Fixup 35419
- **PR** #35508: (*terminalmage*) Add Carbon to versionadded for git.diff
- **PR** #35497: (*deepakhj*) Fixes spacing in requirements files
- **PR** #35302: (*Ch3LL*) Add job cache test
- **PR** #35516: (*rallytime*) Back-port #34441 to 2016.3
- **PR** #34441: (*markuskramerIgitt*) Copy and delete silently, do not list each file
- **PR** #35517: (*rallytime*) Back-port #34502 to 2016.3
- **PR** #34502: (*markuskramerIgitt*) Windows installer build scripts will exit on error
- **PR** #35429: (*tankywoo*) Fix iptables target options with no arguments
- **PR** #35495: (*rallytime*) Use correct deprecated notation instead of a warning for apache_module.enable state function.
- **PR** #35498: (*rallytime*) Add supported templates list to all template doc references in file state
- **PR** #35406: (*rallytime*) Provide links to the renderers in the template docs
- **PR** #35360: (*rallytime*) Add all template registery templates to file.managed docs
- **PR** #35487: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35486: (*rallytime*) Update bootstrap script to latest stable (2016.08.16)
- **PR** #35476: (*cachedout*) Fixup SSH bug where sudo without sudo user would break
- **PR** #35471: (*terminalmage*) win_pkg: Fix traceback when package is not installed
- **PR** #35460: (*rallytime*) [2015.8] Update bootstrap script to latest stable (2016.08.15)
- **PR** #35459: (*thatch45*) Ensure that output for salt-ssh gets back
- **PR** #35453: (*theothergraham*) fixes #34279 - disk cache ttl expiry
- **PR** #35451: (*isbm*) Bugfix: zypper mod repo unchanged
- **PR** #35448: (*isbm*) Add ignore_repo_failure option to suppress zypper's exit code 106 on ...
- **PR** #35413: (*cachedout*) Resolve path issues with cp.push
- **PR** #35446: (*cachedout*) Make salt-client aware of edge-case where saltutil might be broken
- **PR** #35449: (*dkruger*) aptpkg will specify --install-recommends if enabled by the SLS
- **PR** #35467: (*rallytime*) Back-port #33518 to 2016.3
- **PR** #35235: (*rallytime*) Back-port #33518 to 2016.3
- **PR** #33518: (*tonybaloney*) Fix libcloud bug #33367
- **PR** #35461: (*rallytime*) [2016.3] Update bootstrap script to latest stable (2016.08.15)
- **PR** #35456: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35442: (*cachedout*) Fix cp.push_dir pushing empty dirs

- **PR** #35436: (*cachedout*) Minor doc fixup
- **PR** #35132: (*sjorge*) fixes , causing lots of mayham (onchange) with 2016.3.2 for me
- **PR** #35447: (*ticosax*) [dockerng] RepoTags can be also be None with docker 1.12
- **PR** #35308: (*farcaller*) Actually fixed dockerng.list_tags
- **PR** #34702: (*farcaller*) Fixed dockerng.list_tags
- **PR** #35427: (*cachedout*) Correct errant call to argspec from master. Fix ext_job_cache.
- **PR** #35428: (*cachedout*) Resolve stacktrace logged by highstate outputter if sls cannot be found
- **PR** #35412: (*s0undt3ch*) Only allow one sync read to happen at a time.
- **PR** #35406: (*rallytime*) Provide links to the renderers in the template docs
- **PR** #35360: (*rallytime*) Add all template registery templates to file.managed docs
- **PR** #35393: (*deniszh*) No need to run ddns update every time
- **PR** #35407: (*hu-dabao*) [Fix-35094] None will not be added to grains which generate [none]
- **PR** #35411: (*eliasp*) modules.event.send(): Prevent backtrace for masterless Minions
- **PR** #35395: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35394: (*rallytime*) Back-port #34573 to 2015.8
- **PR** #35359: (*terminalmage*) Clean up open filehandles
- **PR** #35357: (*twangboy*) Fix file.recurse with clean: True on Windows (2015.8)
- **PR** #35339: (*isbm*) Bugfix: Prevent continuous restart, if a dependency wasn't installed
- **PR** #34573: (*cedwards*) Update freebsd.rst
- **PR** #35373: (*cachedout*) Raise SaltRenderError on bad requisite
- **PR** #35352: (*twangboy*) Fix file.recurse with clean: True on Windows (2016.3)
- **PR** #35356: (*jfindlay*) document log levels and warn on all logging below info
- **PR** #35358: (*twangboy*) Update libsodium deps
- **PR** #35360: (*rallytime*) Add all template registery templates to file.managed docs
- **PR** #35362: (*rallytime*) Correct deprecation version tags
- **PR** #35361: (*rallytime*) Blockdev deprecations
- **PR** #25267: (*jfindlay*) Disk module improvements
- **PR** #24893: (*The-Loeki*) Contribution: Disk module improvements
- **PR** #35347: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35325: (*kev009*) Fix freebsd netstat route on fbsd 10+
- **PR** #35323: (*thatch45*) Fix issue with bad error check in salt-vt
- **PR** #35309: (*terminalmage*) file.recurse: Do not convert octal mode string to int
- **PR** #35301: (*bobrik*) Pass port to ssh.check_known_host, closes #35264
- **PR** #35334: (*cachedout*) Restore random_master functionality
- **PR** #35331: (*hu-dabao*) fix 35165, salt-run jobs.exit_success jid is broken
- **PR** #35318: (*rallytime*) Remove legacy compat docs in mysql pillar since the code was removed already

- **PR** #30913: (*jtand*) Deprecated code removed.
- **PR** #35329: (*hu-dabao*) sys.doc will skip all not connected minions
- **PR** #35306: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35290: (*terminalmage*) Resolve a couple bugs in orchestration output
- **PR** #35229: (*lubyou*) Ignore import error for pwd module in mac_shadow
- **PR** #35227: (*isbm*) Isbm osfinger ubuntu fix
- **PR** #35286: (*hu-dabao*) fix 34425, a bug that sys.doc cannot output format
- **PR** #35275: (*rallytime*) Back-port #35213 to 2016.3
- **PR** #35213: (*gtmanfred*) add identity v3 support to openstack driver
- **PR** #35278: (*dmurphy18*) Increase timeout for siging to 10 seconds when signing rpm packages
- **PR** #35276: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35271: (*bobrik*) Default state_output_profile to True everywhere, closes #35166
- **PR** #35249: (*terminalmage*) Fix regression in git.latest
- **PR** #35245: (*rallytime*) Back-port #35039 to 2015.8
- **PR** #35241: (*terminalmage*) Ensure max recursion in gitfs results in no blob object being returned.
- **PR** #35240: (*derekmaciel*) Backport #35225 to 2015.8
- **PR** #35236: (*rallytime*) Back-port #35119 to 2015.8
- **PR** #35233: (*terminalmage*) Do not attempt to get fqdn_ip{4,6} grains when ipv{4,6} grains are empty
- **PR** #35225: (*derekmaciel*) Add missing documentation for pkg.installed
- **PR** #35211: (*cachedout*) Alternative sudo users for salt-ssh
- **PR** #35202: (*multani*) doc: fix broken links in the test documentation page
- **PR** #35119: (*derekmaciel*) Assume two EVRs are equal if E and V are equal but one R is missing.
- **PR** #35039: (*whiteinge*) Add saltenv support to module.run
- **PR** #35274: (*rallytime*) Lint fixes for 2016.3 branch
- **PR** #35232: (*theredcat*) fix rabbitmq version detection using a package-agnostic version
- **PR** #35269: (*meaksh*) Checksum validation for zypper pkg.download in 2016.3 and develop
- **PR** #35197: (*vutny*) Make *pkgbuild.repo* state recognize *createrepo* command return code
- **PR** #35178: (*cro*) Add append_minionid_config_dirs option
- **PR** #35259: (*cachedout*) Fixup 35253
- **PR** #35253: (*abednarik*) Fix disk.wipe missing option.
- **PR** #35253: (*abednarik*) Fix disk.wipe missing option.
- **PR** #35206: (*hu-dabao*) Make the log level back to warning for unclassified exc
- **PR** #35196: (*isbm*) Deprecate status.uptime one version later
- **PR** #35207: (*eliasp*) Handle exceptions in *_get_virtual()* and in *_get_virtual()* consumers
- **PR** #35232: (*theredcat*) fix rabbitmq version detection using a package-agnostic version
- **PR** #35244: (*rallytime*) Back-port #31677 to 2016.3

- **PR** #31677: (*miihael*) Return correct value for services that must be enabled in Systemd
- **PR** #35182: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35174: (*rallytime*) Back-port #35146 to 2015.8
- **PR** #35173: (*rallytime*) Back-port #35135 to 2015.8
- **PR** #35146: (*cachedout*) Don't discard running beacons config when listing becaons
- **PR** #35145: (*jacobhammons*) doc version update to 2015.8.11, updates to release notes
- **PR** #35135: (*rallytime*) Add missing CLI Examples to aws_sqs module funcs
- **PR** #34827: (*thatch45*) fix beacon list to include all beacons being processed
- **PR** #35150: (*rallytime*) Start release notes for 2016.3.3
- **PR** #35157: (*hu-dabao*) master returned from func should be a string as designed so far
- **PR** #35147: (*jacobhammons*) doc version updated to 2016.3.2
- **PR** #35136: (*s0undt3ch*) Don't restart processes if the manager is not set to restart them
- **PR** #35133: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35114: (*terminalmage*) Add clarification docs on a common git_pillar misconfiguration
- **PR** #35043: (*rallytime*) Start release notes file for 2015.8.12
- **PR** #34768: (*hrumph*) Fixes #34767
- **PR** #35120: (*kstreee*) The `_handle_event_socket_recv' function in Salt Api is missing first data of stream.
- **PR** #35131: (*rallytime*) Back-port #35011 to 2016.3
- **PR** #35011: (*nishigori*) Fix docstring for code-block of rst
- **PR** #35110: (*hu-dabao*) Do not return job status back to master for master_alive and master_failback schedules
- **PR** #35104: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35066: (*jfindlay*) returners.postgres_local_cache: do not log in __virtual__
- **PR** #35050: (*terminalmage*) [orchestration] Properly handle runner/wheel funcs which accept a `saltdev' argument
- **PR** #35026: (*cachedout*) Expressly deny a minion if a key cannot be found
- **PR** #35024: (*bobrik*) Cache systemd unit update check per unit, closes #34927
- **PR** #35105: (*rallytime*) Update 2016.3.0 release notes with repo.saltstack.com Xenial pkg availability
- **PR** #33870: (*rallytime*) Add note about Xenial packages to 2016.3.0 release notes
- **PR** #35059: (*vutny*) Add *fun_args* field to events generated by execution of Master modules
- **PR** #34955: (*lubyou*) force dism to always output english text
- **PR** #35078: (*jacobweinstock*) added missing non-keyword argument skip_verify to __get_artifact func…
- **PR** #35008: (*hu-dabao*) Fix multimaster failover on more than two masters and failback behaviour
- **PR** #35055: (*galet*) #33536 pkgrepo.managed does not disable a yum repo with ``disabled: True''
- **PR** #35039: (*whiteinge*) Add saltenv support to module.run
- **PR** #35046: (*eliasp*) Prevent backtrace in *salt.states.network*
- **PR** #35054: (*lubyou*) Only fail user lookup is the user parameter is required

- **PR** #35029: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35000: (*rallytime*) Back-port #33875 and #34999 to 2015.8
- **PR** #34994: (*rallytime*) Back-port #34835 to 2015.8
- **PR** #34835: (*thatch45*) Make the mine and publish combine minion and master opts in salt-ssh
- **PR** #33875: (*jmesquita*) Fix naive fileserver map diff algorithm
- **PR** #35021: (*terminalmage*) Don't add `.' to strerror when passed string ends in ? or !
- **PR** #34983: (*eliasp*) modules.slack.post_message: Allow sending messages to direct-message ...
- **PR** #34996: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34991: (*cachedout*) SSH timeout
- **PR** #34976: (*cachedout*) Refine errors in client
- **PR** #34831: (*thatch45*) If the thin does not match, then redeploy, don't error
- **PR** #34987: (*eliasp*) salt.states.slack: check correct result attribute
- **PR** #34835: (*thatch45*) Make the mine and publish combine minion and master opts in salt-ssh
- **PR** #34988: (*rallytime*) Update release notes with new changes
- **PR** #34946: (*anlutro*) Fix virtualenv behavior when requirements files are in subdirectories
- **PR** #34957: (*sjmh*) Don't fall through to checking auth entries
- **PR** #34971: (*cachedout*) Increase timeout for grains test
- **PR** #34951: (*vutny*) Fix #34873
- **PR** #34935: (*rallytime*) Avoid UnboundLocalError in beacons module
- **PR** #34894: (*rallytime*) [develop] Merge forward from 2016.3 to develop
- **PR** #34956: (*cachedout*) Increase all run_script timeouts to 30s
- **PR** #34933: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34916: (*cachedout*) Master performance improvement
- **PR** #34911: (*cachedout*) Backport #34906
- **PR** #34906: (*cachedout*) Set timeout for run_salt in test suite
- **PR** #34898: (*hrumph*) Stop multiple refreshes during call to pkg.list_upgrades
- **PR** #34606: (*isbm*) Bugfix: Exit on configuration read (backport)
- **PR** #34915: (*abednarik*) Update service_rh provider to exclude XenServer >= 7.
- **PR** #34926: (*rallytime*) Lint #34923
- **PR** #34923: (*eliasp*) Handle exception when no Slack API key was provided
- **PR** #34910: (*cachedout*) Fix grains error on proxy minions
- **PR** #34864: (*jmacfar*) Check for version in list of installed versions
- **PR** #34902: (*rallytime*) Back-port #34878 to 2016.3
- **PR** #34878: (*abednarik*) Add VirtuozzoLinux is yumpkg enable list.
- **PR** #34901: (*rallytime*) Add VirtuozzoLinux to the list of enabled distros for rpm.py
- **PR** #34900: (*rallytime*) Add VirtuozzoLinux to enabled platforms list in rh_service.py

- **PR** #34887: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34869: (*terminalmage*) Fail git.latest states with uncommitted changes when force_reset=False
- **PR** #34862: (*thatch45*) Fix salt-ssh cacheing issue
- **PR** #34859: (*cachedout*) Fix wheel test
- **PR** #34632: (*eliasp*) Try to create the log directory when not present yet
- **PR** #34854: (*rallytime*) Remove string_types import from state compiler
- **PR** #34865: (*thatch45*) This needs discussion, since this breaks SUSE
- **PR** #34858: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #34847: (*cachedout*) Add an option to skip the verification of client_acl users
- **PR** #34833: (*rallytime*) Back-port #28521 to 2015.8
- **PR** #34828: (*thatch45*) Fix #34648
- **PR** #34827: (*thatch45*) fix beacon list to include all beacons being processed
- **PR** #34823: (*rallytime*) Back-port #25276 to 2015.8
- **PR** #34822: (*thatch45*) Fix salt-ssh state.high and state.low
- **PR** #28521: (*gongled*) SPM: packaging doesn't work in Python 2.6. Fixed.
- **PR** #25276: (*jacobhammons*) copy spm.1 man page during setup
- **PR** #34852: (*rallytime*) Skip GCE unit tests - causes test suite to hang

### 18.2.5 Salt 2016.3.4 Release Notes

Version 2016.3.4 is a bugfix release for *2016.3.0*.

#### Known Issues

The Salt Minion does not clean up files in `/tmp` when rendering templates. This potentially results in either running out of disk space or running out of inodes. Please see Issue #37541 for more information. This bug was fixed with Pull Request #37540, which will be available in the `2016.3.5` release of Salt.

The release of the *bootstrap-salt.sh* script that is included with 2016.3.4 release has a bug in it that fails to install salt correctly for git installs using tags in the 2015.5 branch. This bug has not been fixed in the salt-bootstrap repository yet, but the previous bootstrap release (v2016.08.16) does not contain this bug.

#### Changes

- The *disk.wipe* execution module function has been modified so that it correctly wipes a disk.
- Add ability to clone from a snapshot to the VMWare salt-cloud driver.
- Add ability to specify disk backing mode in the VMWare salt cloud profile.

### Changes for v2016.3.3..v2016.3.4

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2016-10-27T16:10:53Z*

Total Merges: **274**

Changes:

- **PR** #37282: (*thatch45*) add cpub to raet event for compat
- **PR** #37278: (*jfindlay*) update 2016.3.4 release notes
- **PR** #37252: (*vutny*) Set logging level to `info' for message about init system detection
- 47290d8 Update man pages for the 2016.3 branch (#37259)
- **PR** #37257: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #37254: (*DmitryKuzmenko*) Bugs/37191 minion hangs
- **PR** #37218: (*darkalia*) Issue `#37187`_ Do not parse first /proc/1/cmdline binary if it's not *b...
- **PR** #37239: (*Ch3LL*) Fix cloud tests timeout
- **PR** #37244: (*rallytime*) Update bootstrap release to 2016.10.25
- **PR** #37245: (*rallytime*) Back-port #36334 to 2016.3
- **PR** #37233: (*rallytime*) Back-port #37154 to 2016.3
- **PR** #37232: (*rallytime*) Back-port #37153 to 2016.3
- **PR** #37228: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #37213: (*cachedout*) More salttesting fixes
- **PR** #37207: (*cachedout*) Correct documentation for mine_functions
- **PR** #37208: (*cachedout*) Give multimion a process manager and its own destroy method
- **PR** #37206: (*cachedout*) Address transport test hang
- **PR** #37179: (*isbm*) Fix Salt-API ssh crash (2016.3)
- **PR** #37183: (*gtmanfred*) load tags should reference the actual load tags
- **PR** #37188: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- d7e28d2 Pylint fix for 2016.3 (#37186)
- **PR** #37175: (*cachedout*) Fix test hang
- **PR** #37144: (*DmitryKuzmenko*) Bugs/36866 salt minion communication broken 2016.3
- **PR** #37158: (*jfindlay*) add mock for *status.uptime* unit test
- **PR** #37161: (*rallytime*) Back-port #37098 to 2016.3
- **PR** #37159: (*rallytime*) Back-port #37107 to 2016.3
- **PR** #37163: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- 2bc5ded Allow the minion test daemons a couple of tries to connect to the master (#37150)
- ec7ad9e Add note about salt-bootstrap known issue for 2016.3.4 (#37152)
- **PR** #37135: (*AaronM-Cloudtek*) Fix example signing policy in salt.states.x509 docs
- **PR** #37140: (*vutny*) pkgbuild.repo: fix GPG signing with *use_passphrase=False*

- **PR** #37071: (*vutny*) pkgbuild.repo: add *timeout* parameter for waiting passphrase prompt
- **PR** #37115: (*DmitryKuzmenko*) Backport/36720 fix race condition
- **PR** #37119: (*jfindlay*) log.setup: only assign user if defined
- f22c686 fix digital ocean image name in profile (#37126)
- 4263849 add 2016.3.4 release notes (#37125)
- **PR** #37120: (*rallytime*) Back-port #36246 to 2016.3
- **PR** #37103: (*cachedout*) Remove unnecessary sleep from unit.utils.process_test.TestProcessMana…
- **PR** #36823: (*terminalmage*) Update debian systemd unit files to use default KillMode, Type=notify
- **PR** #37030: (*isbm*) Fix status.uptime for Solaris 9, 10 and 11.
- **PR** #37101: (*rallytime*) [2016.3] Merge forward from 2016.3 to carbon
- **PR** #36958: (*twangboy*) Fix bug where cmd.powershell fails to return
- **PR** #37086: (*cachedout*) Make salt-call a first-class citizen for multi-master
- **PR** #36898: (*clinta*) X509 fixes
- **PR** #37025: (*cro*) Make salt.utils.minion._check_cmdline work on OSes without /proc.
- **PR** #37050: (*twangboy*) Fix service state for Windows (DO NOT MERGE FORWARD)
- **PR** #37076: (*jfindlay*) Document proxy settings
- **PR** #37081: (*terminalmage*) Fix archive.extracted remote source_hash verification
- **PR** #37064: (*cachedout*) Unify job check in scheduler
- **PR** #37072: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #37049: (*terminalmage*) Further clarification on new grains docs from #37028
- **PR** #37057: (*rallytime*) [2016.3] Update salt.utils.cloud references to __utils__ for cache funcs
- **PR** #36977: (*twangboy*) Remove whitespace from string commands
- **PR** #37048: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #37028: (*damon-atkins*) Update topics/grains doco, about considerations before adding a Grain
- **PR** #37012: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- 519e1dc opkg: Support ignore_epoch argument in version comparisons (#37007)
- **PR** #36808: (*gtmanfred*) allow for closing stuff in beacons
- a02868b Make helper funcs private (#36993)
- **PR** #36986: (*jfindlay*) modules.archive.unzip: zipfile is stdlib
- **PR** #36981: (*rallytime*) Skip pkg.upgrades test on distros other that Suse in 2016.3
- **PR** #36755: (*terminalmage*) systemd.py: check retcode for service availability in systemd >= 231
- **PR** #36750: (*terminalmage*) Add the CLI client and pub_data as class attributes
- **PR** #36241: (*hrumph*) Fixes **`#36240`_**
- **PR** #36950: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #36948: (*rallytime*) Back-port #36943 to 2016.3
- **PR** #36946: (*rallytime*) Back-port #36892 to 2016.3

- **PR** #36945: (*rallytime*) Back-port #35199 to 2016.3
- 7565ed6 Fix versionadded (#36949)
- 4d8fb03 return opennebula errors to user (#36930)
- **PR** #36929: (*rallytime*) [yumpkg] Skip test_pkg_upgrade_has_pending_upgrades if there are no upgrades
- 288f437 [2016.3] Remove ``Targeting with Executions'' section from docs (#36926)
- **PR** #36915: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- 0ebf7a4 modules: debian_ip: override params early to fix diff (#36820)
- a23ce84 states.schedule: splay is not ordereddict (#36894)
- **PR** #36885: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- 1c0ba80 salt-ssh: Try ``command -v'' before falling back to ``which'' (#36889)
- 85eea4d fileclient: Change queryarg comparison from None to simple boolean check (#36830)
- **PR** #36853: (*rallytime*) Back-port #33939 to 2016.3
- **PR** #36852: (*rallytime*) Back-port #36743 to 2016.3
- **PR** #36844: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #36835: (*jfindlay*) unify and expand beacon documentation
- **PR** #36789: (*maximeguillet*) Fix behavior of psql -c option with postgresql 9.6
- **PR** #36797: (*cachedout*) Error on reaction with missing SLS file
- **PR** #36803: (*gtmanfred*) do not load libvirt pillar if certtool is unavailable
- **PR** #36815: (*BenoitKnecht*) Fix glance.image_present state
- **PR** #36754: (*terminalmage*) Base rpmdev-vercmp comparison result on retcode
- **PR** #36785: (*cachedout*) Fixup merge forward #36728
- **PR** #36768: (*gtmanfred*) add __utils__ to vultr cloud provider
- **PR** #36764: (*cachedout*) Another bit of detection for failed pip tests
- **PR** #36747: (*jfindlay*) modules.archive integration tests: check for gzip, rar
- **PR** #36744: (*cachedout*) Fix issue where test suite could hang on shutdown
- **PR** #36696: (*cro*) pass __proxy__ in state.sls_id
- **PR** #36716: (*vutny*) salt.modules.ini_manage: fix creating options in empty file
- **PR** #36724: (*rallytime*) Back-port #36628 to 2016.3
- **PR** #36725: (*rallytime*) Back-port #36643 to 2016.3
- **PR** #36726: (*rallytime*) Back-port #36722 to 2016.3
- 48d2b01 fix python26 archive zip module (#36719)
- **PR** #36699: (*cachedout*) Fix error in test
- **PR** #36670: (*jackywu*) fix bug for including loopback addr
- **PR** #36694: (*lorengordon*) Exposes *ignore_if_missing* to file.replace state module
- **PR** #36686: (*jfindlay*) log levels doc: try long form table
- **PR** #36690: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3

- **PR** #36680: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #36659: (*terminalmage*) Support dynamic env in new-style git_pillar
- **PR** #36538: (*clinta*) daemon-reload on call to service.avaliable
- **PR** #36616: (*cro*) Zypper fix test
- **PR** #36621: (*terminalmage*) Fix shadowed builtins
- **PR** #36636: (*rallytime*) Back-port #36618 to 2016.3
- **PR** #36648: (*jfindlay*) Integration tests for archive execution module
- **PR** #36650: (*rallytime*) Revert ``Pr 36386''
- **PR** #36646: (*rallytime*) Provide an error message when invalid transport is set
- **PR** #36635: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #36620: (*rallytime*) Don't allow mercurial states to return True with errors
- **PR** #36622: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #36520: (*twangboy*) Fix cmd.script runas for Windows
- **PR** #36564: (*DmitryKuzmenko*) Improve and fix *_check_cache_minions*
- **PR** #36606: (*danlsgiga*) Add support for ACL Tokens in consul_pillar with the option consul.token
- **PR** #36613: (*slinn0*) Remove file.check_managed_changes when not needed (backport of PR #36589 to 2016.3)
- **PR** #36609: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #36595: (*cachedout*) Remove tests which no longer apply
- **PR** #36594: (*cachedout*) Update boostrap docs to recent versions of Ubuntu
- **PR** #36585: (*twangboy*) Add pyOpenSSL to req file for Windows
- f205d5f Fix salt.utils.rm_rf to delete files too (#36572)
- **PR** #36495: (*cro*) Fix pkg.upgrade for zypper
- **PR** #36539: (*jfindlay*) Prefer archive.cmd_unzip
- **PR** #36546: (*rallytime*) Mercurial Module: Pass the identity_path portion as own arg
- **PR** #36555: (*DmitryKuzmenko*) Bugs/35480 master shutdown
- **PR** #36542: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- 5548ed7 Back-port #36435 to 2016.3 (#36532)
- fe377b3 Be explicit about the salt.utils.templates import (#36535)
- fcc50c9 Wrap the entire GrainsAppendTestCase class with destructiveTest (#36537)
- **PR** #36529: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #36483: (*dmurphy18*) Isolate sun IPv6 fix to Sun OS only
- **PR** #36280: (*alertedsnake*) Feature/2016.3 better postgresql grants
- **PR** #36508: (*twangboy*) Fix chocolatey
- **PR** #36519: (*terminalmage*) Rewrite minionfs walkthrough
- **PR** #36505: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #36496: (*cachedout*) Add repr to namespacedict

- **PR** #36474: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #36478: (*rallytime*) Add the ``bash'' option to the ``code-block''directive.
- **PR** #36484: (*terminalmage*) Fix for temp files being left over by salt-cloud execution
- **PR** #36486: (*terminalmage*) Improve the rebase docs in contributing guidelines
- **PR** #36455: (*twangboy*) Update docs for Windows
- **PR** #36459: (*cachedout*) Pr 36426
- **PR** #36442: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #36310: (*thatch45*) Fix bug where the client will destroy the loop
- **PR** #36394: (*oba11*) fix accound_id in boto_iam and get_region in boto_sns
- **PR** #36424: (*jfindlay*) skip some mac_timezone tests
- **PR** #36428: (*terminalmage*) A couple fixes for Antergos Linux
- **PR** #36425: (*whiteinge*) Check for dictionary explicitly since we're accessing it as one
- **PR** #36199: (*thatch45*) skip all failhards if test=True
- **PR** #36418: (*rallytime*) Back-port #36246 to 2016.3
- **PR** #36419: (*rallytime*) Back-port #36329 to 2016.3
- **PR** #36420: (*rallytime*) Back-port #36365 to 2016.3
- **PR** #36413: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #36305: (*gtmanfred*) cache query args with url as well
- **PR** #36389: (*cachedout*) Pr 36386
- 5737b1c Update versionadded and release notes (#36352)
- **PR** #36369: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- fbbe9ec Quote postgres privilege target names (#36249)
- 9451141 set __virtualname__ to `service' (#36330)
- fee3be4 Use infoblox_* values if present in arguments (#36339)
- 19eb848 remove help message from glance module (#36345)
- a4bbd5e Add resize2fs unit test from blockdev_test to disk_test (#36346)
- **PR** #36350: (*terminalmage*) Add note about yumpkg.check_db removal in Boron
- **PR** #36344: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- 3a37fe5 merge error overwrites correct ssh_host with stale data in ip_address (#36312)
- **PR** #36299: (*rallytime*) Gate the pkg.group_installed state test: not all pkg modules have group_install
- b3aac0e Back-port #36273 to 2016.3 (#36295)
- 7296179 Back-port #36124 to 2016.3 (#36296)
- **PR** #36297: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- 7684ebd Filter out pub kwargs from cloud runner (#36178)
- **PR** #36238: (*pass-by-value*) Add ability to clone from a snapshot to salt-cloud vmware driver
- a0bbb0f Integration tests fixes for 2016.3 (#36263)

- **PR** #36264: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35688: (*cachedout*) Splat serializer default configs into the serializer kwargs
- **PR** #36025: (*mirceaulinic*) Potential fix for `#36021`_
- 449c298 Fix timezones states on OS X (#36183)
- **PR** #36235: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #36137: (*cachedout*) Allow highstate outputter to show all results
- 1b12940 Docs clarification for module sync and state.apply (#36217)
- **PR** #36184: (*DmitryKuzmenko*) Disable signal handling while handling signal
- **PR** #36203: (*xiaoanyunfei*) fix owner of MultiprocessingLoggingQueue
- b586ed7 if the backend stack traces when it should return an empty string (#36193)
- **PR** #36188: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35907: (*rallytime*) Catch CommandExecutionError when the group in group_installed doesn't exist
- **PR** #36068: (*rallytime*) Remove grains type deprecation warning from 2016.3
- **PR** #36152: (*cachedout*) Remove unnecessary unpack
- **PR** #36158: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- 3445a33 Remove unclosed backticks in walkthrough doc (#36170)
- **PR** #36161: (*jacobhammons*) Adds `#36055`_ to release notes
- **PR** #36139: (*meaksh*) Fixing unit tests for 2016.3
- **PR** #36143: (*multani*) doc: fix doc formatting for salt.states.mount
- **PR** #36070: (*rallytime*) Use __utils__ instead of salt.utils.cloud in opennebula driver
- **PR** #36089: (*terminalmage*) Support running git states / remote exec funcs as a different user in Windows
- **PR** #35923: (*kstreee*) Fixes a bug that Ctrl-c not working on Salt CLI.
- **PR** #36078: (*thatch45*) Failhard test=True fix
- **PR** #34529: (*Ch3LL*) Add skip_verify for archive.extracted
- **PR** #36073: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- a86e36c Add docs for new kwargs added to the wheel key module (#36040)
- 2934fc1 Doc cherrypy deemphasize urlencoded (#36047)
- **PR** #36039: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- 1d90c42 Back-port #35824 to 2016.3 (#36038)
- 65b6734 catch unicode encoding errors in json outputter (#36033)
- 822481e modules.service: Do not default to OpenRC on Gentoo, also allow systemd (#36010)
- b68d293 fix redis_return's clean_old_jobs. (#36014)
- 95591c2 Add documentation about salt_interface to EC2 docs (#36015)
- **PR** #36019: (*meaksh*) Back-port #36000 to 2016.3
- b9fc51a Fix error when profiling is turned on and minions don't return (#36028)
- 20a361d Add include_* kwargs to the *_dict key functions (#36030)

- **PR** #36024: (*DmitryKuzmenko*) Don't subscribe to events if not sure it would read them.
- **PR** #36023: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #36004: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35952: (*twangboy*) Load UserProfile when using RunAs (2016.3)
- **PR** #35959: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35955: (*jacobhammons*) Version docs to 2016.3.3
- 9910b9c Fix incremental doc builds - OS X, postgres returner, tcp transport doc updates (#35865)
- 24f9d33 Speed up FreeBSD pkg install process for pkg.latest since pkg command by default tries to update repository DB on each search: (#35904)
- b87e4f1 Salt Cloud: add *centos* default user for official CentOS AMIs (#35931)
- 580e0d4 Mention that docker image names must be given with repository (#35926)
- **PR** #35868: (*rallytime*) Add more helpful return messages for drac runner
- **PR** #35903: (*rallytime*) [2016.3] Merge forward from 2015.8 into 2016.3
- **PR** #35855: (*vutny*) [REGRESSION] salt-cloud: fix path to Salt Master socket dir
- **PR** #35881: (*whiteinge*) Add fail-safe in case Salt gives us data we can't serialize
- 9679266 Add engines to list of extension module options in master config docs (#35864)
- 40bcb7d Fix IAM roles statement to be boto version specific in sqs_events (#35861)
- ee45a88 Fix doc formatting for sqs_events engine example config (#35860)
- **PR** #35859: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35849: (*theredcat*) Fix potential infinite loop with no error when using recursive makedirs
- **PR** #35682: (*vutny*) [BACKPORT] Fix empty *fun_agrs* field in Reactor generated events
- **PR** #35792: (*DmitryKuzmenko*) Reconnect syndic to event bus if master disappeared.
- **PR** #35817: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- b89f455 fix 34241, webutil.useradd_all is deprecated (#35788)
- 2be5daf Bump the deprecation warning in pkgrepo state to Nitrogen (#35810)
- 083d836 Fix misuse of HTTP credentials in modjk execution module (#35796)
- 0247867 Adds mock for tornado.locks (#35807)
- e4dfc21 Trivial documentation spelling fix (#35800)
- **PR** #35763: (*isbm*) Sphinx crash: documentation config fix
- cd90052 Documentation spelling fixes (#35773)
- **PR** #35767: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35753: (*rallytime*) Fixup the unit.client_test.LocalClientTestCase.test_cmd_subset from #35720
- dab8428 Add versionadded for enabled function in apache_module state (#35732)
- **PR** #35737: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35729: (*cachedout*) Remove docs mocks for msgpack and psutils
- **PR** #35628: (*jf*) Fix user.present state reporting for groups when remove_groups=false

- **PR** #35696: (*xiaoanyunfei*) fix maximum recursion depth bug
- **PR** #35720: (*hu-dabao*) fix 20575, make subset really return random subset
- **PR** #35700: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- **PR** #35634: (*hu-dabao*) fix 34922, StopIteration should not throw exception out
- **PR** #35679: (*twangboy*) Revert to vcredist 12 (2013)
- **PR** #35662: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3
- 64974c8 Backport #35627 to 2016.3 (#35661)
- **PR** #35615: (*hu-dabao*) fix 35591, verify the acl file exist before proceed
- **PR** #35485: (*cro*) Cassandra returner bugfixes and documentation.
- **PR** #35520: (*morganwillcock*) Check for all success return codes in win_dism state
- **PR** #35616: (*xbglowx*) Remove duplicate auth_tries in minion docs
- **PR** #35552: (*DmitryKuzmenko*) Syndic fix: don't strip `retcode' and `success' from events.
- **PR** #35559: (*Jlin317*) Fix highstate outputter when it's given multiple results
- **PR** #35605: (*rallytime*) Back-port #32739 to 2016.3
- **PR** #35606: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3

### 18.2.6 Salt 2016.3.5 Release Notes

Version 2016.3.5 is a bugfix release for *2016.3.0*.

#### Security Fixes

CVE-2017-5192: local_batch client external authentication not respected

The `LocalClient.cmd_batch()` method client does not accept `external_auth` credentials and so access to it from salt-api has been removed for now. This vulnerability allows code execution for already-authenticated users and is only in effect when running salt-api as the `root` user.

CVE-2017-5200: Salt-api allows arbitrary command execution on a salt-master via Salt's ssh_client

Users of Salt-API and salt-ssh could execute a command on the salt master via a hole when both systems were enabled.

We recommend everyone on the 2016.3 branch upgrade to a patched release as soon as possible.

#### Improved Checksum Handling in `file.managed`, `archive.extracted` States

When the `source_hash` argument for these states refers to a file containing checksums, Salt now looks for checksums matching the name of the source URI, as well as the file being managed. Prior releases only looked for checksums matching the filename being managed. Additionally, a new argument (`source_hash_name`) has been added, which allows the user to disambiguate ambiguous matches when more than one matching checksum is found in the `source_hash` file.

A more detailed explanation of this functionality can be found in the *`file.managed`* documentation, in the section for the new `source_hash_name` argument.

### Changes for v2016.3.4..v2016.3.5

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2017-01-19T22:38:51Z*

Statistics:

- Total Merges: **189**
- Total Issue references: **119**
- Total PR references: **288**

Changes:

- **PR** #38812: (*rallytime*) Update pyobjects test to be a list @ *2017-01-18T21:06:01Z*
  - d14f0c6 Merge pull request #38812 from rallytime/pyobjects-test
  - f3e84c1 Update pyobjects test to be a list
- **PR** #38813: (*gtmanfred*) catch SIGPIPE in vmware connection @ *2017-01-18T21:05:42Z*
  - **ISSUE** #36598: (*ikkaro*) CloudClient vmware driver reusing SI bug | refs: #38813
  - 50f03f8 Merge pull request #38813 from gtmanfred/2016.3
  - ce3472c catch SIGPIPE in vmware connection
- **PR** #38809: (*twangboy*) Fix get_hostname to handle longer computer names @ *2017-01-18T19:32:00Z*
  - 23b8b47 Merge pull request #38809 from twangboy/fix_hostname_2016.3
  - d57a51f Fix tests for get_hostname
  - 7ca3fd7 Fix get_hostname to handle longer computer names
- **PR** #38808: (*vutny*) Fix #38388 @ *2017-01-18T18:19:36Z*
  - **ISSUE** #38388: (*johje349*) No INFO logs in minion log file | refs: #38808
  - 1033bbd Merge pull request #38808 from vutny/fix-38388
  - 9bd203f Fix #38388
- **PR** #38668: (*terminalmage*) Fix proposal for #38604 @ *2017-01-18T17:53:09Z*
  - **ISSUE** #10: (*thatch45*) list jobs option
  - f3ae3cd Merge pull request #38668 from terminalmage/issue38604
  - 0ea97cd Merge pull request #10 from cachedout/pr-38668
    - db81afc Munge retcode into return data for batching
  - a642a99 Return the ret data from batch execution instead of raw data
- **PR** #38789: (*rallytime*) Update some saltenv refs to environment in salt.modules.state docs @ *2017-01-18T15:39:22Z*
  - **ISSUE** #38622: (*mikejford*) Incorrect saltenv argument documentation in salt.modules.state | refs: #38789
  - c6a19a9 Merge pull request #38789 from rallytime/fix-38622
  - af41fe0 Update some saltenv refs to environment in salt.modules.state docs
- **PR** #38790: (*cachedout*) Fix typo in pyobjects test @ *2017-01-18T15:38:57Z*
  - e0bf700 Merge pull request #38790 from cachedout/fix_pyobjects_test_typo

  - a66afb5 Fix typo in pyobjects test

- **PR** #38792: (*rallytime*) Update pillar tutorial lanuage regarding pillar_opts settings @ *2017-01-18T15:38:19Z*
  - **ISSUE** #38629: (*Arabus*) Conflicting documentation about default value of pillar_opts | refs: #38792
  - 6e9785e Merge pull request #38792 from rallytime/fix-38629
  - 1e125e2 Update pillar tutorial lanuage regarding pillar_opts settings
- **PR** #38796: (*cachedout*) Revert ``Fixed prepending of root_dir override to the other paths'' @ *2017-01-17T23:18:18Z*
  - **PR** #38707: (*alexbleotu*) Fixed prepending of root_dir override to the other paths | refs: #38796
  - 3417adc Merge pull request #38796 from saltstack/revert-38707-root_dir_fix-gh
  - cb080f3 Revert ``Fixed prepending of root_dir override to the other paths''
- **PR** #38585: (*rallytime*) Follow up to PR #38527 @ *2017-01-17T18:40:01Z*
  - **ISSUE** #38524: (*rbjorklin*) salt-api seems to ignore rest_timeout since 2016.11.0 | refs: #38585 #38527
  - **ISSUE** #38479: (*tyeapple*) api_logfile setting takes no effect | refs: #38585
  - **PR** #38570: (*rallytime*) [2016.11] Merge forward from 2016.3 to 2016.11 | refs: #38585
  - **PR** #38560: (*Ch3LL*) fix api logfile | refs: #38585
  - **PR** #38527: (*rbjorklin*) salt-api no longer forces the default timeout | refs: #38585 #38585 #38585
  - bab3479 Merge pull request #38585 from rallytime/follow-up-38527
  - 0558720 Pylint fix: add line at end of file
  - fa01367 Keep a copy of the DEFAULT_API_OPTS and restore them after the test run
  - 2ad0763 Test clean up
  - fd2ee7d Add some simple unit tests for salt.config.api_config function
  - 3d2fefc Make sure the pidfile and log_file values are overriden by api opts
  - 1f6b540 Make sure the pidfile and log_file values are overriden by api opts
  - 04d307f salt-api no longer forces the default timeout
- **PR** #38707: (*alexbleotu*) Fixed prepending of root_dir override to the other paths | refs: #38796 @ *2017-01-17T15:40:13Z*
  - 0fb6bb7 Merge pull request #38707 from alexbleotu/root_dir_fix-gh
  - 0bac8c8 Fixed prepending of root_dir override to the other paths
- **PR** #38774: (*vutny*) DOCS: add C++ compiler installation on RHEL required for bundled 0mq @ *2017-01-17T15:21:00Z*
  - 96c9dc1 Merge pull request #38774 from vutny/dev-test-docs
  - 4620dc4 DOCS: add C++ compiler installation on RHEL required for bundled 0mq
- **PR** #38749: (*vutny*) pkg build modules throw better exception message if keyid wasn't found @ *2017-01-17T02:13:08Z*
  - aedfbb7 Merge pull request #38749 from vutny/pkg-build-better-exception-msg
  - 53f2be5 pkg build modules throw better exception message if keyid wasn't found
- **PR** #38743: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3 @ *2017-01-17T01:46:01Z*

- **ISSUE** #20: (*thatch45*) Sort sys.doc output
- **ISSUE** #19: (*thatch45*) Sending a faulty command kills all the minions!
- **PR** #38731: (*rallytime*) Various follow up fixes
- **PR** #38602: (*terminalmage*) Fix failing unit.states.boto_vpc_test.BotoVpcRouteTableTestCase.test_present_with_routes
- 8466b34 Merge pull request #38743 from rallytime/merge-2016.3
- d24776f Merge branch `2015.8' into `2016.3'
- 6869621 Merge pull request #38731 from rallytime/merge-2015.8
  * 9eb191b Pylint fix
  * b910499 Various follow up fixes
  * e8309a6 Add release notes for 2015.8.13
  * f881f36 Merge pull request #20 from rallytime/2015.8.12_follow_up-batch-tests
    · 3428232 Clean up tests and docs for batch execution
  * c80b20b Merge pull request #19 from whiteinge/batchclient
    · 3d8f3d1 Remove batch execution from NetapiClient and Saltnado
  * 97b0f64 Lintfix
  * d151666 Add explanation comment
  * 62f2c87 Add docstring
  * 9b0a786 Explain what it is about and how to configure that
  * 5ea3579 Pick up a specified roster file from the configured locations
  * 3a8614c Disable custom rosters in API
  * c0e5a11 Add roster disable flag
- e9c59e9 Merge pull request #38602 from terminalmage/fix-boto-test
  * 3424a10 Fix failing unit.states.boto_vpc_test.BotoVpcRouteTableTestCase.test_present_with_routes

- **PR** #38723: (*rallytime*) Remove ``event_publisher_pub_hwm'' and ``salt_event_pub_hwm'' from config/__init__.py @ *2017-01-15T18:36:14Z*
  - **ISSUE** #38674: (*jackywu*) There is no code to use parameter `event_publisher_pub_hwm' in saltstack-2016.3 | refs: #38723
  - **PR** #29294: (*skizunov*) ZeroMQ no longer required when transport is TCP | refs: #38723 #38723
  - a642cde Merge pull request #38723 from rallytime/fix-38674
  - 706c885 Remove ``event_publisher_pub_hwm'' and ``salt_event_pub_hwm'' from config/__init__.py
- **PR** #38669: (*rallytime*) Update bootstrap script verstion to latest release @ *2017-01-15T18:03:27Z*
  - fc545af Merge pull request #38669 from rallytime/update-bootstrap-script
  - 78ba76e Update bootstrap script verstion to latest release
- **PR** #38693: (*twangboy*) Update jinja2 to 2.9.4 @ *2017-01-15T14:40:46Z*
  - 50d417f Merge pull request #38693 from twangboy/update_jinja
  - e0c7e55 Update jinja2 to 2.9.4
- **PR** #38739: (*vutny*) DOCS: correct examples of running test suite @ *2017-01-15T14:35:47Z*

  - f4233bb Merge pull request #38739 from vutny/fix-runtests-doc
  - b872bb6 DOCS: correct examples of running test suite
- 51d4707 DOCS: add links to File State Backups page where necessary (#38735)
  - **PR** #38735: (*vutny*) DOCS: add links to File State Backups page where necessary
- 6d3717b Proofread jinja_to_execution_module tutorial (#38720)
  - **PR** #38720: (*dereckson*) Proofread jinja_to_execution_module tutorial
- **PR** #38647: (*gtmanfred*) Allow novaclient to use keystoneauth1 sessions for authentication @ *2017-01-10T17:48:26Z*
  - **ISSUE** #36548: (*abonillasuse*) openstack auth with nova driver | refs: #38647
  - 7b850d4 Merge pull request #38647 from gtmanfred/nova
  - 5be9b60 add documentation about using keystoneauth for v3
  - 7b657ca add the ability to use keystone v2 and v3
  - 5646ae1 add ability to use keystoneauth to authenitcate in nova driver
- **PR** #38650: (*rallytime*) Remove the installation instructions for out-of-date community ppa @ *2017-01-10T17:47:45Z*
  - **ISSUE** #38648: (*ericuldall*) No release file error from PPA on Ubuntu | refs: #38650
  - **ISSUE** #38572: (*COLABORATI*) ppa:saltstack/salt failure | refs: #38650
  - **ISSUE** #34504: (*AvinashDeluxeVR*) Installation documentation for Ubuntu server and Windows minion leads the user to use different salt versions. | refs: #38650
  - 383768d Merge pull request #38650 from rallytime/remove-ubuntu-ppa-docs
  - 30429b2 Remove the installation instructions for out-of-date community ppa
- **PR** #38657: (*DmitryKuzmenko*) Publish the `data' field content for Syndic evets @ *2017-01-10T16:59:33Z*
  - **ISSUE** #38087: (*UtahDave*) The `data' field in the return from a minion below a syndic is wrapped in an extra `data' field. | refs: #38657
  - 7d9f56e Merge pull request #38657 from DSRCorporation/bugs/38087_syndic_event_format_fix
  - 594c33f Publish the `data' field content for Syndic evets
- **PR** #38649: (*Ch3LL*) fix unit.modules.file_test @ *2017-01-10T16:44:45Z*
  - 8398751 Merge pull request #38649 from Ch3LL/test_apply_template
  - 47f8b68 fix unit.modules.file_test
- **PR** #38626: (*cachedout*) Revert ``Fix/workaround for issue #37355'' @ *2017-01-06T21:28:09Z*
  - **ISSUE** #37355: (*Firewire2002*) salt-ssh - ImportError: No module named backports.ssl_match_hostname | refs: #37358
  - **ISSUE** #34600: (*davidpsv17*) Error trying a salt-ssh test.ping | refs: #37358
  - **ISSUE** #27355: (*jerob*) salt ssh error with debian 7 on target | refs: #37358
  - **PR** #37358: (*Firewire2002*) Fix/workaround for issue #37355 | refs: #38626
  - 74ddc71 Merge pull request #38626 from saltstack/revert-37358-2016.3.3_issue37355
  - e912ac9 Revert ``Fix/workaround for issue #37355``
- **PR** #37358: (*Firewire2002*) Fix/workaround for issue #37355 | refs: #38626 @ *2017-01-06T18:58:47Z*

  - **ISSUE** #37355: (*Firewire2002*) salt-ssh - ImportError: No module named backports.ssl_match_hostname | refs: #37358
  - **ISSUE** #34600: (*davidpsv17*) Error trying a salt-ssh test.ping | refs: #37358
  - **ISSUE** #27355: (*jerob*) salt ssh error with debian 7 on target | refs: #37358
  - 5e58b32 Merge pull request #37358 from Firewire2002/2016.3.3_issue37355
  - 910da18 fixed typo
  - 4fbc5dd fixed wrong renamed variable and spaces
  - 92366e6 issue #37355
  - 7dc87ab issue #37355
  - 2878180 issue #37355
- **PR** #35390: (*alexandr-orlov*) Returns back missed proper grains dictionary for file module @ *2017-01-06T18:02:13Z*
  - 6c2fe61 Merge pull request #35390 from alexandr-orlov/2016.3
  - cd5ae17 fxd missed proper grains dictionary
- **PR** #38618: (*rallytime*) Back-port #38579 to 2016.3 @ *2017-01-06T17:37:56Z*
  - **ISSUE** #38558: (*multani*) pillar.get("...", default=var, merge=true) updates default value | refs: #38579 #38579
  - **PR** #38579: (*zwo-bot*) Fix #38558 - pillar.get with default= ...,merge=true influence subsequent calls of pillar.get | refs: #38618
  - 2579cfa Merge pull request #38618 from rallytime/bp-38579
  - 2052ece Add copy import
  - 2c8845a add test for pillar.get() + default value
  - c2f98d2 ticket 38558: add unit test, deepcopy() only if necessary
  - 30ae0a1 added deepcopy of default if merge=True
- **PR** #38601: (*terminalmage*) pillar.get: Raise exception when merge=True and default is not a dict @ *2017-01-05T23:15:51Z*
  - da676ce Merge pull request #38601 from terminalmage/pillar-get
  - 8613d72 pillar.get: Raise exception when merge=True and default is not a dict
- **PR** #38600: (*terminalmage*) Avoid errors when sudo_user is set (2016.3 branch) @ *2017-01-05T20:57:09Z*
  - **PR** #38598: (*terminalmage*) Avoid errors when sudo_user is set | refs: #38600
  - 224fc77 Merge pull request #38600 from terminalmage/issue38459-2016.3
  - 8a45b13 Avoid errors when sudo_user is set
- **PR** #38589: (*tobithiel*) State Gem: fix incorrect warning about missing rvm/rbenv @ *2017-01-05T20:12:15Z*
  - a376970 Merge pull request #38589 from tobithiel/fix_rvm_rbenv_warning
  - 9ec470b State Gem: fix incorrect warning about missing rvm/rbenv
- **PR** #38567: (*pass-by-value*) Create queue if one doesn't exist @ *2017-01-05T18:46:11Z*
  - 02e6a78 Merge pull request #38567 from pass-by-value/pgjsonb_queue_changes_2016.3
  - 67879eb Create queue if one doesn't exist

- **PR** #38587: (*rallytime*) Change daemontools __virtualname__ from service to daemontools @ *2017-01-05T18:06:01Z*
  - **ISSUE** #37498: (*githubcdr*) service.restart salt-minion fails on Ubuntu 14.04.5 LTS | refs: #37748 #38587
  - 0889cbd Merge pull request #38587 from rallytime/fix-37498
  - 2a58809 Change daemontools __virtualname__ from service to daemontools
- **PR** #38562: (*rallytime*) Update arch installation docs with correct package name @ *2017-01-04T20:04:28Z*
  - 7b74436 Merge pull request #38562 from rallytime/arch-install-docs
  - 8b1897a Update arch installation docs with correct package name
- **PR** #38560: (*Ch3LL*) fix api logfile | refs: #38585 @ *2017-01-04T19:03:17Z*
  - 0186070 Merge pull request #38560 from Ch3LL/fix_api_log
  - 1b45e96 fix api logfile
- **PR** #38531: (*rallytime*) Back-port #33601 to 2016.3 @ *2017-01-04T16:56:53Z*
  - **PR** #33601: (*mchugh19*) Fix slack engine to run on python2.6 | refs: #38531
  - 0056620 Merge pull request #38531 from rallytime/bp-33601
  - c36cb39 remove the unnecessary double trigger
  - 3841449 fix spacing lint error
  - 8c1defc Remove uncessary type from alias commands. Deduplicate alias handling to autodetect function selection. Add error reporting to slack connectivty problems. Cleanup slack's unicode conversion
  - c2f23bc Fix slack engine to run on python2.6
- **PR** #38541: (*techhat*) Strip user:pass from cached URLs @ *2017-01-04T15:39:57Z*
  - **ISSUE** #38187: (*curiositycasualty*) username/password saved as cleartext when using URIs with user:pass@ format | refs: #38541
  - 50242c7 Merge pull request #38541 from techhat/issue38187
  - eae3a43 Strip user:pass from cached URLs
- **PR** #38554: (*multani*) Fix YAML deserialization of unicode @ *2017-01-04T15:31:16Z*
  - **ISSUE** #30454: (*favoretti*) Using yaml serializer inside jinja template results in unicode being prepended by `!!python/unicode' | refs: #38554 #38554 #30481
  - **PR** #30481: (*basepi*) Add yaml_safe jinja filter | refs: #38554
  - 325dc56 Merge pull request #38554 from multani/fix/30454
  - 2e7f743 yaml: support unicode serialization/deserialization
  - df76113 jinja: test the ``yaml'' filter with ordered dicts
  - f7712d4 Revert ``Add yaml_safe filter''
- 4ddbc2e add note about pyVmomi locale workaround (#38536)
  - **PR** #38536: (*UtahDave*) add note about pyVmomi locale workaround
- 1c951d1 fix gce image bug (#38542)
  - **ISSUE** #38353: (*Ch3LL*) salt-cloud gce specifying | refs: #38542 #38542
  - **PR** #38542: (*Ch3LL*) fix gce image bug

- **PR** #38487: (*gtmanfred*) Fix crontab issues with spaces @ *2017-01-01T20:33:29Z*
  - **ISSUE** #38449: (*swalladge*) Parsing issues in *list_tab* (salt/modules/cron.py) | refs: #38487
  - ec60f9c Merge pull request #38487 from gtmanfred/2016.3
  - 048b9f6 add test
  - c480c11 allow spaces in cron env
  - c529ec8 allow crons to have multiple spaces
- **PR** #38491: (*gtmanfred*) Use UTC for timing in case timezone changes @ *2017-01-01T20:30:57Z*
  - **ISSUE** #37684: (*thusoy*) State execution duration is timezone-dependent | refs: #38491
  - c5ba11b Merge pull request #38491 from gtmanfred/timing
  - 79368c7 Use UTC for timing in case timezone changes
- **PR** #38503: (*jinm*) Hash type fallback for file management @ *2017-01-01T17:36:51Z*
  - **ISSUE** #38472: (*jinm*) file.managed Unable to manage file: `hash_type' (2016.3.4) | refs: #38503
  - 86f0aa0 Merge pull request #38503 from jinm/issue_38472_jinm
  - 0cd9df2 Hash type fallback for file management
- **PR** #38457: (*bshelton229*) Stops git.latest checking for local changes in a bare repo @ *2016-12-30T14:28:47Z*
  - ed2ba4b Merge pull request #38457 from bshelton229/git-latest-head-bug
  - 558e7a7 Stops git.latest checking for local changes in a bare repo
- **PR** #38385: (*dragon788*) Use unambigous long names with double dashes @ *2016-12-29T17:10:48Z*
  - 36e21b2 Merge pull request #38385 from dragon788/2016.3-double-dash
  - 86c4b56 Newline for lint compat
  - 9d9b686 Address review comments, consistency of quotes
  - df9bd5e Use unambigous long names with double dashes
- **PR** #38474: (*cachedout*) Allow an existing ioloop to be passed to salt-key @ *2016-12-29T16:28:51Z*
  - **ISSUE** #38209: (*limited*) Accepting a minion causes tornado to exit | refs: #38474
  - 59f2560 Merge pull request #38474 from cachedout/key_loop
  - de50453 Allow an existing ioloop to be passed to salt-key
- **PR** #38467: (*gtmanfred*) file.line fail with mode=delete @ *2016-12-28T20:00:33Z*
  - **ISSUE** #38438: (*jf*) file.line with mode=delete breaks on empty file | refs: #38467
  - 3d0c752 Merge pull request #38467 from gtmanfred/2016.3
  - 7b7c6b3 file.line fail with mode=delete
- **PR** #38434: (*slinn0*) Make sysctl.persist fail when failing to set a value into the running kernel @ *2016-12-27T15:37:53Z*
  - 940025d Merge pull request #38434 from slinn0/issue_38433_fixes
  - 22af87a Fixes for https://github.com/saltstack/salt/issues/38433
- e5eb512 Update deprecation notices to the correct version (#38421)
  - **PR** #38421: (*rallytime*) Update deprecation notices to the correct version

  - **PR** #38420: (*rallytime*) Removed various deprecation notices from salt/modules/* files | refs: #38421
- 9ce5331 file.managed: Fix failure when filename contains unicode chars (#38415)
  - **ISSUE** #38282: (*sash-kan*) file.managed fails when file (which contains utf-characters in the name) exists | refs: #38415
  - **PR** #38415: (*terminalmage*) file.managed: Fix failure when filename contains unicode chars
- **PR** #38419: (*Ch3LL*) fix scsci docs example @ *2016-12-22T18:57:51Z*
  - 2cdb59d Merge pull request #38419 from Ch3LL/fix_doc_scsi
  - 234043b fix scsci docs example
- 2725352 Improve pillar documentation (#38407)
  - **PR** #38407: (*terminalmage*) Improve pillar documentation
- **PR** #38398: (*terminalmage*) Fix call to file.get_managed in cron.file state @ *2016-12-22T16:46:14Z*
  - **ISSUE** #38372: (*fanirama*) Issue with cron.file. Source: salt://path/to/crontab_file not found | refs: #38398
  - 423b1fd Merge pull request #38398 from terminalmage/issue38372
  - c80dbaa Fix call to file.get_managed in cron.file state
- 5a33d1e Fix http.query when result has no text (#38382)
  - **PR** #38382: (*heewa*) Fix http.query when result has no text
- **PR** #38390: (*meaksh*) Add ``try-restart'' to fix autorestarting on SUSE systems @ *2016-12-21T16:06:24Z*
  - b74b5c7 Merge pull request #38390 from meaksh/2016.3-fix-try-restart-for-autorestarting-on-SUSE-systems
  - de6ec05 add try-restart to fix autorestarting on SUSE systems
- **PR** #38221: (*UtahDave*) Fix default returner @ *2016-12-20T20:34:36Z*
  - 2c3a397 Merge pull request #38221 from UtahDave/fix_default_returner
  - 3856407 remove a blank line to satisfy linter
  - 9c248aa validate return opt, remove default.
  - 8bb37f9 specify allowed types and default for ``returner''
  - 11863a4 add examples of default minion returners
  - e7c6012 add support for default returners using *return*
- **PR** #38288: (*terminalmage*) archive.extracted: don't try to cache local sources (2016.3 branch) @ *2016-12-18T13:07:11Z*
  - 09d9cff Merge pull request #38288 from terminalmage/archive-extracted-local-source-2016.3
  - 845e3d0 Update tests to reflect change in cache behavior
  - 5a08d7c archive.extracted: don't try to cache local sources (2016.3 branch)
- **PR** #38312: (*cro*) Backport feature allowing proxy config to live in pillar OR /etc/salt/proxy @ *2016-12-18T12:39:01Z*
  - bf37667 Merge pull request #38312 from cro/proxy_config_in_cfg
  - 2006c40 Typo
  - 689d95b Backport feature allowing proxy config to live in pillar OR /etc/salt/proxy.

- **PR** #38320: (*rallytime*) Cleanup doc internal markup references @ *2016-12-18T12:31:28Z*
  - **ISSUE** #12788: (*whiteinge*) Comb through docs to replace :doc: roles with :ref: | refs: #38320
  - c83db5a Merge pull request #38320 from rallytime/cleanup-doc-refs
  - 62978cb Don't check the doc/conf.py file for doc markup refs
  - 770e732 Add a unit test to search for new doc markup refs
  - 5c42a36 Remove ":doc:" references from all doc/topics/installation/* files
  - 23bce1c Remove ":doc:" references from all doc/topics/releases/* files
  - 4aafa41 Remove ":doc:" references from a bunch of doc/* files
  - 02bfe79 Remove more ":doc:" references from doc/* files
  - 6e32267 Remove ":doc:" references in salt/* files
- 6367ca7 Add nick to args for create_multi (#38281)
  - **PR** #38281: (*mikejford*) Add nick to args for create_multi
- **PR** #38313: (*dragon788*) 2016.3 chocolatey fix @ *2016-12-16T17:20:39Z*
  - **ISSUE** #38290: (*dragon788*) Need to use machine automation friendly output | refs: #38313
  - 235682b Merge pull request #38313 from dragon788/2016.3-chocolatey-fix
  - 1f5fc17 Use machine readable output for list
  - cdbd2fb Added limit-output to eliminate false packages
- **PR** #38279: (*rallytime*) Add docs for syndic_wait setting @ *2016-12-15T18:30:31Z*
  - **ISSUE** #38174: (*NickDubelman*) [syndic] Why can't a syndic node signal when all of it's minions have returned? | refs: #38279
  - **ISSUE** #32400: (*rallytime*) Document Default Config Values | refs: #38279
  - 9e78ddc Merge pull request #38279 from rallytime/fix-38174
  - 4a62d01 Add docs for syndic_wait setting
- **PR** #38248: (*meaksh*) Successfully exit of salt-api child processes when SIGTERM is received @ *2016-12-15T09:16:27Z*
  - fc9e1df Merge pull request #38248 from meaksh/salt-api-successfully-close-child-processes
  - ee6eae9 Successfully exit of salt-api child processes when SIGTERM.
- **PR** #38254: (*terminalmage*) Also check if pillarenv is in opts @ *2016-12-15T09:10:24Z*
  - 3c718ed Merge pull request #38254 from terminalmage/check-pillarenv
  - fa9ad31 Also check if pillarenv is in opts
- 6b9060c [2016.3] Bump latest release version to 2016.11.1 (#38256)
  - **PR** #38256: (*rallytime*) [2016.3] Bump latest release version to 2016.11.1
- **PR** #38198: (*vutny*) Add missing requirements for running unit tests: libcloud and boto3 @ *2016-12-13T14:12:20Z*
  - 004e46a Merge pull request #38198 from vutny/unit-tests-require-libcloud-boto3
  - a6098ba Remove note about SaltTesting installation, now it is in the requirements
  - 004bff1 Add missing requirements for running unit tests: libcloud and boto3

- **PR** #38213: (*rallytime*) Skip test_cert_info tls unit test on pyOpenSSL upstream errors @ *2016-12-13T12:05:01Z*
  - 9d497bc Merge pull request #38213 from rallytime/skip-tls-test
  - bdb807f Skip test_cert_info tls unit test on pyOpenSSL upstream errors
- **PR** #38224: (*whiteinge*) Allow CORS OPTIONS requests to be unauthenticated @ *2016-12-13T12:02:30Z*
  - 203109d Merge pull request #38224 from whiteinge/cors-options-unauthed
  - de4d322 Allow CORS OPTIONS requests to be unauthenticated
- **PR** #38223: (*whiteinge*) Add root_dir to salt-api file paths @ *2016-12-13T07:44:19Z*
  - **PR** #37272: (*vutny*) Get default logging level and log file from default opts dict | refs: #38223
  - 721a5fe Merge pull request #38223 from whiteinge/salt-api-root_dirs
  - bfbf390 Add root_dir to salt-api file paths
- **PR** #38191: (*terminalmage*) Clarify the fact that git_pillar.update does not fast-forward @ *2016-12-12T09:45:48Z*
  - **ISSUE** #38162: (*747project*) git_pillar does not detect changes to remote repository when told to update | refs: #38191
  - 70f7d22 Merge pull request #38191 from terminalmage/issue38162
  - 1ae543a Clarify the fact that git_pillar.update does not fast-forward
- **PR** #38194: (*vutny*) Document the requirements for running ZeroMQ-based integration tests @ *2016-12-12T09:42:11Z*
  - 28171cb Merge pull request #38194 from vutny/integration-test-requirements-doc
  - e9f419f Document the requirements for running ZeroMQ-based integration tests
- **PR** #38185: (*rallytime*) Back-port #38181 to 2016.3 @ *2016-12-09T22:27:44Z*
  - **PR** #38181: (*rallytime*) Reset socket default timeout to None (fixes daemons_tests failures) | refs: #38185
  - a4ef037 Merge pull request #38185 from rallytime/bp-38181
  - 609f814 Reset socket default timeout to None (fixes daemons_tests failures)
- **PR** #38163: (*Ch3LL*) enabled ec2 cloud tests @ *2016-12-09T18:01:57Z*
  - 65b2ad7 Merge pull request #38163 from Ch3LL/enabled_ec2_cloud
  - be74c45 enabled ec2 cloud tests
- **PR** #38177: (*vutny*) Correct *cp.get_file_str* docstring and add integration tests @ *2016-12-09T16:55:35Z*
  - b63f74e Merge pull request #38177 from vutny/fix-cp-get-file-str
  - a449980 Correct *cp.get_file_str* docstring and add integration tests
- **PR** #38153: (*vutny*) Master config includes may contain errors and be safely skipped @ *2016-12-08T17:43:34Z*
  - 7596313 Merge pull request #38153 from vutny/master-includes-error-tolerance
  - cd0154e Master config includes may contain errors and be safely skipped
- 86091db Skip daemon unit tests when running on Python 2.6 (#38134)
  - **PR** #38134: (*rallytime*) Skip daemon unit tests when running on Python 2.6
- **PR** #38102: (*rallytime*) Add False + msg tuple return if requests is missing for zenoss module @ *2016-12-07T13:24:37Z*

  - **ISSUE** #38091: (*tjyang*) [WARNING ] salt.loaded.int.module.zenoss.__virtual__() is wrongly returning *None.* | refs: #38102
  - d3d98fd4 Merge pull request #38102 from rallytime/fix-38091
  - 4f79d5a Add False + msg tuple return if requests is missing for zenoss module
- **PR** #38104: (*rallytime*) Back-port #36794 to 2016.3 @ *2016-12-07T13:23:48Z*
  - **ISSUE** #36707: (*do3meli*) slow FreeBSD sysctl module with test=true | refs: #36794
  - **PR** #36794: (*do3meli*) FreeBSD sysctl module now handels config_file parameter in show method | refs: #38104
  - 8c8cbc2 Merge pull request #38104 from rallytime/bp-36794
  - c906c8a Pylint fixes
  - da3ebf8 FreeBSD sysctl module now handels config_file parameter in show method
- **PR** #38083: (*twangboy*) Only delete .sls files from winrepo-ng [DO NOT MERGE FORWARD] @ *2016-12-06T14:13:35Z*
  - **ISSUE** #35342: (*morganwillcock*) win_pkg: refresh_db doesn't remove cached items which have been renamed or removed | refs: #38083
  - fbc8776 Merge pull request #38083 from twangboy/fix_refresh_db
  - 978af6d Remove only .sls files from the cached winrepo-ng
- **PR** #38059: (*rallytime*) Call exec_test for the Syndic daemon in tests.unit.daemons_test.py @ *2016-12-04T04:18:41Z*
  - **PR** #38057: (*rallytime*) [2016.11] Merge forward from 2016.3 to 2016.11 | refs: #38059
  - **PR** #38034: (*cachedout*) Modify daemons test to use multiprocessing | refs: #38059
  - 9dcfdee Merge pull request #38059 from rallytime/daemons-test-fix
  - eb372b2 Add missing ``not'' statement: The last syndic test should assertFalse()
  - 4e10f8e Call exec_test for the Syndic daemon in tests.unit.daemons_test.py
- **PR** #38039: (*rallytime*) Check to see if a line is already commented before moving on @ *2016-12-02T20:08:35Z*
  - **ISSUE** #37939: (*Talkless*) file.comment always report changes in test=True mode | refs: #38039
  - 9cd42b9 Merge pull request #38039 from rallytime/fix-37939
  - 1da7aac Update unit tests to account for additional file.search call
  - 8a685b1 Check to see if a line is already commented before moving on
  - f2c0455 Write an integration test demonstrating the issue
- **PR** #38045: (*terminalmage*) yumpkg.py: don't include non-upgrade versions found by ``yum list available'' @ *2016-12-02T20:07:38Z*
  - **ISSUE** #38037: (*dmurphy18*) pkg.latest and yumpkg.latest_version return incorrect package versions 2016.3 and 2016.11 | refs: #38045
  - a34a763 Merge pull request #38045 from terminalmage/issue38037
  - 6528950 Simplify logic for matching desired pkg arch with actual pkg arch
  - 3babbcd yumpkg.py: don't include non-upgrade versions found by ``yum list available''
- 6724fe4 Modify daemons test to use multiprocessing (#38034)

  - **PR** #38034: (*cachedout*) Modify daemons test to use multiprocessing | refs: #38059
- **PR** #37995: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3 @ *2016-11-30T20:12:55Z*
  - **PR** #37978: (*terminalmage*) Add clarifying language to ext_pillar_first docs
  - 6942d5d Merge pull request #37995 from rallytime/merge-2016.3
  - b44e179 Merge branch `2015.8' into `2016.3'
    * 7a7e367 Merge pull request #37978 from terminalmage/ext_pillar_first-docs
      · 61ed9a8 Add clarifying language to ext_pillar_first docs
- cd66c17 fix broken yaml code block (#38002)
  - **PR** #38002: (*laleocen*) fix broken yaml code block
- **PR** #37912: (*attiasr*) fix encoding problem aws responses @ *2016-11-30T18:10:30Z*
  - **ISSUE** #35088: (*Modulus*) salt/cloud/ec2.py encoding problems. | refs: #37912
  - 3dd45fb Merge pull request #37912 from attiasr/fix_aws_response_encoding
  - ba4ec4e use Requests result encoding to encode the text
  - abe4eb3 fix encoding problem aws responses
- **PR** #37950: (*vutny*) Set default Salt Master address for a Syndic (like for a Minion) @ *2016-11-30T18:09:04Z*
  - 69a74a4 Merge pull request #37950 from vutny/fix-starting-up-syndic
  - 7d9bc9a syndic_master: correct default value, documentation and example config
  - 92a7c7e Set default Salt Master address for a Syndic (like for a Minion)
- 7f269bc Add clarification on expr_form usage and future deprecation (#37964)
  - **PR** #37964: (*terminalmage*) Add clarification on expr_form usage and future deprecation
- 1001987 Catch possible exception from lsb_release (#37962)
  - **ISSUE** #37867: (*tobiasBora*) Bug into lsb_release that crash salt | refs: #37962
  - **PR** #37962: (*cachedout*) Catch possible exception from lsb_release
- 330021c Handle empty tokens safely (#37961)
  - **ISSUE** #37945: (*gstachowiak*) Missing exception handling in salt.master.Maintenance. Process never completes. | refs: #37961
  - **PR** #37961: (*cachedout*) Handle empty tokens safely
- **PR** #37272: (*vutny*) Get default logging level and log file from default opts dict | refs: #38223 @ *2016-11-28T23:04:20Z*
  - ea46639 Merge pull request #37272 from vutny/fix-getting-default-logging-opts
  - e5ce523 Fix description in the Salt Syndic usage info
  - 518a3dd Add unit tests for Salt parsers processing logging options
  - 83d6a44 Add *ssh_log_file* option to master config and documentation
  - c8a0915 Fix configuration example and documentation for *syndic_log_file* option
  - e64dd3e Correct default attributes for various parser classes
  - 82a2e21 Fix default usage string for Salt command line programs
  - 45dffa2 Fix readding and updating logfile and pidfile config options for Salt API

  - f47253c Fix reading and applying Salt Cloud default configuration
  - fad5bec Work with a copy of default opts dictionaries
  - b7c2481 Fix *log_level_logfile* config value type
  - 1bd76a1 Fix setting temporary log level if CLI option omitted
  - 121848c Fix obtaining *log_granular_levels* config setting
  - 44cf07f Make CLI options take precedence for setting up logfile_logger
  - 61afaf1 Fix setting option attributes when processing *log_level* and *log_file*
  - 3c60e23 Fix processing of *log_level_logfile* config setting
  - 55a0af5 Use attribute functions for getting/setting options and config values
  - c25f2d0 Fix getting Salt API default logfile option
  - f242237 Remove processing of unused and undocumented *cli_*_log_** config options
  - 2065e83 Get default logging level and file from default opts dict
- **PR** #37925: (*kontrolld*) Fix missing ipv6 options centos network @ *2016-11-28T22:38:43Z*
  - f2f957d Merge pull request #37925 from kontrolld/add-ipv6-centos-network
  - ac2b477 Adding IPv6 functionality for CentOS /etc/sysconfig/network
- **PR** #37899: (*DmitryKuzmenko*) Clear functions context in schedule tasks for ZeroMQ. @ *2016-11-28T22:23:45Z*
  - **ISSUE** #37059: (*basepi*) Beacon fileserver operations cause scheduled jobs with fileserver operations to hang | refs: #37899
  - c07ad11 Merge pull request #37899 from DSRCorporation/bugs/37059_schedule_task_hang
  - 9497748 Clear functions context in schedule tasks for ZeroMQ.
- **PR** #37928: (*techhat*) Don't modify self.opts directly @ *2016-11-28T21:07:40Z*
  - **ISSUE** #37737: (*b-harper*) python client api CloudClient multiple calls needed | refs: #37928
  - a55519d Merge pull request #37928 from techhat/issue37737
  - a09a60e Don't modify self.opts directly
- **PR** #37929: (*gtmanfred*) add list_nodes_min to nova driver @ *2016-11-28T21:05:40Z*
  - 9d17f1c Merge pull request #37929 from gtmanfred/2016.3
  - c7d2c73 add list_nodes_min to nova driver
- **PR** #37926: (*kontrolld*) Fixes no IPv6 functionality in /etc/sysconfig/network @ *2016-11-28T20:40:00Z*
  - 3bb743b Merge pull request #37926 from kontrolld/fix-ipv6-centos-network
  - 3ed42e5 updated
  - 3b3bc4f Fixes no IPv6 functionality in /etc/sysconfig/network
- **PR** #37921: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3 @ *2016-11-28T19:54:40Z*
  - **PR** #37918: (*rallytime*) [2015.8] Update version numbers in doc config for 2016.11.0 release
  - **PR** #37914: (*terminalmage*) Update earlier release channels' docs with Carbon release notes
  - 271170a Merge pull request #37921 from rallytime/merge-2016.3
  - 523a67c Merge branch `2015.8' into `2016.3'

    * 4cdc6cf Update earlier release channels' docs with Carbon release notes (#37914)
    * d31491a [2015.8] Update version numbers in doc config for 2016.11.0 release (#37918)

- **PR** #37924: (*cachedout*) Update test for new gem ver @ *2016-11-28T18:17:53Z*
  - 6cd6429 Merge pull request #37924 from cachedout/fix_gem_states
  - 894cca3 Update test for new gem ver
- **PR** #37916: (*rallytime*) [2016.3] Update version numbers in doc config for 2016.11.0 release @ *2016-11-28T17:09:08Z*
  - c35ba1f Merge pull request #37916 from rallytime/doc-update-2016.3
  - bd40592 [2016.3] Update version numbers in doc config for 2016.11.0 release
- **PR** #37785: (*AaronM-Cloudtek*) respect trailing dot in ddns name parameter @ *2016-11-28T14:02:10Z*
  - **ISSUE** #37287: (*AaronM-Cloudtek*) salt.states.ddns.present: `NS' record type always returns as changed | refs: #37785
  - e13a248 Merge pull request #37785 from Cloudtek/ddns-respect-trailing-dot
  - 262e3b3 respect trailing dot in ddns name parameter
- **PR** #37895: (*fj40crawler*) Change return value for salt/states/augeas.py to be True instead of N... @ *2016-11-28T13:49:27Z*
  - **ISSUE** #37870: (*fj40crawler*) salt.states.augeas.change returns None when test=True | refs: #37895
  - c03b389 Merge pull request #37895 from fj40crawler/fix-augeas-return-for-test
  - ddc238d Fixed augeas_test.py to match True v.s. None for test_change_in_test_mode
  - ef75c45 Merge branch `2016.3' of github.com:saltstack/salt into fix-augeas-return-for-test
  - b0fe0cd Change return value for salt/states/augeas.py to be True instead of None for cases where salt is run with test=True. Fixes #37870
- **PR** #37907: (*Talkless*) Fix server trust in test run of svn.latest @ *2016-11-28T13:47:39Z*
  - fdbc31e Merge pull request #37907 from Talkless/patch-2
  - 072a319 Fix server trust in test run of svn.latest
- **PR** #37896: (*toanju*) rh networking: add missing values @ *2016-11-27T10:30:35Z*
  - f39fdf4 Merge pull request #37896 from toanju/2016.3
  - c953041 rh networking: add missing values
- **PR** #37886: (*bdrung*) Fix various spelling mistakes @ *2016-11-25T02:59:36Z*
  - ea935c5 Merge pull request #37886 from bdrung/fix-typos
  - 9a51ba5 Fix various spelling mistakes
- **PR** #37736: (*dhaines*) handle semodule version >=2.4 (#37732) and fix typo @ *2016-11-24T01:44:20Z*
  - **ISSUE** #37732: (*dhaines*) list_semod() (from modules/selinux.py) incompatible with policycoreutils-2.5 (RHEL 7.3) | refs: #37736
  - 371b0a8 Merge pull request #37736 from dhaines/issue-37732
  - 7ef590a Update selinux.py
  - 516a67e fix indexing error
  - 4e49c1e fix typo

  - b16f2d8 handle semodule version >=2.4 (#37732) and fix typo
- **PR** #37797: (*clan*) check count of columns after split @ *2016-11-24T01:28:59Z*
  - 87aeb66 Merge pull request #37797 from clan/extfs
  - acf0f96 check count of columns after split
- **PR** #37762: (*twangboy*) Add pre_versions to chocolatey.installed @ *2016-11-24T01:27:29Z*
  - f7c7109 Merge pull request #37762 from twangboy/fix_chocolatey_state
  - 9696b6d Use keyword args instead of relying on ordering
  - 398eaa0 Add pre_versions to the available arguments
- **PR** #37866: (*meaksh*) Backport #37149 #36938 and #36784 to 2016.3 @ *2016-11-23T21:54:17Z*
  - **PR** #37857: (*meaksh*) Backport #37149 and #36938 to 2015.8 | refs: #37866
  - **PR** #37856: (*meaksh*) Backport #36784 to 2015.8 | refs: #37866
  - **PR** #37149: (*dincamihai*) Fix pkg.latest_version when latest already installed | refs: #37866 #37857
  - **PR** #36938: (*wanparo*) acl.delfacl: fix position of -X option to setfacl | refs: #37866 #37857
  - **PR** #36784: (*moio*) OS grains for SLES Expanded Support | refs: #37866 #37856
  - 56baa92 Merge pull request #37866 from meaksh/2016.3-bp-37149-36938-36784
  - 9d8d578 Fix pkg.latest_version when latest already installed
  - ffca0d4 - acl.delfacl: fix position of -X option to setfacl
  - 3dfed6b Adjust linux_acl unit test argument ordering
  - f185ecd core.py: quote style fixed
  - 8404d13 Setting up OS grains for SLES Expanded Support (SUSE's Red Hat compatible platform)
- **PR** #37863: (*rallytime*) Back-port #36893 to 2016.3 @ *2016-11-23T17:09:09Z*
  - **ISSUE** #32829: (*tyhunt99*) Dockerng appears to not be using docker registries pillar data | refs: #36893 #36893
  - **PR** #36893: (*tyhunt99*) add option to force a reauth for a docker registry | refs: #37863
  - d0cc7f0 Merge pull request #37863 from rallytime/bp-36893
  - 4c70534 Add versionadded to reauth option in dockerng module
  - 5ca2c38 added documentation for the new reuth option in docker registry configuration
  - 5b0c11a add option to force a reauth for a docker registry
- b17a118 add multiline encryption documentation to nacl (#37847)
  - **PR** #37847: (*laleocen*) add multiline encryption documentation to nacl
- aa37487 add missing chloginclass (#37827)
  - **ISSUE** #37787: (*elyulka*) user.present state fails to change loginclass on FreeBSD | refs: #37827
  - **PR** #37827: (*silenius*) add missing chloginclass
- 0e74bad Update branch refs to more relevant branch (#37826)
  - **PR** #37826: (*rallytime*) Update branch refs to more relevant branch
  - **PR** #37822: (*laleocen*) add documenation for multiline encryption using nacl | refs: #37826

- 6a9b49c Add ``names'' option to file state docs: point users to highstate doc examples (#37823)
  - **ISSUE** #19269: (*markuskramerIgitt*) Undocumented feature *names:* of *file.directory* | refs: #37823
  - **PR** #37823: (*rallytime*) Add ``names'' option to file state docs: point users to highstate doc examples
- aaf587d Clarify keystone.user_present password state docs with default behavior (#37821)
  - **ISSUE** #15697: (*arthurlogilab*) keystone.user_present should not re-set the password when user exists | refs: #37821
  - **PR** #37821: (*rallytime*) Clarify keystone.user_present password state docs with default behavior
- c300863 Add some dependency documentation to libvirt docs (#37820)
  - **ISSUE** #5999: (*pille*) libvirt.keys does not work | refs: #37820
  - **PR** #37820: (*rallytime*) Add some dependency documentation to libvirt docs
- **PR** #37772: (*bdrung*) Support initializing OpenSSL 1.1 @ *2016-11-21T20:28:51Z*
  - 485270f Merge pull request #37772 from bdrung/openssl1.1
  - 819c965 Support initializing OpenSSL 1.1
- 4910912 Update orchestrate runner file.copy doc example (#37817)
  - **ISSUE** #37383: (*edwardsdanielj*) Orchestration arguments (kwarg) not being interperted / How I learned to stop worrying about documentation and love experimenting | refs: #37817
  - **PR** #37817: (*rallytime*) Update orchestrate runner file.copy doc example
- **PR** #37816: (*rallytime*) Back-port #32157 to 2016.3 @ *2016-11-21T20:22:27Z*
  - **ISSUE** #37653: (*gravyboat*) Salt.cron docs don't wrap @hourly and @daily correctly in quotes for the examples | refs: #37816
  - **ISSUE** #31953: (*sjorge*) Documentation for salt.states.cron is incorrect | refs: #32157
  - **PR** #32157: (*cachedout*) Add quotes to cron doc | refs: #37816
  - c5d3d8b Merge pull request #37816 from rallytime/bp-32157
  - d9c2971 Add quotes to cron doc
- **PR** #37812: (*rallytime*) Back-port #37790 to 2016.3 @ *2016-11-21T18:46:40Z*
  - **PR** #37790: (*sofixa*) Update cloud/proxmox.rst with more options and LXC | refs: #37812
  - 97e6b6a Merge pull request #37812 from rallytime/bp-37790
  - ca3b6e7 Update proxmox.rst with more options and LXC
- **PR** #37811: (*rallytime*) Back-port #37789 to 2016.3 @ *2016-11-21T18:46:21Z*
  - **ISSUE** #37751: (*freach*) Documentation salt.states.dockerng.running: ``privileged'' property undocumented | refs: #37789
  - **PR** #37789: (*fedusia*) issue: 37751 | refs: #37811
  - 27703c5 Merge pull request #37811 from rallytime/bp-37789
  - ba3fef4 fix comment
  - a021f76 issue: 37751 Add documentation for option privileged
- **PR** #37810: (*rallytime*) Back-port #37775 to 2016.3 @ *2016-11-21T18:45:53Z*
  - **PR** #37775: (*calve*) Document *python* argument in *salt.states.virtualenv_mod* | refs: #37810

  - adac9d7 Merge pull request #37810 from rallytime/bp-37775
  - 2bed914 Document *python* argument in *salt.states.virtualenv_mod*
- 7de7844 Add nodegroup check to ckminions (#37763)
  - **ISSUE** #37742: (*blaketmiller*) Cannot match on nodegroup when checking minions | refs: #37763
  - **PR** #37763: (*cachedout*) Add nodegroup check to ckminions
- d674369 Fix ip/port issue with salt-call (#37766)
  - **ISSUE** #37725: (*secumod*) salt-call incorrectly parses master hostname:port from minion config | refs: #37766
  - **PR** #37766: (*cachedout*) Fix ip/port issue with salt-call
- c62ff6b Add thorium path to syspaths (#37767)
  - **ISSUE** #33709: (*msummers42*) Any/All Salt-SSH invocations in 2016.3.0 Fails with AttributeError: `module' object has no attribute `BASE_THORIUM_ROOTS_DIR' | refs: #37767
  - **PR** #37767: (*cachedout*) Add thorium path to syspaths
- **PR** #37760: (*hu-dabao*) Fix couchbase returner and add couple of more features @ *2016-11-18T00:28:23Z*
  - bff949f Merge pull request #37760 from hu-dabao/fix_cb_returner
  - de372f2 1. returner no need to check whether the jid exists for external job cache setup 2. add full_ret to return doc so that the document will be informative 3. make ttl as a config attribute because salt-minion does not have keep_jobs attribute 4. add password into config attribute 5. update the documents accordingly
- **PR** #37738: (*terminalmage*) Allow pillar.get to retrieve fresh pillar data when saltenv passed @ *2016-11-17T23:13:04Z*
  - **ISSUE** #36629: (*yhekma*) The pillar run module does not honor saltenv | refs: #37738
  - 1f976ac Merge pull request #37738 from terminalmage/issue36629
  - da46678 Allow pillar.get to retrieve fresh pillar data when saltenv passed
- 7aee7fc Switch default filter tag for ONE resources from user only to all resources (#37745)
  - **PR** #37745: (*cro*) Switch default filter tag for ONE resources from user only to all resources
- 6ba8d4e check for SERVICE_DIR in __virtual__ in salt.modules.daemontools (#37748)
  - **ISSUE** #37498: (*githubcdr*) service.restart salt-minion fails on Ubuntu 14.04.5 LTS | refs: #37748 #38587
  - **PR** #37748: (*silenius*) check for SERVICE_DIR in __virtual__ in salt.modules.daemontools
- **PR** #37735: (*Ch3LL*) change size and image of joyent profile @ *2016-11-16T21:07:52Z*
  - **ISSUE** #37734: (*Ch3LL*) Joyent Cloud Size Issue | refs: #37735
  - fa78831 Merge pull request #37735 from Ch3LL/fix_joyent_profile
  - 9ef41dc change size and image of joyent profile
- **PR** #37731: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3 @ *2016-11-16T17:13:02Z*
  - **PR** #37718: (*terminalmage*) Fix incorrectly-formatted RST
  - 98e25c6 Merge pull request #37731 from rallytime/merge-2016.3
  - ec13897 Merge branch `2015.8' into `2016.3'
    * f417dbb Merge pull request #37718 from terminalmage/docs

        - 23b8b2a Fix incorrectly-formatted RST
- 3be9ab4 Warn on AES test for systems with > 1 core (#37724)
  - **PR** #37724: (*cachedout*) Warn on AES test for systems with > 1 core
- **PR** #37721: (*terminalmage*) Fix for pillar setting `environment' key in __gen_opts() @ *2016-11-16T16:04:53Z*
  - 35655d5 Merge pull request #37721 from terminalmage/zd909
  - acdd551 Update git_pillar docs to reflect info from bugfix
  - 433737d Fix for pillar setting `environment' key in __gen_opts()
- **PR** #37719: (*terminalmage*) Fix incorrectly-formatted RST (2016.3 branch) @ *2016-11-16T08:20:53Z*
  - 99cda7c Merge pull request #37719 from terminalmage/docs-2016.3
  - f163b4c Fix incorrectly-formatted RST
- **PR** #37694: (*cachedout*) Catch differences in git URLs in npm state @ *2016-11-16T01:56:18Z*
  - 8dea695 Merge pull request #37694 from cachedout/npm_git
  - 0e3bc23 Catch differences in git URLs in npm state
- **PR** #37705: (*rallytime*) Don't overwrite the ``key'' variable passed in to _listeners_present func @ *2016-11-15T21:26:37Z*
  - **ISSUE** #37665: (*kluoto*) boto_elb state fails as key is overwritten by the code | refs: #37705
  - 329448c Merge pull request #37705 from rallytime/fix-37665
  - 3b7e9c5 Don't overwrite the ``key'' variable passed in to _listeners_present func
- **PR** #37707: (*Ch3LL*) add timeout increase on azure tests @ *2016-11-15T21:24:25Z*
  - **PR** #37239: (*Ch3LL*) Fix cloud tests timeout | refs: #37707
  - ac9a316 Merge pull request #37707 from Ch3LL/fix_timeout_azure
  - 363122c add timeout increase on azure tests
- **PR** #37704: (*twangboy*) Fix test disabled 2016.3 [DO NOT MERGE FORWARD] @ *2016-11-15T16:48:52Z*
  - 1ece265 Merge pull request #37704 from twangboy/fix_test_disabled_2016.3
  - a0429cf Use nfsd instead of apsd for test_disabled
- **PR** #37690: (*twangboy*) Update pyzmq to 15.3.0 for 2016.3 [DO NOT MERGE FORWARD] @ *2016-11-15T03:10:36Z*
  - 44f05ac Merge pull request #37690 from twangboy/update_pyzmq_2016.3
  - cf55342 Update pyzmq to version 15.3.0
- **PR** #37680: (*rallytime*) Back-port #32965 to 2016.3 @ *2016-11-15T02:56:46Z*
  - **PR** #32965: (*kevinquinnyo*) Fix `present' option when used without `key_type' | refs: #37680
  - a743d8b Merge pull request #37680 from rallytime/bp-32965
  - 1865b13 Fix `present' option when used without `key_type'
- **PR** #37681: (*rallytime*) Back-port #35965 to 2016.3 @ *2016-11-14T21:19:22Z*
  - **ISSUE** #35964: (*edgan*) salt-ssh doesn't set the return code to non-zero on highstate rendering error | refs: #35965
  - **PR** #35965: (*edgan*) Set the return code to 1 on salt-ssh highstate errors | refs: #37681

  - 1c2d6ff Merge pull request #37681 from rallytime/bp-35965
  - 700f3fa Set the return code to 1 on salt-ssh highstate errors
- **PR** #37668: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3 @ *2016-11-14T15:43:25Z*
  - **PR** #37641: (*cro*) Add docs for rotate_aes_key
  - 1b456b5 Merge pull request #37668 from rallytime/merge-2016.3
  - ef684c6 Merge branch `2015.8' into `2016.3'
  - a01b665 Add docs for rotate_aes_key (#37641)
- **PR** #37625: (*cachedout*) Return with proper retcodes in batch mode @ *2016-11-12T20:29:09Z*
  - **ISSUE** #37492: (*JensRantil*) Failing *salt -b 1 minion state.highstate* has wrong exit code | refs: #37625
  - 305e51d Merge pull request #37625 from cachedout/issue_37492
  - b603152 Return with proper retcodes in batch mode
- **PR** #37639: (*rallytime*) Back-port #37607 to 2016.3 @ *2016-11-11T20:29:20Z*
  - **ISSUE** #34547: (*sebw*) salt-cloud deployment fails when deploy: True | refs: #37607
  - **PR** #37607: (*techhat*) Try the connection again, in case it's been reset | refs: #37639
  - **PR** #35673: (*cro*) Proxies don't handle reusing the SmartConnect instances very well. D... | refs: #37607
  - **PR** #34059: (*alexbleotu*) Vmware common gh | refs: #37607
  - 7510cd4 Merge pull request #37639 from rallytime/bp-37607
  - 9914c93 Pylint: Remove kwargs that are not in the 2016.3 branch
  - d941e93 Disable pylint warning
  - 940ee49 Lint fix
  - 69893f0 Try the connection again, in case it's been reset
- **PR** #37638: (*rallytime*) Back-port #37349 to 2016.3 @ *2016-11-11T20:29:01Z*
  - **ISSUE** #37118: (*gtmanfred*) group in file.find module unable to be a list | refs: #37349 #37349
  - **PR** #37349: (*haeac*) Pull request for Bug #37118 | refs: #37638
  - 24ca960 Merge pull request #37638 from rallytime/bp-37349
  - ba2105b Fix for Bug #37118, the wrong parameter was being used to convert the group name to group id.
- **PR** #37644: (*Ch3LL*) digital ocean list_keypairs: increase limit for ssh keys parsed @ *2016-11-11T20:28:46Z*
  - **ISSUE** #37643: (*Ch3LL*) digital ocean list_keypairs limits to 20 keys | refs: #37644
  - e1e8b81 Merge pull request #37644 from Ch3LL/fix_37643
  - c02961a list_keypairs: increase limit for ssh keys parsed
- **PR** #37640: (*rallytime*) Add known issue #37541 to 2016.3.4 release notes @ *2016-11-11T20:28:12Z*
  - **ISSUE** #37541: (*yhekma*) salt-minion does not clean up temp files for templates | refs: #37540 #37640
  - a97c2ad Merge pull request #37640 from rallytime/update-release-notes
  - 6d6de12 Grammatical fix
  - 24d7f20 Add known issue #37541 to 2016.3.4 release notes

- **PR** #37642: (*cro*) Forward-port change from 2015.8 adding release note for rotate_aes_key @ *2016-11-11T20:27:07Z*
  - fab3eaa Merge pull request #37642 from cro/rotate_aes_doc
  - 1ca5b95 Forward-port change from 2015.8 adding release note for rotate_aes_key
- **PR** #37629: (*TronPaul*) fix __opts__ and provider being None in salt.utils.aws:get_location @ *2016-11-11T09:49:47Z*
  - **ISSUE** #37628: (*TronPaul*) [git 2016.3] Refreshing of an s3 file server results in an exception | refs: #37629
  - 4c07b35 Merge pull request #37629 from TronPaul/fix-s3fs-opts
  - a452cde fix __opts__ and provider being None issue
- **PR** #37481: (*thatch45*) Raet internal client reference fix @ *2016-11-11T04:39:41Z*
  - 200d9fc Merge pull request #37481 from thatch45/raet_client
  - 50d9111 Attempted fix, needs user verification
- **PR** #37611: (*jeanpralo*) Fix cmd batch raw @ *2016-11-11T02:53:58Z*
  - b14faf1 Merge pull request #37611 from jeanpralo/fix-cmd-batch-raw
  - 4f16840 add integration test for salt.client.LocalClient.cmd_batch
  - ead47e4 update ret dict to avoid hanging
  - 0a2f153 fix dict key for raw support to avoid exception
- **PR** #37614: (*gtmanfred*) remove redundant code @ *2016-11-11T02:49:13Z*
  - 35c8333 Merge pull request #37614 from gtmanfred/2016.3
  - 71c2df8 remove redundent code
- **PR** #37627: (*cachedout*) Exempt pip.iteritems from test_valid_docs test @ *2016-11-11T02:48:37Z*
  - 4fab707 Merge pull request #37627 from cachedout/pr-36706
  - 94df2f8 Exempt pip.iteritems from test_valid_docs test
- **PR** #36706: (*siccrusher*) Add basic sanity checks for env_vars in pip.install function @ *2016-11-11T02:47:16Z*
  - **ISSUE** #36644: (*b1naryth1ef*) env_vars not properly validated/casted to strings w/ virtualenv.manage/pip.install | refs: #36706
  - ee74f31 Merge pull request #36706 from siccrusher/fix_env_var_validation
  - fb27f8b Revert change
  - 79f3e83 Use fully-qualified path for six
  - 0ca1222 Update pip.py
  - b15de37 * Ensure src is python3 compatible
  - 0976a2d * Before passing on the env_vars dictionary ensure all values are strings. Fixes #36644
- **PR** #37626: (*cachedout*) Exit with proper retcode on hard client failures @ *2016-11-11T02:38:47Z*
  - **ISSUE** #37491: (*JensRantil*) ``Failed to authenticate! ...'' error should exit non-zero | refs: #37626
  - 902a975 Merge pull request #37626 from cachedout/issue_37491
  - bab9a72 Exit with proper retcode on hard client failures
- **PR** #37617: (*terminalmage*) Clarify docs for git_pillar dynamic env feature @ *2016-11-11T01:52:52Z*

  - 845f835 Merge pull request #37617 from terminalmage/git_pillar-docs
  - 8cdf5db Clarify docs for git_pillar dynamic env feature
- **PR** #36627: (*sjmh*) Skip rest of loop on failed func match @ *2016-11-10T23:47:12Z*
  - 3079d78 Merge pull request #36627 from sjmh/fix/auth_skip_nomatch
  - b3baaf3 Skip rest of loop on failed func match
- **PR** #37600: (*mcalmer*) change TIMEZONE on SUSE systems (bsc`#1008933`_) @ *2016-11-10T21:54:04Z*
  - **ISSUE** #1008933: (**)
  - a71e7c7 Merge pull request #37600 from mcalmer/fix-timezone-on-SUSE
  - 3530b54 change TIMEZONE on SUSE systems (bsc`#1008933`_)
- **PR** #37602: (*DmitryKuzmenko*) Handle master restart in appropriate places using *salt.event* listener. @ *2016-11-10T21:53:20Z*
  - **ISSUE** #37238: (*cmclaughlin*) Restarting master causes minion to hang | refs: #37438 #37602
  - **ISSUE** #37018: (*tsaridas*) get events from python | refs: #37438 #37602
  - **PR** #37438: (*DmitryKuzmenko*) Fix for #37238 salt hang on master restart | refs: #37602
  - 39b7587 Merge pull request #37602 from DSRCorporation/bugs/37238_salt_hang_on_master_restart
  - d3d987b Handle master restart in appropriate places using *salt.event* listener.
- **PR** #37608: (*gtmanfred*) allow multiline returns from docker for mac @ *2016-11-10T21:48:59Z*
  - 019e1a7 Merge pull request #37608 from gtmanfred/2016.3
  - 74aee1e allow multiline returns from docker for mac
- 71032f8 Documentation improvements and corrections (#37604)
  - **ISSUE** #37592: (*craigafinch*) State git.latest does not work with SSH | refs: #37604
  - **ISSUE** #37551: (*viict*) git.latest ``Not a valid commit name'' | refs: #37571 #37604
  - **PR** #37604: (*terminalmage*) Documentation improvements and corrections
- a7e09f9 Use existing VM's VDD size if not specified in the cloud profile (#37579)
  - **PR** #37579: (*pass-by-value*) Use existing VM's VDD size if not specified in the cloud profile
- **PR** #37540: (*yhekma*) Added prefix to tempfile for template @ *2016-11-10T00:37:18Z*
  - **ISSUE** #37541: (*yhekma*) salt-minion does not clean up temp files for templates | refs: #37540 #37640
  - fdd13b4 Merge pull request #37540 from yhekma/2016.3
  - 93a59f8 Added prefix to tempfile for template
- 5e80acc Update for m2crypto changes removing lhash (#37578)
  - **ISSUE** #37084: (*AaronM-Cloudtek*) x509.certificate_managed does not work with m2crypto >=0.25 | refs: #37578
  - **PR** #37578: (*clinta*) Update for m2crypto changes removing lhash
- 928462d fix example of function argument limiting (#37584)
  - **PR** #37584: (*clinta*) Fix eauth example for limiting args
- 2810b85 Add a test to ensure we don't check for fast-forward before fetching (#37571)
  - **ISSUE** #37551: (*viict*) git.latest ``Not a valid commit name'' | refs: #37571 #37604

    - **PR** #37571: (*terminalmage*) Add a test to ensure we don't check for fast-forward before fetching
- **PR** #37553: (*rallytime*) Back-port #37521 to 2016.3 @ *2016-11-08T23:11:07Z*
    - **ISSUE** #33645: (*ketzacoatl*) saltutil.sync_all does not sync custom pillar modules to masterless minions | refs: #33833
    - **ISSUE** #25297: (*Akilesh1597*) perform `refresh_pillar' as a part of `sync_all' | refs: #37521 #25361
    - **PR** #37521: (*genuss*) refresh_pillar() should be called always with refresh=True during saltutil.sync_all | refs: #37553
    - **PR** #33833: (*terminalmage*) Support syncing pillar modules to masterless minions | refs: #37521
    - **PR** #25361: (*tedski*) perform *refresh_pillar* as part of *sync_all* when *refresh=True* | refs: #37521
    - b01c247 Merge pull request #37553 from rallytime/bp-37521
    - 30f92b0 refresh_pillar() should be called always
- **PR** #37565: (*rallytime*) Back-port #37549 to 2016.3 @ *2016-11-08T23:10:25Z*
    - **PR** #37549: (*Mrten*) sqlite is not found in 2015.8 | refs: #37565
    - 694df30 Merge pull request #37565 from rallytime/bp-37549
    - c92a90b Update sqlite3.py
    - fb76557 sqlite is not found in 2015.8
- 2fc0b22 Fix regression in service.dead state (#37562)
    - **ISSUE** #37511: (*jdelic*) service.dead now only operates if the service file exists | refs: #37562
    - **PR** #37562: (*terminalmage*) Fix regression in service.dead state
- ac754db Skip config type checking for sdb values (#37560)
    - **ISSUE** #37554: (*sjmh*) salt-api doesn't dynamically re-read nodegroups configuration | refs: #37560
    - **PR** #37560: (*whiteinge*) Skip config type checking for sdb values
- 453319b Don't pass the vpc id to boto.vpc.create_internet_gateway func (#37556)
    - **PR** #37556: (*rallytime*) Don't pass the vpc id to boto.vpc.create_internet_gateway func
- 89b9417 Documentation rendering fixes (#37543)
    - **PR** #37543: (*multani*) Documentation rendering fixes
- **PR** #37457: (*rallytime*) Fixup file.line docs to be more clear and consistent @ *2016-11-08T00:29:20Z*
    - **ISSUE** #31081: (*JensRantil*) salt.modules.file.line documentation unclarities | refs: #37457
    - 96b8b9a Merge pull request #37457 from rallytime/fix-31081
    - 25821bb Clarify which modes use ``before'', ``after'', and ``indent'' options
    - 8b2d2b9 Clarify file.line state docs as well
    - b261589 Move note about using mode=insert with location options to mode section
    - db0b0ce Fixup file.line docs to be more clear and consistent
- **PR** #37526: (*twangboy*) Remove loop from dsc.apply_config @ *2016-11-08T00:23:11Z*
    - **ISSUE** #35799: (*davegiles*) dsc.apply_config hangs (no error) on empty directory on target | refs: #37526
    - 7de790f Merge pull request #37526 from twangboy/fix_35799
    - fc42609 Remove unnecessary format

  - c934a2b Remove the loop from apply_config

- **PR** #37534: (*rallytime*) Back-port fix needed from #37515 @ *2016-11-08T00:14:46Z*
  - **PR** #37515: (*rallytime*) [carbon] Merge forward from 2016.3 to carbon | refs: #37534 #37534
  - 94811df Merge pull request #37534 from rallytime/bp-merge-foward-fix
  - d1b2af1 Add missing source_hash_name args to a couple funcs
- **PR** #37533: (*whiteinge*) Return a 504 response instead of 500 for Salt timeouts @ *2016-11-08T00:14:15Z*
  - 17adbb0 Merge pull request #37533 from whiteinge/salt-api-504-timeouts
  - 63226ae Return a 504 response instead of 500 for Salt timeouts
- **PR** #37529: (*lorengordon*) Backport: PR 36736 to 2016.3 @ *2016-11-08T00:04:10Z*
  - **ISSUE** #36679: (*lorengordon*) Command `Import-Module ServerManager' failed with return code: 1 | refs: #36736
  - **PR** #36736: (*m03*) Fix issue 36679 win_servermanager error | refs: #37529
  - a9f03ee Merge pull request #37529 from lorengordon/bp-36736
  - 21c2664 Fix issue 36679 win_servermanager failure
- **PR** #37519: (*rallytime*) Update returner __virtual__() return messages for loader @ *2016-11-07T23:06:23Z*
  - **ISSUE** #37444: (*Tanoti*) Returning False from __virtual__ in a returner does not return expected error | refs: #37502 #37519
  - **PR** #37502: (*cachedout*) Log proper message on returners that cannot be loaded | refs: #37519
  - 19475aa Merge pull request #37519 from rallytime/returner-load-errors
  - fb261a3 Update returner __virtual__() return messages for loader
- **PR** #37527: (*rallytime*) Add syndic_id=None kwarg to save_minions funcs in returners @ *2016-11-07T23:04:03Z*
  - **ISSUE** #35016: (*pingangit*) TypeError: save_minions() got an unexpected keyword argument `syndic_id' | refs: #37527
  - fefdfab Merge pull request #37527 from rallytime/fix-35016
  - 2944b24 Add syndic_id=None kwarg to save_minions funcs in returners
- b77b6ba fix Lithium to 2015.5.0 (#37530)
  - **PR** #37530: (*gtmanfred*) fix Lithium to 2015.5.0
- **PR** #37514: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3 @ *2016-11-07T16:51:06Z*
  - **PR** #37482: (*rallytime*) [2015.8] Doc version updated to 2016.3.4
  - 7431648 Merge pull request #37514 from rallytime/merge-2016.3
  - 41166ae Merge branch `2015.8' into `2016.3'
  - c505a05 [2015.8] Doc version updated to 2016.3.4 (#37482)
- **PR** #37503: (*cachedout*) Catch loader error on returners without save_load @ *2016-11-07T09:33:57Z*
  - **ISSUE** #36713: (*Tanoti*) ExtraData: unpack(b) received extra data after upgrading to 2016.3.3 | refs: #37503
  - 2d924d0 Merge pull request #37503 from cachedout/issue_36713
  - 5f7f971 Catch loader error on returners without save_load
- **PR** #37499: (*cachedout*) Clarify docs on salt-key events @ *2016-11-07T09:33:20Z*

  - **ISSUE** #37448: (*alisson276*) In `salt/key' events there are acts that never happen | refs: #37499
  - d95bf59 Merge pull request #37499 from cachedout/key_docs_clarify
  - 2758e74 Clarify docs on salt-key events
- **PR** #37500: (*cachedout*) Remove unused flag @ *2016-11-07T09:33:04Z*
  - 1dd1408 Merge pull request #37500 from cachedout/remove_include_errors
  - 6c705b1 Remove unused flag
- **PR** #37502: (*cachedout*) Log proper message on returners that cannot be loaded | refs: #37519 @ *2016-11-07T09:32:45Z*
  - **ISSUE** #37444: (*Tanoti*) Returning False from __virtual__ in a returner does not return expected error | refs: #37502 #37519
  - 4b6f1ab Merge pull request #37502 from cachedout/issue_37444
  - 4c5ab05 Remove debugging
  - 17d01e4 Log proper message on returners that cannot be loaded
- **PR** #37494: (*sjorge*) Forgot to update os_family map in #37472 @ *2016-11-06T22:18:54Z*
  - **ISSUE** #37389: (*d101nelson*) Some core grains are inaccurate or incomplete for Solaris | refs: #37472
  - **PR** #37472: (*sjorge*) 2016.3 solaris grains improvements | refs: #37494 #37494
  - 2422daf Merge pull request #37494 from sjorge/2016.3-osfam_map
  - 96ba545 Forgot to update os_family map in #37472
- **PR** #37496: (*mcalmer*) fix status handling in sysv init scripts @ *2016-11-06T22:18:00Z*
  - 41bd8e3 Merge pull request #37496 from mcalmer/fix-status-handling-in-sysv-init-scripts
  - 1fb2c4d fix status handling in sysv init scripts
- **PR** #37497: (*terminalmage*) Update 2016.3.5 release notes with source_hash_name explanation @ *2016-11-06T22:17:40Z*
  - e741a77 Merge pull request #37497 from terminalmage/release_notes
  - c08038d Update 2016.3.5 release notes with source_hash_name explanation
- **PR** #37486: (*twangboy*) Add requirement for PowerShell 3 on Windows @ *2016-11-06T06:01:07Z*
  - f4426c2 Merge pull request #37486 from twangboy/fix_win_docs
  - 9e0631a Add docs denoting the requirement for at least PowerShell 3
- **PR** #37493: (*cachedout*) Add sdb support to minion and master configs @ *2016-11-06T06:00:18Z*
  - a1f355a Merge pull request #37493 from cachedout/minion_master_sdb
  - 9761a46 Add sdb support to minion and master configs
- **PR** #37452: (*rallytime*) file.line with mode=replace on an empty file should return False, not stacktrace @ *2016-11-06T01:55:11Z*
  - **ISSUE** #31135: (*jeffreyctang*) file.line mode=replace breaks on empty file. | refs: #37452
  - be93710 Merge pull request #37452 from rallytime/fix-31135
  - c792f76 Bump log level from debug to warning on empty file
  - 5f181cf file.line with mode=replace on an empty file should return False

  - 94a00c6 Write a unit test demonstrating stack trace in #31135

- **PR** #37469: (*terminalmage*) Rewrite file.extract_hash to improve its matching ability @ *2016-11-06T01:50:01Z*
  - **ISSUE** #37001: (*phil123456*) URGENT : archive.extracted does not work anymore | refs: #37081
  - **ISSUE** #29010: (*The-Loeki*) file.managed download failing checksum testing for Ubuntu initrd w/source_hash | refs: #37469
  - **PR** #37081: (*terminalmage*) Fix archive.extracted remote source_hash verification | refs: #37469 #37469
  - 129b038 Merge pull request #37469 from terminalmage/issue29010
  - a3f38e5 Update file.extract_hash unit tests
  - b26b528 Add the source_hash_name param to file.managed states
  - 52fe72d Rewrite file.extract_hash
- **PR** #37472: (*sjorge*) 2016.3 solaris grains improvements | refs: #37494 #37494 @ *2016-11-06T01:46:10Z*
  - **ISSUE** #37389: (*d101nelson*) Some core grains are inaccurate or incomplete for Solaris | refs: #37472
  - 9426b9d Merge pull request #37472 from sjorge/2016.3-solaris-grains
  - 2958f5c detect and properly handle OmniOS
  - 37c3a7f handle Oracle Solaris better
  - 69706d3 parse minorrelease if it has a / in it
  - d1cf4a0 improve regex for parsing /etc/release using files from Solaris 8 SPARC and Solaris 10
  - 88eddef some more cleanup for smartos
  - d3ff39f improve smartos os version grains
- **PR** #37478: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3 @ *2016-11-04T20:30:08Z*
  - **ISSUE** #37388: (*tyhunt99*) [2016.3.4] Refreshing of an s3 file server results in an exception. | refs: #37428
  - **ISSUE** #37286: (*terminalmage*) GitFS: mountpoints with trailing slashes cause all file paths in that repo to fail to be matched | refs: #37408
  - **ISSUE** #36849: (*skulikov*) file.managed and archive.extracted don't properly work for tgz remote files | refs: #37418
  - **PR** #37441: (*rallytime*) Back-port #37428 to 2015.8
  - **PR** #37428: (*cachedout*) Fix incorrect reference of __utils__ in salt.utils | refs: #37441
  - **PR** #37418: (*terminalmage*) Do not use compression in tornado httpclient requests
  - **PR** #37408: (*terminalmage*) Strip slashes from gitfs mountpoints
  - 4ba63ab Merge pull request #37478 from rallytime/merge-2016.3
  - 3483a44 Merge branch `2015.8' into `2016.3'
    * 35888c2 Merge pull request #37408 from terminalmage/issue37286
      · 4e4a057 Strip slashes from gitfs mountpoints
    * b6c57c6 Merge pull request #37418 from terminalmage/issue36849
      · 740bc54 Do not use compression in tornado httpclient requests
    * 7fba8aa Merge pull request #37441 from rallytime/bp-37428
      · 6fe3ef4 Fix incorrect reference of __utils__ in salt.utils

- 8aa101a Get release notes started for 2016.3.5 (#37485)
  - **PR** #37485: (*rallytime*) Get release notes started for 2016.3.5
- dfd9495 [2016.3] Doc version updated to 2016.3.4 (#37483)
  - **PR** #37483: (*rallytime*) [2016.3] Doc version updated to 2016.3.4
- **PR** #37121: (*nevins-b*) allow the file.recurse state to support saltenv @ *2016-11-04T05:59:28Z*
  - **ISSUE** #37123: (*nevins-b*) file.recurse state doesn't support pulling from other environments | refs: #37121
  - 580eca7 Merge pull request #37121 from nevins-b/2016.3
  - 99d2c36 making messaging in tests match new return
  - bc4b0e7 adding test for saltenv in file.recurse source url
  - 3315b67 fixing saltenv if not set in url
  - a9683cb allow the file.recurse state to support saltenv (salt://example/dir?saltenv=dev)
- **PR** #37426: (*jfindlay*) Wait for macOS to change system settings @ *2016-11-04T04:35:52Z*
  - **PR** #37351: (*jfindlay*) modules.mac_power: give macOS time to change setting | refs: #37426
  - 766b143 Merge pull request #37426 from jfindlay/mac_sleep
  - 43a8e19 modules.mac_power: wait for system to make change
  - feabca6 modules.mac_system: wait for system to make change
  - 0213eb9 utils.mac_utils: add confirm_updated
- **PR** #37438: (*DmitryKuzmenko*) Fix for #37238 salt hang on master restart | refs: #37602 @ *2016-11-04T04:10:51Z*
  - **ISSUE** #37238: (*cmclaughlin*) Restarting master causes minion to hang | refs: #37438 #37602
  - **ISSUE** #37018: (*tsaridas*) get events from python | refs: #37438 #37602
  - 9eab5c8 Merge pull request #37438 from DSRCorporation/bugs/37238_salt_hang_on_master_restart
  - f253d3c Auto reconnect *salt* to master if the connection was lost.
- **PR** #37440: (*rallytime*) Back-port #31207 to 2016.3 @ *2016-11-04T04:09:33Z*
  - **PR** #31207: (*thusoy*) Remove error logging of missing boto libraries | refs: #37440
  - 9aa7073 Merge pull request #37440 from rallytime/bp-31207
  - c71ae61 Remove error logging of missing boto libraries
- **PR** #37442: (*twangboy*) Create paths.d directory @ *2016-11-04T04:07:19Z*
  - edbfadc Merge pull request #37442 from twangboy/fix_osx_postinstall
  - 8091a30 Create paths.d directory
- **PR** #37445: (*twangboy*) Check for Server os before checking [DO NOT MERGE FORWARD] @ *2016-11-04T04:04:49Z*
  - afb1b3c Merge pull request #37445 from twangboy/fix_import_error_2016.3
  - c0d5ebd Check for Server os before checking
- **PR** #37446: (*twangboy*) Detect VC++ for Python on Win32 @ *2016-11-04T04:04:02Z*
  - 7a9f95a Merge pull request #37446 from twangboy/fix_build_32
  - 2de69f4 Detect VC for Python correctly on 32bit Windows

- **PR** #37447: (*rallytime*) Cast ip_protocol rule as a str() in boto_secgroup.present @ *2016-11-04T04:03:45Z*
  - **ISSUE** #36961: (*nullify005*) boto_secgroup assumes a string when checking ip_protocol validity when not tcp|udp|all|-1 | refs: #37447
  - 651e0f7 Merge pull request #37447 from rallytime/fix-36961
  - 6b930ac Cast ip_protocol rule as a str() in boto_secgroup.present
- **PR** #37455: (*techhat*) Make api opts respect correct root_dir @ *2016-11-04T03:25:40Z*
  - **ISSUE** #36446: (*whiteinge*) Custom salt-api config problem | refs: #37455
  - **PR** #36386: (*xiaoanyunfei*) fix salt-api's default opts were covered by salt-master #35734 | refs: #37455
  - a51d944 Merge pull request #37455 from techhat/issue36446
  - 7eff90d Make api opts respect correct root_dir
- **PR** #37459: (*twangboy*) Fix error message when ConvertTo-Json not supported [DO NOT MERGE FORWARD] @ *2016-11-04T03:22:31Z*
  - 3591bf0 Merge pull request #37459 from twangboy/fix_dsc_json_msg_2016.3
  - 949b709 Use cmd.run_all instead of cmd.shell
- **PR** #37430: (*meaksh*) Including resolution parameters in the Zypper debug-solver call during a dry-run dist-upgrade (2016.3) @ *2016-11-03T14:35:46Z*
  - **ISSUE** #2016: (*seanchannel*) status.custom failing on any arguments
  - **PR** #37353: (*meaksh*) Including resolution parameters in the Zypper debug-solver call during a dry-run dist-upgrade | refs: #37430
  - 80a99c4 Merge pull request #37430 from meaksh/zypper-dist-upgrade-debug-solver-fix-2016.3
  - ffc596f Including resolver params for Zypper debug-solver
- 67cc7a7 Fix incorrect reference of __utils__ in salt.utils (#37428)
  - **ISSUE** #37388: (*tyhunt99*) [2016.3.4] Refreshing of an s3 file server results in an exception. | refs: #37428
  - **PR** #37428: (*cachedout*) Fix incorrect reference of __utils__ in salt.utils | refs: #37441
- **PR** #37419: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3 @ *2016-11-02T21:40:04Z*
  - **ISSUE** #33187: (*usbportnoy*) Deploy to jboss TypeError at boss7.py:469 | refs: #33190
  - **PR** #37392: (*rallytime*) Back-port #33190 to 2015.8
  - **PR** #33190: (*usbportnoy*) Fixes Type error in jboss state module when concatenating comments | refs: #37392
  - 7864f9b Merge pull request #37419 from rallytime/merge-2016.3
  - bce47c9 Merge branch `2015.8' into `2016.3'
    - 7b1d3b5 Merge pull request #37392 from rallytime/bp-33190
    - 4063bae catch None cases for comments in jboss7 state module
- d749567 Fix regression in output for Ctrl-c'ed CLI jobs (#37416)
  - **PR** #37416: (*terminalmage*) Fix regression in output for Ctrl-c'ed CLI jobs
- e9b4620 Add unit tests for cloning from snapshot (#37414)
  - **PR** #37414: (*pass-by-value*) Add unit tests for cloning from snapshot
  - **PR** #37350: (*pass-by-value*) Add handling for full and linked clone | refs: #37414

- **PR** #37404: (*cachedout*) Revert ``Bootstrap delay option for salt-cloud'' @ *2016-11-02T09:48:53Z*
  - **PR** #37401: (*cachedout*) Bootstrap delay option for salt-cloud | refs: #37404
  - ecd794a Merge pull request #37404 from saltstack/revert-37401-bootstrap_delay
  - e864de8 Revert ``Bootstrap delay option for salt-cloud''
- **PR** #37401: (*cachedout*) Bootstrap delay option for salt-cloud | refs: #37404 @ *2016-11-02T09:02:13Z*
  - 2eb44fb Merge pull request #37401 from cachedout/bootstrap_delay
  - 6e42b0e Bootstrap delay option for salt-cloud
- **PR** #37350: (*pass-by-value*) Add handling for full and linked clone | refs: #37414 @ *2016-11-02T08:02:29Z*
  - 9446e48 Merge pull request #37350 from pass-by-value/full_and_linked_clone_v1
  - d8b1c9c Add handling for full and linked clone and commit disk mode additions
- **PR** #37386: (*rallytime*) Fix win_useradd.chgroups return when cmd.run_all retcode != 0 @ *2016-11-02T06:34:12Z*
  - **ISSUE** #34841: (*Ch3LL*) Wrong return when using *user.chgroups* on windows | refs: #37386
  - c7f4d7f Merge pull request #37386 from rallytime/fix-34841
  - c70492a Fix win_useradd.chgroups return when cmd.run_all retcode != 0
- **PR** #37390: (*rallytime*) Don't insert __pub* keys into dnsmasq config file with set_config function @ *2016-11-02T06:31:53Z*
  - **ISSUE** #34263: (*vernondcole*) Use of dnsmasq.set_config injects unintentional text into the configuration file. | refs: #37390
  - 34b6c64 Merge pull request #37390 from rallytime/fix-34263
  - e082ff5 Fix failing test now that we're raising a CommandExecutionError
  - c6a3476 Filter out the __pub keys passed via **kwargs for dnsmasq.set_config
  - fd380c7 Add test case to reproduce dnsmasq.set_config failure in #34263
- **PR** #37391: (*rallytime*) Back-port #35287 to 2016.3 @ *2016-11-02T06:18:26Z*
  - **ISSUE** #35163: (*SolarisYan*) salt file.mkdir | refs: #35287 #35189
  - **PR** #35287: (*dere*) 2016.3 | refs: #37391
  - **PR** #35189: (*dere*) return value for file.mkdir instead of None | refs: #35287
  - 798b2ac Merge pull request #37391 from rallytime/bp-35287
  - 0e1ebea Simplify return value to ``True''.
  - 13022c5 return value for mkdir instead of None
- **PR** #37279: (*gtmanfred*) initialize super class of NamespacedDictWrapper @ *2016-11-01T15:12:49Z*
  - **ISSUE** #37264: (*junster1*) Parsing __grains__ with json.dumps in a module is returning an empty dict in 2016.3.3 | refs: #37279
  - 1a4833b Merge pull request #37279 from gtmanfred/2016.3
  - 597f346 initialize super class of NamespacedDictWrapper
- **PR** #37351: (*jfindlay*) modules.mac_power: give macOS time to change setting | refs: #37426 @ *2016-10-31T19:15:40Z*
  - 3511759 Merge pull request #37351 from jfindlay/mac_set

  - 0c58056 modules.mac_power: give macOS time to change setting

- **PR** #37340: (*cachedout*) SIGILL -> SIGKILL in process test @ *2016-10-31T08:50:10Z*
  - 25c987e Merge pull request #37340 from cachedout/ill_kill_3
  - a6b7417 SIGILL -> SIGKILL in process test
- **PR** #37306: (*DmitryKuzmenko*) Don't use os.wait() on subprocesses managed by *multiprocessing*. @ *2016-10-31T06:55:30Z*
  - **ISSUE** #35480: (*jelenak*) 200 processes of salt-master (2016.3.2) | refs: #37306
  - 7f16548 Merge pull request #37306 from DSRCorporation/bugs/35480_master_shutdown_no_process_error
  - b6937eb Don't use os.wait() on subprocesses managed by *multiprocessing*.
- **PR** #37314: (*rallytime*) Document the existence of placementgroup option in ec2 driver @ *2016-10-31T06:42:33Z*
  - **ISSUE** #34998: (*exowaucka*) placementgroup parameter for salt-cloud is undocumented | refs: #37314
  - bf8ba97 Merge pull request #37314 from rallytime/fix-34998
  - 39459ed Document the existence of placementgroup option in ec2 driver
- **PR** #37219: (*alex-zel*) Fix freeipa ldap groups @ *2016-10-28T04:33:37Z*
  - **ISSUE** #36148: (*alex-zel*) Eauth error with openLDAP groups | refs: #37219
  - e0baf4b Merge pull request #37219 from alex-zel/fix-freeipa-ldap-groups
  - b5b2e7e Remove trailing whitespaces
  - 32f906b Add support for FreeIPA

### 18.2.7 Salt 2016.3.6 Release Notes

Version 2016.3.6 is a bugfix release for *2016.3.0*.

#### Changes for v2016.3.5..v2016.3.6

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2017-03-22T20:18:54Z*

Statistics:

- Total Merges: **118**
- Total Issue references: **53**
- Total PR references: **168**

Changes:

- **PR** #39855: (*Foxlik*) Use regular expression instead of split when replacing authorized_keys @ *2017-03-22T18:28:32Z*
  - **ISSUE** #39854: (*Foxlik*) quoted space in authorized_keys confuses ssh.py | refs: #39855
  - c59ae9a Merge pull request #39855 from Foxlik/use_regex_to_compare_authorized_keys
  - d46845a Add newline at end of file
  - d4a3c8a Use regular expression instead of split when replacing authorized_keys

- **PR** #40221: (*rallytime*) Back-port #39179 to 2016.3 @ *2017-03-22T17:40:34Z*
  - **PR** #39179: (*mcalmer*) fix error parsing | refs: #40221
  - fd10430 Merge pull request #40221 from rallytime/bp-39179
  - 07dc2de fix error parsing
- **PR** #40206: (*cro*) Leave sign_pub_messages off by default. @ *2017-03-22T16:43:03Z*
  - **ISSUE** #40203: (*frogunder*) 2016.3.6. Minion don't connect to older master. | refs: #40206
  - a27a2cc Merge pull request #40206 from cro/sign_pub_take2
  - 01048de leave sign_pub_messages off on minion by default.
  - a82b005 Leave sign_pub_messages off by default.
- **PR** #40193: (*rallytime*) Back-port #40117 to 2016.3 @ *2017-03-22T16:42:21Z*
  - **PR** #40117: (*narendraingale2*) Fix force remove | refs: #40193
  - d1abb4c Merge pull request #40193 from rallytime/bp-40117
  - cf18579 More optimization.
  - 5a08266 Removed debug statemnt
  - f557f7c Added fix for issue 39393
  - bb62278 Reverting changes.
  - a9107cd Added if condition for broken link.
- **PR** #40196: (*twangboy*) Update dependencies for PyOpenSSL @ *2017-03-22T16:40:46Z*
  - 0f1ff4d Merge pull request #40196 from twangboy/win_fix_deps
  - 6761527 Update dependencies for PyOpenSSL
- **PR** #40184: (*terminalmage*) Link to minion start reactor example from FAQ. @ *2017-03-21T17:33:09Z*
  - b050151 Merge pull request #40184 from terminalmage/link-reactor-example
  - a42be82 Link to minion start reactor example from FAQ.
- **PR** #40182: (*terminalmage*) Add support for ``stopped'' state to dockerng's mod_watch @ *2017-03-21T15:40:29Z*
  - d4e6c58 Merge pull request #40182 from terminalmage/dockerng-mod_watch-stopped
  - 4629a26 Add support for ``stopped'' state to dockerng's mod_watch
- **PR** #40171: (*Ch3LL*) additional PRs/issues for 2016.3.6 release notes @ *2017-03-20T22:14:17Z*
  - a0b4082 Merge pull request #40171 from Ch3LL/2016.3.6_release
  - 9c6d8d8 additional PRs/issues for 2016.3.6 release notes
- **PR** #40120: (*sergeizv*) gce: Exclude GCENodeDriver objects from _expand_node result @ *2017-03-20T21:44:42Z*
  - 33ba782 Merge pull request #40120 from sergeizv/gce-expand-node-fix
  - 9d0fbe7 gce: Exclude GCENodeDriver objects from _expand_node result
- **PR** #40122: (*meaksh*) Adding ``pkg.install downloadonly=True'' support to yum/dnf execution module @ *2017-03-20T21:44:15Z*
  - 4884397 Merge pull request #40122 from meaksh/2016.3-yum-downloadonly-support
  - 067f3f7 Adding downloadonly support to yum/dnf module

- **PR** #40159: (*cro*) Turn on sign_pub_messages by default. @ *2017-03-20T21:00:49Z*
  - 60e1d4e Merge pull request #40159 from cro/sign_pub
  - e663b76 Fix small syntax error
  - 0a0f46f Turn on sign_pub_messages by default. Make sure messages with no `sig' are dropped with error when sign_pub_messages is True.
- **PR** #40123: (*twangboy*) Adds support for inet_pton in Windows to network util @ *2017-03-20T16:25:47Z*
  - 28e4fc1 Merge pull request #40123 from twangboy/win_fix_network
  - 06dfd55 Adds support for inet_pton in Windows to network util
- **PR** #40141: (*bobrik*) Use the first address if cannot connect to any @ *2017-03-20T15:06:57Z*
  - **ISSUE** #39995: (*frogunder*) Head of Develop - Multimaster error | refs: #40141
  - **ISSUE** #39118: (*bobrik*) Minion ipv6 option is not documented | refs: #39289
  - **PR** #39289: (*bobrik*) Autodetect IPv6 connectivity from minion to master | refs: #39766 #40141
  - 35ddb79 Merge pull request #40141 from bobrik/fallback-resolve
  - af1545d Use the first address if cannot connect to any
- **PR** #40059: (*terminalmage*) Fix traceback when virtualenv.managed is invoked with nonexistant user @ *2017-03-16T20:46:43Z*
  - 116201f Merge pull request #40059 from terminalmage/fix-virtualenv-traceback
  - e3cfd29 Fix traceback when virtualenv.managed is invoked with nonexistant user
- **PR** #40090: (*rallytime*) Back-port #40056 to 2016.3 @ *2017-03-16T19:42:58Z*
  - **PR** #40056: (*thatch45*) update mention bot blacklist | refs: #40090
  - a01b52b Merge pull request #40090 from rallytime/bp-40056
  - ae012db update mention bot blacklist
- **PR** #40057: (*cachedout*) More mentionbot blacklists @ *2017-03-16T18:10:11Z*
  - d1570bb Merge pull request #40057 from cachedout/ollie_blacklist
  - 0ac2e83 Merge branch `2016.3' into ollie_blacklist
- **PR** #40070: (*Ch3LL*) update 2016.3.6 release notes with additional PR's @ *2017-03-16T15:43:22Z*
  - d36bdb1 Merge pull request #40070 from Ch3LL/2016.3.6_release
  - a1f8b49 update 2016.3.6 release notes with additional PR's
- **PR** #40018: (*meaksh*) Allows overriding `timeout' and `gather_job_timeout' to `manage.up' runner call @ *2017-03-15T19:43:01Z*
  - 8dcffc7 Merge pull request #40018 from meaksh/2016.3-handling-timeouts-for-manage.up-runner
  - 9f5c3b7 Allows to set custom timeouts for `manage.up' and `manage.status'
  - 2102d9c Allows to set `timeout' and `gather_job_timeout' via kwargs
- **PR** #40038: (*velom*) correctly parse ``pkg_name===version'' from pip freeze @ *2017-03-15T19:30:03Z*
  - 22fc529 Merge pull request #40038 from velom/fix-pip-freeze-parsing
  - 3fae91d correctly parse ``pkg_name===version'' from pip freeze
- **PR** #40053: (*gtmanfred*) Update rh_ip.py @ *2017-03-15T18:57:32Z*

  - **ISSUE** #40036: (*oogali*) UnboundLocalError: local variable `ifcfg' referenced before assignment | refs: #40053
  - 3584f93 Merge pull request #40053 from saltstack/rh_ip_patch
  - 219947a Update rh_ip.py
- **PR** #40041: (*terminalmage*) Fix transposed lines in salt.utils.process @ *2017-03-15T17:58:24Z*
  - **ISSUE** #40011: (*tsaridas*) salt-minion does not shutdown properly 2016.11.3 rh6 | refs: #40041
  - 837432d Merge pull request #40041 from terminalmage/issue40011
  - 5b5d1b3 Fix transposed lines in salt.utils.process
- **PR** #40021: (*Ch3LL*) 2016.3.6 release notes with change log @ *2017-03-14T21:06:18Z*
  - ee7f3b1 Merge pull request #40021 from Ch3LL/2016.3.6_release
  - f3e7e4f Add 2016.3.6 Release Notes
- **PR** #40016: (*terminalmage*) Attempt to fix failing grains tests in 2016.3 @ *2017-03-14T18:34:32Z*
  - 26895b7 Merge pull request #40016 from terminalmage/fix-grains-test
  - 0ec81a4 Fixup a syntax error
  - 5d84b40 Attempt to fix failing grains tests in 2016.3
- **PR** #39980: (*vutny*) [2016.3] Allow to use *bg* kwarg for *cmd.run* state function @ *2017-03-14T17:16:14Z*
  - 0c61d06 Merge pull request #39980 from vutny/cmd-run-state-bg
  - a81dc9d [2016.3] Allow to use *bg* kwarg for *cmd.run* state function
- **PR** #39994: (*rallytime*) Add a versionadded tag for dockerng ulimits addition @ *2017-03-13T20:58:02Z*
  - **ISSUE** #39942: (*Foxlik*) Web Documentation not in sync with release 2016.11.3 | refs: #39994
  - b042484 Merge pull request #39994 from rallytime/ulimits-dockerng-version
  - 37bd800 Add a versionadded tag for dockerng ulimits addition
- **PR** #39988: (*terminalmage*) Add comment explaining change from #39973 @ *2017-03-13T18:37:29Z*
  - **PR** #39973: (*terminalmage*) Don't use docker.Client instance from context if missing attributes
  - e125c94 Merge pull request #39988 from terminalmage/dockerng-timeout
  - bd2519e Add comment explaining change from #39973
- **PR** #39973: (*terminalmage*) Don't use docker.Client instance from context if missing attributes @ *2017-03-11T14:57:50Z*
  - cd0336e Merge pull request #39973 from terminalmage/dockerng-timeout
  - 869416e Don't use docker.Client instance from context if missing attributes
- **PR** #39962: (*cachedout*) Disable mention bot delay on 2016.3 @ *2017-03-10T20:24:08Z*
  - 282c607 Merge pull request #39962 from cachedout/disable_mentionbot_delay_3
  - 7a638f2 Disable mention bot delay on 2016.3
    * 5592c68 More mentionbot blacklists
- **PR** #39937: (*cachedout*) Fix --non-gpg-checks in zypper module @ *2017-03-10T18:02:51Z*
  - 1e0c88a Merge pull request #39937 from cachedout/gpg_zypper
  - 13ed0d1 Fix --non-gpg-checks in zypper module

- **PR** #39929: (*terminalmage*) Scrap event-based approach for refreshing grains (2016.3 branch) @ *2017-03-09T22:03:16Z*
  - 4526fc6 Merge pull request #39929 from terminalmage/pr-39770-2016.3
  - cf0100d Scrap event-based approach for refreshing grains
- **PR** #39919: (*The-Loeki*) CIDR matching supports IPv6, update docs @ *2017-03-09T16:03:00Z*
  - **ISSUE** #22080: (*The-Loeki*) CIDR matching for IPv6 / improve IPv6 support in utils.network | refs: #39919
  - 111110c Merge pull request #39919 from The-Loeki/patch-1
  - 170cbad CIDR matching supports IPv6, update docs
- **PR** #39899: (*techhat*) Update cleanup function for azure @ *2017-03-08T23:28:33Z*
  - caf10e9 Merge pull request #39899 from techhat/cleanupdisks
  - baf4579 Update cleanup function for azure
- **PR** #39871: (*terminalmage*) Squelch warning for pygit2 import @ *2017-03-07T20:40:18Z*
  - fcf95f3 Merge pull request #39871 from terminalmage/squelch-import-warning
  - 2b2ec69 Squelch warning for pygit2 import
- **PR** #39794: (*cachedout*) Clean up errors which might be thrown when the monitor socket shuts down @ *2017-03-04T16:12:37Z*
  - f223fa8 Merge pull request #39794 from cachedout/clean_monitor_socket_shutdown
  - 2e683e7 Clean up errors which might be thrown when the monitor socket shuts down
- **PR** #39819: (*terminalmage*) Improve the Top File matching docs @ *2017-03-04T16:06:40Z*
  - 4002dc1 Merge pull request #39819 from terminalmage/top-file-matching-docs
  - 7178e77 Improve the Top File matching docs
- **PR** #39820: (*ni3mm4nd*) Add missing apostrophe in Beacons topic documentation @ *2017-03-04T16:05:29Z*
  - c08aaeb Merge pull request #39820 from ni3mm4nd/beacons_topic_doc_typo
  - 804b120 Add missing apostrophe
- **PR** #39826: (*cachedout*) Add group func to yubikey auth @ *2017-03-04T16:02:14Z*
  - cbd2a4e Merge pull request #39826 from cachedout/yubikey_fix
  - 6125eff Add group func to yubikey auth
- **PR** #39624: (*drawsmcgraw*) Address issue 39622 @ *2017-03-03T15:59:04Z*
  - **ISSUE** #39622: (*drawsmcgraw*) boto_vpc.create_subnet does not properly assign tags | refs: #39624
  - f575ef4 Merge pull request #39624 from drawsmcgraw/39622
  - 13da50b Fix indention lint errors
  - 5450263 Address issue 39622
- **PR** #39796: (*cachedout*) Stop the process manager when it no longer has processes to manage @ *2017-03-02T23:03:13Z*
  - **ISSUE** #39119: (*frogunder*) Head of 2016.3 - Salt-Master uses 90 seconds to restart | refs: #39796
  - 1f3619c Merge pull request #39796 from cachedout/master_shutdown
  - e31d46c Stop the process manager when it no longer has processes to manage

- **PR** #39791: (*gtmanfred*) load runners if role is master @ *2017-03-02T19:43:41Z*
  - **ISSUE** #39333: (*jagguli*) Not Available error - Scheduling custom runner functions | refs: #39791
  - **ISSUE** #38514: (*githubcdr*) Unable to schedule runners | refs: #39791
  - 53341cf Merge pull request #39791 from gtmanfred/2016.3
  - 3ab4f84 load runners if role is master
- **PR** #39784: (*sergeizv*) Fix 39782 @ *2017-03-02T16:08:51Z*
  - **ISSUE** #39782: (*sergeizv*) salt-cloud show_instance action fails on EC2 instances | refs: #39784
  - **ISSUE** #33162: (*jfindlay*) Key error with salt.utils.cloud.cache_node and EC2 | refs: #33164 #39784
  - **PR** #33164: (*jfindlay*) cloud.clouds.ec2: cache each named node | refs: #39784 #39784
  - c234c25 Merge pull request #39784 from sergeizv/fix-39782
  - b71c3fe Revert ``cloud.clouds.ec2: cache each named node (#33164)"
- **PR** #39766: (*rallytime*) Restore ipv6 connectivity and ``master: <ip>:<port>" support @ *2017-03-02T02:55:55Z*
  - **ISSUE** #39336: (*GevatterGaul*) salt-minion fails with IPv6 | refs: #39766
  - **ISSUE** #39118: (*bobrik*) Minion ipv6 option is not documented | refs: #39289
  - **PR** #39289: (*bobrik*) Autodetect IPv6 connectivity from minion to master | refs: #39766 #40141
  - **PR** #25021: (*GideonRed*) Introduce ip:port minion config | refs: #39766
  - 4ee59be Merge pull request #39766 from rallytime/fix-ipv6-connection
  - 65b2396 Restore ipv6 connectivity and ``master: <ip>:<port>" support
- **PR** #39761: (*cachedout*) Properly display error in jboss7 state @ *2017-03-01T18:43:23Z*
  - **ISSUE** #33187: (*usbportnoy*) Deploy to jboss TypeError at boss7.py:469 | refs: #39170 #39761
  - a24da31 Merge pull request #39761 from cachedout/issue_33187
  - c2df29e Properly display error in jboss7 state
- **PR** #39728: (*rallytime*) [2016.3] Bump latest release version to 2016.11.3 @ *2017-02-28T18:07:44Z*
  - 0888bc3 Merge pull request #39728 from rallytime/update-release-ver-2016.3
  - c9bc8af [2016.3] Bump latest release version to 2016.11.3
- **PR** #39619: (*terminalmage*) Add a function to simply refresh the grains @ *2017-02-28T00:20:27Z*
  - b52dbee Merge pull request #39619 from terminalmage/zd1207
  - c7dfb49 Fix mocking for grains refresh
  - 7e0ced3 Properly hand proxy minions
  - 692c456 Add a function to simply refresh the grains
- **PR** #39487: (*bobrik*) Document default permission modes for file module @ *2017-02-24T23:49:00Z*
  - **ISSUE** #39482: (*bobrik*) file.managed and file mode don't mention default mode | refs: #39487
  - 3f8b5e6 Merge pull request #39487 from bobrik/mode-docs
  - 41ef69b Document default permission modes for file module
- **PR** #39641: (*smarsching*) Return runner return code in a way compatible with check_state_result @ *2017-02-24T23:07:11Z*

  - **ISSUE** #39169: (*blueyed*) Using batch-mode with *salt.state* in orchestration runner considers all minions to have failed | refs: #39641 #39641
  - f7389bf Merge pull request #39641 from smarsching/issue-39169-2016.3
  - 88c2d9a Fix return data structure for runner (issue #39169).
- **PR** #39633: (*terminalmage*) Fix misspelled argument in salt.modules.systemd.disable() @ *2017-02-24T18:21:36Z*
  - fc970b6 Merge pull request #39633 from terminalmage/fix-systemd-typo
  - ca54541 Add missing unit test for disable func
  - 17109e1 Fix misspelled argument in salt.modules.systemd.disable()
- **PR** #39613: (*terminalmage*) Fix inaccurate documentation @ *2017-02-24T06:07:35Z*
  - 53e78d6 Merge pull request #39613 from terminalmage/fix-docs
  - 9342eda Fix inaccurate documentation
- **PR** #39600: (*vutny*) state.file: drop non-relevant examples for *source_hash* parameter @ *2017-02-23T16:55:27Z*
  - 4e2b852 Merge pull request #39600 from vutny/state-file-docs
  - 9b0427c state.file: drop non-relevant examples for *source_hash* parameter
- **PR** #39584: (*cachedout*) A note in the docs about mentionbot @ *2017-02-23T15:12:13Z*
  - ed83420 Merge pull request #39584 from cachedout/mentionbot_docs
  - 652044b A note in the docs about mentionbot
- **PR** #39583: (*cachedout*) Add empty blacklist to mention bot @ *2017-02-23T02:22:57Z*
  - d3e50b4 Merge pull request #39583 from cachedout/mentionbot_blacklist
  - 62491c9 Add empty blacklist to mention bot
- **PR** #39579: (*rallytime*) [2016.3] Pylint: Remove unused import @ *2017-02-22T23:46:33Z*
  - 8352e6b Merge pull request #39579 from rallytime/fix-lint
  - 65889e1 [2016.3] Pylint: Remove unused import
- **PR** #39578: (*cachedout*) Add mention-bot configuration @ *2017-02-22T23:39:24Z*
  - 43dba32 Merge pull request #39578 from cachedout/2016.3
  - 344499e Add mention-bot configuration
- **PR** #39542: (*twangboy*) Gate ssh_known_hosts state against Windows @ *2017-02-22T20:16:41Z*
  - 8f7a0f9 Merge pull request #39542 from twangboy/gate_ssh_known_hosts
  - c90a52e Remove expensive check
  - 6d645ca Add __virtual__ function
- **PR** #39289: (*bobrik*) Autodetect IPv6 connectivity from minion to master | refs: #39766 #40141 @ *2017-02-22T19:05:32Z*
  - **ISSUE** #39118: (*bobrik*) Minion ipv6 option is not documented | refs: #39289
  - c109658 Merge pull request #39289 from bobrik/autodetect-ipv6
  - 2761a1b Move new kwargs to the end of argument list
  - 0df6b92 Narrow down connection exception to socket.error
  - e8a2cc0 Do no try to connect to salt master in syndic config test

  - af95786 Properly log address that failed to resolve or pass connection check
  - 9a34fbe Actually connect to master instead of checking route availability
  - c494839 Avoid bare exceptions in dns_check
  - 29f3766 Rewrite dns_check to try to connect to address
  - 55965ce Autodetect IPv6 connectivity from minion to master
- **PR** #39569: (*s0undt3ch*) Don't use our own six dictionary fixes in this branch @ *2017-02-22T18:59:49Z*
  - 3fb928b Merge pull request #39569 from s0undt3ch/2016.3
  - 49da135 Don't use our own six dictionary fixes in this branch
- **PR** #39508: (*dincamihai*) Openscap @ *2017-02-22T18:36:36Z*
  - 91e3319 Merge pull request #39508 from dincamihai/openscap
  - 9fedb84 Always return oscap's stderr
  - 0ecde2c Include oscap returncode in response
- **PR** #39562: (*terminalmage*) Add ulimits to dockerng state/exec module @ *2017-02-22T16:31:49Z*
  - **ISSUE** #30802: (*kjelle*) Missing ulimits on docker.running / dockerng.running | refs: #39562
  - fbe2194 Merge pull request #39562 from terminalmage/issue30802
  - c503740 Add ulimits to dockerng state/exec module
  - da42040 Try the docker-py 2.0 client name first
- 01d4a84 dockerng.get_client_args: Fix path for endpoint config for some versions of docker-py (#39544)
  - **PR** #39544: (*terminalmage*) dockerng.get_client_args: Fix path for endpoint config for some versions of docker-py
- **PR** #39498: (*terminalmage*) Resubmit PR #39483 against 2016.3 branch @ *2017-02-20T19:35:33Z*
  - dff35b5 Merge pull request #39498 from terminalmage/pr-39483
  - 20b097a dockerng: compare sets instead of lists of security_opt
- **PR** #39497: (*terminalmage*) Two dockerng compatibility fixes @ *2017-02-19T17:43:36Z*
  - 6418e72 Merge pull request #39497 from terminalmage/docker-compat-fixes
  - cbd0270 docker: make docker-exec the default execution driver
  - a6a17d5 Handle docker-py 2.0's new host_config path
- **PR** #39423: (*dincamihai*) Openscap module @ *2017-02-17T18:31:04Z*
  - 9c4292f Merge pull request #39423 from dincamihai/openscap
  - 9d13422 OpenSCAP module
- **PR** #39464: (*gtmanfred*) skip false values from preferred_ip @ *2017-02-16T22:48:32Z*
  - **ISSUE** #39444: (*clem-compilatio*) salt-cloud - IPv6 and IPv4 private_ips - preferred_ip sends False to is_public_ip | refs: #39464
  - 7dd2502 Merge pull request #39464 from gtmanfred/2016.3
  - f829d6f skip false values from preferred_ip
- **PR** #39460: (*cachedout*) Fix mocks in win_disim tests @ *2017-02-16T19:27:48Z*
  - db359ff Merge pull request #39460 from cachedout/win_dism_test_fix

  - e652a45 Fix mocks in win_disim tests

- **PR** #39426: (*morganwillcock*) win_dism: Return failure when package path does not exist @ *2017-02-16T00:09:22Z*
  - 9dbfba9 Merge pull request #39426 from morganwillcock/dism
  - a7d5118 Return failure when package path does not exist
- **PR** #39431: (*UtahDave*) Fix grains.setval performance @ *2017-02-15T23:56:30Z*
  - 5616270 Merge pull request #39431 from UtahDave/fix_grains.setval_performance
  - 391bbec add docs
  - 709c197 allow sync_grains to be disabled on grains.setval
- **PR** #39405: (*rallytime*) Update :depends: docs for boto states and modules @ *2017-02-15T17:32:08Z*
  - **ISSUE** #39304: (*Auha*) boto_s3_bucket documentation dependency clarification | refs: #39405
  - 239e16e Merge pull request #39405 from rallytime/fix-39304
  - bd1fe03 Update :depends: docs for boto states and modules
- **PR** #39411: (*rallytime*) Update external_cache docs with other configuration options @ *2017-02-15T17:30:40Z*
  - **ISSUE** #38762: (*oz123*) Configuration information for custom returners | refs: #39411
  - 415102f Merge pull request #39411 from rallytime/fix-38762
  - e13febe Update external_cache docs with other configuration options
- 7e1803b Update docs on upstream EPEL7 pygit2/libgit2 issues (#39421)
  - **PR** #39421: (*terminalmage*) Update docs on upstream EPEL7 pygit2/libgit2 issues
- 4ff13ac salt.fileserver.roots: Fix regression in symlink_list (#39409)
  - **PR** #39409: (*terminalmage*) salt.fileserver.roots: Fix regression in symlink_list
  - **PR** #39337: (*terminalmage*) Don't re-walk the roots fileserver in symlink_list() | refs: #39409
- **PR** #39362: (*dincamihai*) Add cp.push test @ *2017-02-14T18:42:11Z*
  - 8b8ab8e Merge pull request #39362 from dincamihai/cp-push-test-2016.3
  - 91383c5 Add cp.push test
- **PR** #39380: (*joe-niland*) Quote numeric user names so pwd.getpwnam handles them properly @ *2017-02-14T18:33:33Z*
  - 4b726f9 Merge pull request #39380 from joe-niland/quote-numeric-usernames
  - c2edfdd Quote numeric user names so pwd.getpwnam handles them properly
- **PR** #39400: (*meaksh*) Prevents `OSError' exception in case certain job cache path doesn't exist @ *2017-02-14T18:27:04Z*
  - 1116d32 Merge pull request #39400 from meaksh/2016.3-fix-local-cache-issue
  - e7e559e Prevents `OSError' exception in case path doesn't exist
- **PR** #39300: (*terminalmage*) Replace more usage of str.format in the loader @ *2017-02-13T19:01:19Z*
  - **PR** #39227: (*terminalmage*) Loader optimzation | refs: #39300
  - 6c854da Merge pull request #39300 from terminalmage/loader-optimization
  - d3e5d15 Replace more usage of str.format in the loader

- **PR** #39337: (*terminalmage*) Don't re-walk the roots fileserver in symlink_list() | refs: #39409 @ *2017-02-13T18:41:17Z*
  - 5286b5f Merge pull request #39337 from terminalmage/issue34428
  - a7d2135 Don't re-walk the roots fileserver in symlink_list()
- **PR** #39339: (*cro*) Add link to external pillar documentation for clarification. @ *2017-02-13T18:40:13Z*
  - ce781de Merge pull request #39339 from cro/pillar_filetree_doc
  - 410810c Clarification on external pillar usage.
- fa30143 Document the upstream RedHat bug with their pygit2 package (#39316)
  - **PR** #39316: (*terminalmage*) Document the upstream RedHat bug with their pygit2 package
- **PR** #39313: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3 @ *2017-02-10T16:23:23Z*
  - **PR** #39296: (*sergeizv*) Whitespace fix in docs Makefile
  - **PR** #39295: (*sergeizv*) Fix typo
  - **PR** #39294: (*sergeizv*) Fix link in proxyminion guide
  - **PR** #39293: (*sergeizv*) Grammar fix
  - 9de559f Merge pull request #39313 from rallytime/merge-2016.3
  - 0b8dddf Merge branch `2015.8' into `2016.3'
  - fc551bc Merge pull request #39293 from sergeizv/grammar-fix
    - 70f2b58 Rewrap paragraph
    - e6ab517 Grammar fix
  - 8a1b456 Merge pull request #39295 from sergeizv/typo-fix
    - 5d9f36d Fix typo
  - cfaafec Merge pull request #39296 from sergeizv/whitespace-fix
    - 1d4c1dc Whitespace fix in docs Makefile
  - 0b4dcf4 Merge pull request #39294 from sergeizv/fix-link
    - 04bde6e Fix link in proxyminion guide
- dd3ca0e Fix #38595 - Unexpected error log from redis retuner in master's log (#39299)
  - **ISSUE** #38595: (*yue9944882*) Redis ext job cache occurred error | refs: #38610 #38610
  - **PR** #39299: (*rallytime*) Back-port #38610 to 2016.3
  - **PR** #38610: (*yue9944882*) Fix #38595 - Unexpected error log from redis retuner in master's log | refs: #39299
- **PR** #39297: (*cro*) Add doc to recommend pgjsonb for master job caches @ *2017-02-09T22:49:59Z*
  - f16027d Merge pull request #39297 from cro/pg_returner_docs
  - 28bac64 Typo
  - 19fedcd Add doc to recommend pgjsonb for master job caches
- **PR** #39286: (*terminalmage*) Allow minion/CLI saltenv/pillarenv to override master when compiling pillar @ *2017-02-09T21:22:46Z*
  - 77e50ed Merge pull request #39286 from terminalmage/fix-pillarenv-precedence

  - 3cb9833 Allow minion/CLI saltenv/pillarenv to override master when compiling pillar

- **PR** #39221: (*lvg01*) Fix bug 39220 @ *2017-02-09T18:12:29Z*
  - **ISSUE** #39220: (*lvg01*) state file.line skips leading spaces in content with mode:ensure and indent:False | refs: #39221 #39221 #39221 #39221
  - 5244041 Merge pull request #39221 from lvg01/fix-bug-39220
  - e8a41d6 Removes to early content stripping (stripping is allready done when needed with ident:true), fixes #39220
  - a4b169e Fixed wrong logic, fixes #39220
- 5a27207 Add warning for Dulwich removal (#39280)
  - **ISSUE** #36913: (*terminalmage*) Support custom refspecs in GitFS | refs: #39210
  - **PR** #39280: (*terminalmage*) Add warning for Dulwich removal
  - **PR** #39210: (*terminalmage*) salt.utils.gitfs: remove dulwich support, make refspecs configurable | refs: #39280
- 1b9217d Update jsonschema tests to reflect change in jsonschema 2.6.0 (#39260)
  - **PR** #39260: (*terminalmage*) Update jsonschema tests to reflect change in jsonschema 2.6.0
- c1d16cc Better handling of enabled/disabled arguments in pkgrepo.managed (#39251)
  - **ISSUE** #33536: (*murzick*) pkgrepo.managed does not disable a yum repo with ``disabled: True'' | refs: #35055
  - **PR** #39251: (*terminalmage*) Better handling of enabled/disabled arguments in pkgrepo.managed
  - **PR** #35055: (*galet*) #33536 pkgrepo.managed does not disable a yum repo with ``disabled: True'' | refs: #39251
- **PR** #39227: (*terminalmage*) Loader optimzation | refs: #39300 @ *2017-02-08T19:38:21Z*
  - 8e88f71 Merge pull request #39227 from terminalmage/loader-optimization
  - c750662 Loader optimzation
- **PR** #39228: (*gtmanfred*) default to utf8 encoding if not specified @ *2017-02-08T19:36:57Z*
  - **ISSUE** #38856: (*fhaynes*) salt-cloud throws an exception when ec2 does not return encoding | refs: #39228
  - bc89b29 Merge pull request #39228 from gtmanfred/2016.3
  - afee047 default to utf8 encoding if not specified
- **PR** #39231: (*terminalmage*) Add clarification for jenkins execution module @ *2017-02-08T19:34:45Z*
  - d9b0671 Merge pull request #39231 from terminalmage/clarify-jenkins-depends
  - ad1b125 Add clarification for jenkins execution module
- **PR** #39232: (*terminalmage*) Avoid recursion in s3/svn ext_pillars @ *2017-02-08T19:33:28Z*
  - ddcff89 Merge pull request #39232 from terminalmage/issue21342
  - c88896c Avoid recursion in s3/svn ext_pillars
- ef4e437 Fix the win_ip_test failures (#39230)
  - **ISSUE** #38697: (*fboismenu*) On Windows, ip.get_all_interfaces returns at most 2 DNS/WINS Servers | refs: #38793
  - **PR** #39230: (*rallytime*) Fix the win_ip_test failures

  - **PR** #38793: (*fboismenu*) Fix for #38697 | refs: #39197 #39230

- **PR** #39199: (*rallytime*) Back-port #39170 to 2016.3 @ *2017-02-07T16:19:32Z*
  - **ISSUE** #33187: (*usbportnoy*) Deploy to jboss TypeError at boss7.py:469 | refs: #39170 #39761
  - **PR** #39170: (*grep4linux*) Added missing source_hash_name argument in get_managed function | refs: #39199
  - df5f934 Merge pull request #39199 from rallytime/bp-39170
  - c129905 Added missing source_hash_name argument in get_managed function Additional fix to #33187 Customer was still seeing errors, this should now work. Tested with 2015.8.13 and 2016.11.2
- **PR** #39206: (*cachedout*) Ignore empty dicts in highstate outputter @ *2017-02-07T16:11:36Z*
  - **ISSUE** #37174: (*mikeadamz*) The State execution failed to record the order in which all states were executed spam while running pkg.upgrade from orchestration runner | refs: #39206
  - 2621c11 Merge pull request #39206 from cachedout/issue_issue_37174
  - be31e05 Ignore empty dicts in highstate outputter
- **PR** #39209: (*terminalmage*) Sort the return list from the fileserver.envs runner @ *2017-02-07T16:07:08Z*
  - dd44045 Merge pull request #39209 from terminalmage/sorted-envs
  - e6dda4a Sort the return list from the fileserver.envs runner
- 7bed687 [2016.3] Pylint fix (#39202)
  - **PR** #39202: (*rallytime*) [2016.3] Pylint fix
- **PR** #39197: (*cachedout*) Pr 38793 @ *2017-02-06T19:23:12Z*
  - **ISSUE** #38697: (*fboismenu*) On Windows, ip.get_all_interfaces returns at most 2 DNS/WINS Servers | refs: #38793
  - **PR** #38793: (*fboismenu*) Fix for #38697 | refs: #39197 #39230
  - ab76054 Merge pull request #39197 from cachedout/pr-38793
  - f3d35fb Lint fixes
  - 624f25b Fix for #38697
- **PR** #39166: (*Ch3LL*) fix boto ec2 module create_image doc @ *2017-02-06T18:27:17Z*
  - fa45cbc Merge pull request #39166 from Ch3LL/fix_boto_ec2_docs
  - 90af696 fix boto ec2 module create_image doc
- **PR** #39173: (*rallytime*) Restore ``Salt Community'' doc section @ *2017-02-06T18:19:11Z*
  - **PR** #30770: (*jacobhammons*) Doc restructuring, organization, and cleanup | refs: #39173
  - **PR** #10792: (*cachedout*) Documentation overhaul | refs: #39173
  - a40cb46 Merge pull request #39173 from rallytime/restore-community-docs
  - 5aeddf4 Restore ``Salt Community'' doc section
- 9de08af Apply fix from #38705 to 2016.3 branch (#39077)
  - **ISSUE** #38704: (*nasenbaer13*) Archive extracted fails when another state run is queued | refs: #38705
  - **PR** #39077: (*terminalmage*) Apply fix from #38705 to 2016.3 branch
  - **PR** #38705: (*nasenbaer13*) Fix for #38704 archive extracted and dockerio states

- da3053e update vmware getting started doc (#39146)
  - **PR** #39146: (*gtmanfred*) update vmware getting started doc
- e78ca0f Fixing a weird edge case when using salt syndics and targetting via pillar. Without this fix the master of masters ends up in an infinite loop since the data returned from the minions is differently structured than if a sync was not in use. (#39145)
  - **PR** #39145: (*garethgreenaway*) [2016.3] Fix when targeting via pillar with Salt syndic
- **PR** #38804: (*alexbleotu*) Second attempt to fix prepending of root_dir to paths @ *2017-02-02T16:10:37Z*
  - **ISSUE** #2016: (*seanchannel*) status.custom failing on any arguments
  - **ISSUE** #3: (*thatch45*) libvirt module
  - **ISSUE** #1: (*thatch45*) Enable regex on the salt cli
  - cd8077a Merge pull request #38804 from alexbleotu/root_dir_`fix-2016`_.3-gh
  - b3bdd3b Add missing whiteline
  - c7715ac Merge pull request #3 from cro/ab_rootdirfix
    - e8cbafa When running testsuite, salt.syspaths.ROOT_DIR is often empty.
  - b12dd44 Merge pull request #1 from cro/ab_rootdirfix
    - bffc537 Remove extra if statements (rstrip will check for the presence anyway).
  - 97521b3 Second attempt to fix prepending of root_dir to paths
- 6ffeda3 Clarify ipv6 option for minion and inteface for master, closes #39118 (#39131)
  - **ISSUE** #39118: (*bobrik*) Minion ipv6 option is not documented | refs: #39289
  - **PR** #39131: (*bobrik*) Clarify ipv6 option for minion and inteface for master, closes #39118
- 646b9ea Don't abort pillar.get with merge=True if default is None (#39116)
  - **PR** #39116: (*terminalmage*) Don't abort pillar.get with merge=True if default is None
- **PR** #39091: (*terminalmage*) Run test_valid_docs in batches @ *2017-02-01T19:09:05Z*
  - cc9b69b Merge pull request #39091 from terminalmage/update-test-valid-docs
  - d76f038 add debug logging for batch vars
  - b4afea2 Don't fail test if data is empty
  - b3a5d54 Account for trimmed value in `salt -d' output
  - 909916c Run test_valid_docs in batches
- bcee3d1 Move fileclient tests to tests/integration/fileserver/fileclient_test.py (#39081)
  - **PR** #39081: (*terminalmage*) Move fileclient tests to tests/integration/fileserver/fileclient_test.py
- 122422b Bump openstack deprecation notice to Oxygen (#39067)
  - **PR** #39067: (*rallytime*) Bump openstack deprecation notice to Oxygen
- **PR** #39047: (*rallytime*) [2016.3] Merge forward from 2015.8 to 2016.3 @ *2017-01-30T23:48:14Z*
  - **PR** #39046: (*rallytime*) Add 2015.8.14 release notes file
  - **PR** #39037: (*rallytime*) Update 2015.8.13 release notes
  - a24af5a Merge pull request #39047 from rallytime/merge-2016.3
  - b732a1f Merge branch `2015.8' into `2016.3'

  - 56ccae6 Add 2015.8.14 release notes file (#39046)
  - 5943fe6 Update 2015.8.13 release notes (#39037)
- fef1b11 Add 2016.3.6 release notes file (#39045)
  - **PR** #39045: (*rallytime*) Add 2016.3.6 release notes file
- 7c43f4a [2016.3] Update release numbers for doc build (#39042)
  - **PR** #39042: (*rallytime*) [2016.3] Update release numbers for doc build
- ff32459 Update 2016.3.5 release notes (#39038)
  - **PR** #39038: (*rallytime*) Update 2016.3.5 release notes
- **PR** #39028: (*terminalmage*) Clarify delimiter argument @ *2017-01-30T18:20:26Z*
  - 5b09dc4 Merge pull request #39028 from terminalmage/clarify-delimiter-argument
  - f29ef07 Clarify delimiter argument
- 1ff359f Add CLI Example for rest_sample_utils.get_test_string function (#39030)
  - **PR** #39030: (*rallytime*) Back-port #38972 to 2016.3
  - **PR** #38972: (*rallytime*) Add CLI Example for rest_sample_utils.get_test_string function | refs: #39030
- f13fb9e Enable __proxy__ availability in states, highstate, and utils. Enable __utils__ availability in proxies. (#38899)
  - **ISSUE** #38753: (*alexbleotu*) *__proxy__* dunder is not injected when invoking the *salt* variable in sls files | refs: #38899 #38829
  - **ISSUE** #38557: (*alexbleotu*) Proxy not working on develop | refs: #38829
  - **ISSUE** #38265: (*mirceaulinic*) *__utils__* object not available in proxy module | refs: #38899 #38829 #38829
  - **ISSUE** #32918: (*mirceaulinic*) Proxy minions reconnection | refs: #38829
  - **PR** #38899: (*cro*) Enable __proxy__ availability in states, highstate, and utils. Enable __utils__ for proxies.
  - **PR** #38829: (*cro*) MANY dunder variable fixes for proxies + proxy keepalive from @mirceaulinic | refs: #38899
  - **PR** #37864: (*mirceaulinic*) Proxy keepalive feature | refs: #38829
- **PR** #38951: (*DmitryKuzmenko*) Keep the only one record per module-function in depends decorator. @ *2017-01-27T17:05:42Z*
  - **ISSUE** #37938: (*johje349*) Memory leak in Reactor | refs: #38951
  - **ISSUE** #33890: (*hvnsweeting*) salt memleak when running state.sls | refs: #38951
  - da96221 Merge pull request #38951 from DSRCorporation/bugs/37938_fix_depends_decorator_memleak
  - 0b18f34 Keep the only one record per module-function in depends decorator.
- **PR** #38982: (*rallytime*) Set response when using ``GET'' method in s3 utils @ *2017-01-27T17:04:48Z*
  - **ISSUE** #34780: (*joehoyle*) S3fs broken in 2016.3.1 | refs: #38982
  - 85165ed Merge pull request #38982 from rallytime/fix-34780
  - 1583c55 Set response when using ``GET'' method in s3 utils
- **PR** #38989: (*anlutro*) Documentation: fix SLS in environment variable examples @ *2017-01-27T17:00:08Z*
  - cfdbc99 Merge pull request #38989 from alprs/docfix-state_pt3_environ

  - 52a9ad1 fix SLS in environment variable examples
- **PR** #39000: (*rallytime*) Skip the test_badload test until Jenkins move is complete @ *2017-01-27T16:58:21Z*
  - 55e4d25 Merge pull request #39000 from rallytime/skip-badload-test
  - 4b3ff0f Skip the test_badload test until Jenkins move is complete
- **PR** #38995: (*terminalmage*) Fix pillar.item docstring @ *2017-01-27T16:58:00Z*
  - fe054eb Merge pull request #38995 from terminalmage/fix-pillar.item-docstring
  - 06d094d Fix pillar.item docstring
- **PR** #38950: (*mbom2004*) Fixed Logstash Engine in file logstash.py @ *2017-01-26T19:10:07Z*
  - **ISSUE** #34551: (*mbom2004*) salt.engines.logstash not loading | refs: #38950
  - b66b6f6 Merge pull request #38950 from mbom2004/2016.3
  - c09f39d Remove unused json import
  - 249efa3 Fixed Logstash Engine in file logstash.py
- a6c6e47 Handle changing ``is_default'' value in moto package for boto test mock (#38973)
  - **PR** #38973: (*rallytime*) Handle changing ``is_default'' value in moto package for boto test mock
- **PR** #38952: (*terminalmage*) Make the ext_pillars available to pillar.ext tunable @ *2017-01-26T19:01:56Z*
  - b965b5d Merge pull request #38952 from terminalmage/zd1168
  - 6b014e5 Rename on_demand_pillar to on_demand_ext_pillar
  - d216f90 Document new on_demand_pillar option and add to config template
  - 426b20f Add documentation for on-demand pillar to pillar.ext docstring
  - 7b10274 Make on-demand ext_pillars tunable
  - d54723c Add on_demand_pillar config option
- **PR** #38948: (*rallytime*) Bump the template context deprecation version to Oxygen @ *2017-01-25T19:45:59Z*
  - **ISSUE** #35777: (*rallytime*) Properly deprecate template context data in Oxygen | refs: #38948
  - 2c4ad85 Merge pull request #38948 from rallytime/bump-template-context-deprecation
  - 749e003 Bump the template context deprecation version to Oxygen
- **PR** #38946: (*rallytime*) Back-port #37632 to 2016.3 @ *2017-01-25T19:40:40Z*
  - **PR** #37632: (*twangboy*) Fix versions report for Windows Server platforms | refs: #38946
  - e4514ca Merge pull request #38946 from rallytime/bp-37632
  - ee37cda Fix some lint
  - c08071e Fix versions report for server OSs
- **PR** #38913: (*Adaephon-GH*) Ignore plist files without Label key @ *2017-01-25T19:07:27Z*
  - 953a203 Merge pull request #38913 from Adaephon-GH/patch-1
  - e2f4a16 Removing trailing whitespace
  - 616292c Ignore plist files without Label key
- **PR** #38917: (*twangboy*) Update Jinja2 to 2.9.4 @ *2017-01-25T19:05:38Z*
  - 826dce1 Merge pull request #38917 from twangboy/update_jinja_mac

  - 62e608b Update Jinja2 to 2.9.4
- **PR** #38925: (*terminalmage*) Fix two wheel issues in netapi @ *2017-01-25T18:28:52Z*
  - **ISSUE** #38540: (*amendlik*) API wheel client throws exception and success=true | refs: #38925
  - **ISSUE** #38537: (*amendlik*) API client wheel_async always returns status 500 | refs: #38925
  - b27733c Merge pull request #38925 from terminalmage/issue38540
  - 76392fc Fix traceback when a netapi module uses wheel_async
  - bd4474f Fix `success' value for wheel commands
- **PR** #38926: (*gtmanfred*) add note about pysss for pam eauth @ *2017-01-25T18:12:20Z*
  - 618596f Merge pull request #38926 from gtmanfred/2016.3
  - 9cae953 add note about pysss for pam eauth
- **PR** #38847: (*terminalmage*) Catch MinionError in file.source_list @ *2017-01-24T16:03:10Z*
  - **ISSUE** #38825: (*IshMalik*) file.managed multiple sources for redundency failure | refs: #38847
  - 405d86a Merge pull request #38847 from terminalmage/issue38825
  - 11a4780 Use log.exception() instead
  - e40fac5 Catch MinionError in file.source_list
- **PR** #38875: (*terminalmage*) Reactor: fix traceback when salt:// path is nonexistant @ *2017-01-24T15:23:39Z*
  - **ISSUE** #36121: (*Ashald*) TemplateNotFound/Unable to cache file | refs: #38875
  - b5df104 Merge pull request #38875 from terminalmage/issue36121
  - fbc4d2a reactor: ensure glob_ref is a string
  - 2e443d7 cp.cache_file: add note re: return for nonexistant salt:// path
- **PR** #38890: (*cro*) Backport #38887 to 2016.3: Enable resetting a VM via salt-cloud & VMware driver @ *2017-01-24T15:15:35Z*
  - **ISSUE** #37413: (*Snarfingcode666*) Salt-cloud vmware missing reboot command | refs: #38890
  - e9ebec4 Merge pull request #38890 from cro/vmware_reset_vm_20163
  - 0146562 Call correct function for resetting a VM
- **PR** #38883: (*techhat*) Don't require text_out path to exist @ *2017-01-23T18:20:42Z*
  - **PR** #38867: (*mchugh19*) Touch deploy.sh before use | refs: #38883
  - **PR** #32026: (*techhat*) Don't require the decode_out file to already exist | refs: #38883
  - c3fbfcd Merge pull request #38883 from techhat/dontrequire
  - 67bc4d6 Don't require text_out path to exist
- **PR** #38851: (*terminalmage*) Support docker-py 2.0 in dockerng @ *2017-01-23T16:48:12Z*
  - 6430a45 Merge pull request #38851 from terminalmage/docker-py-2.0
  - 3c061b2 Support docker-py 2.0 in dockerng
- **PR** #38844: (*cachedout*) Fix memory leak in HTTP client @ *2017-01-20T20:59:14Z*
  - ac8008d Merge pull request #38844 from cachedout/http_memory_leak
  - c46bf85 Fix memory leak in HTTP client

- **PR** #38823: (*gtmanfred*) pass pillar to compound matcher in match module @ *2017-01-20T19:19:09Z*
  - **ISSUE** #38798: (*ripta*) *match.compound* fails to match when pillar data is used | refs: #38823
  - dfe6dfe Merge pull request #38823 from gtmanfred/2016.3
  - f0a71e8 pass pillar to compound matcher in match module

### 18.2.8 Salt 2015.8.0 Release Notes - Codename Beryllium

#### 2015.8.0 Detailed Change List

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs)

*Generated at: 2015-09-09T18:15:43Z*

This list includes all pull requests merged into the 2015.8 branch between the forking of the branch from develop and the release of 2015.8.0.

Statistics:

- Total Merges: **682**
- Total Issue references: **342**
- Total PR references: **866**

Pull Requests:

- #26993: (*whiteinge*) Backport #26975
- #26970: (*cachedout*) Revert ``better path query parsing in fileserver''
- #26980: (*terminalmage*) Use human-readable cachedirs for gitfs-backed winrepo
- #26969: (*TheBigBear*) URL of salt windows downloads has changed
- #26968: (*TheBigBear*) URL of salt windows downloads has changed
- #26958: (*s0undt3ch*) Bradthurber bootstrap command line help doc update
- #26949: (*rallytime*) Back-port #25148 to 2015.8
- #26914: (*cro*) Add salt-proxy script and manpage to setup.py so they will get installed.
- #26909: (*terminalmage*) Don't try to git clone from /tmp on Windows
- #26910: (*s0undt3ch*) Sometimes the event system is just too fast
- #26905: (*s0undt3ch*) Exit the loop if run_once is true
- #26897: (*msteed*) spm file hash part deux
- #26900: (*s0undt3ch*) If no tag is passed, don't actually subscribe to anything.
- #26880: (*s0undt3ch*) Restore backwards compatibility to *salt.utils.event*
- #26896: (*msteed*) spm remove: use pkgfiles to calculate file hashes
- #26891: (*jtand*) Fixed an unboundlocalerror
- #26892: (*cachedout*) Make the testing ioloop the current one
- #26886: (*jtand*) Gets the azure version correctly on python-azure 1.0.0
- #26870: (*rallytime*) Back-port #26834 to 2015.8
- #26865: (*dmurphy18*) Fix apt preferences for apts, repos for pbuilder building for Debian

- #26873: (*terminalmage*) Properly handle getting local config values in older git versions
- #26869: (*rallytime*) Fix provider --> driver change for salt-cloud lxc
- #26858: (*terminalmage*) Fix a couple version checks for git state and execution module
- #26853: (*UtahDave*) Fix salt-cloud on windows
- #26852: (*basepi*) [2015.8] Only reference msgpack if it imported successfully
- #26835: (*terminalmage*) Backport #26572 to 2015.8
- #26836: (*jacobhammons*) Added rst source for salt-proxy man page, added build and copy lines ...
- #26818: (*terminalmage*) Support empty repositories in git.latest
- #26819: (*rallytime*) Make sure we're calling _validate_name in the correct place in 2015.8 Linode driver
- #26841: (*l2ol33rt*) Fix reference before assignment in sqs engine
- #26822: (*terminalmage*) Add some missing imports for masterless winrepo
- #26831: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #26826: (*techhat*) Pass a package name to unregister_file()
- #26757: (*cachedout*) Fix various filehandle leaks
- #26816: (*gtmanfred*) rev defaults to HEAD
- #26801: (*jacobhammons*) Added doc for dockerng minion configuration options
- #26808: (*anlutro*) Fix git init argument formatting
- #26807: (*terminalmage*) Move salt.utils.itersplit() to salt.utils.itertools.split()
- #26796: (*jacobhammons*) Add doc for __states__
- #26764: (*sjorge*) salt.utils.is_proxy() is no longer always true on SunOS/Illumos/SmartOS
- #26772: (*sjorge*) pull in smartos `virt' module from develop
- #26726: (*terminalmage*) Redact HTTPS Basic Auth in states/funcs which deal with git remotes
- #26769: (*terminalmage*) Use --track to set tracking branch on older git versions
- #26765: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #26761: (*sjorge*) fix SPM paths on smartos/illumos esky
- #26751: (*terminalmage*) Fixes for masterless winrepo
- #26745: (*rallytime*) Make sure pyrax configs are in place before checking for deps
- #26746: (*rallytime*) Make sure nova configs are set before checking for dependencies
- #26750: (*basepi*) [2015.8] Add __utils__ to state modules
- #26752: (*cro*) Fix typo in some diagram labels
- #26747: (*basepi*) [2015.8] Add __states__ to state modules, for cross-calling states
- #26744: (*basepi*) [2015.8] Fix issue from #26717
- #26737: (*dmurphy18*) Fix to allow for package naming other than just salt
- #26742: (*rallytime*) Only warn about vsphere deprecation if vsphere is configured
- #26733: (*sjorge*) Refactor of smartos_vmadm module
- #26735: (*s0undt3ch*) Add *.hg* and *.cvs* to spm_build_exclude

- #26720: (*UtahDave*) Updates for winrepo in 2015.8 to support jinja, while maintaining backwards compat
- #26719: (*jodv*) Backport 26532 to 2015.8
- #26721: (*rallytime*) Linode Driver Cleanup
- #26707: (*techhat*) Add top_level_dir to FORMULAs
- #26723: (*s0undt3ch*) Handle SPM paths in the setup script
- #26717: (*basepi*) [2015.8] Revert loader changes from #26645
- #26712: (*techhat*) Move SPM paths around
- #26680: (*TheBigBear*) add more python libs info in `--versions-report'
- #26716: (*terminalmage*) Allow git identity to be a list
- #26691: (*garethgreenaway*) Fixes to ipset module for 2015.8
- #26701: (*kev009*) Ignore the first element of kern.disks split, which is the sysctl name (new disks grain)
- #26678: (*terminalmage*) Restructure git.latest rewrite to work better when following HEAD
- #26679: (*rallytime*) Back-port #26661 to 2015.8
- #26684: (*techhat*) Add reactor formulas to spm
- #26682: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #26671: (*rallytime*) Warn users if cloud driver dependencies are missing.
- #26674: (*rallytime*) Back-port #26583 to 2015.8
- #26670: (*techhat*) Set up SPM to install -conf packages
- #26657: (*jfindlay*) top file compilation fixes
- #26659: (*TheBigBear*) minor doc edits - spelling
- #26654: (*jfindlay*) merge **`#26650`**_
- #26567: (*jtand*) Added git version check to git module
- #26649: (*twangboy*) Fixed Lint for real in win_repo.py
- #26608: (*jacobhammons*) 2015.8.0 release notes and doc/conf.py updates
- #26646: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #26645: (*rallytime*) Back-port #26390 to 2015.8
- #26642: (*twangboy*) Added function to render winrepo Jinja
- #26625: (*twangboy*) Correctly detect packages with no version, docs
- #26575: (*msteed*) Update spm for integration into raas
- #26635: (*cro*) Don't report windows as a proxy.
- #26622: (*rallytime*) [2015.8] Also add -Z to script args for cloud tests
- #26619: (*rallytime*) Apply cloud test fixes from 2015.5 to 2015.8
- #26603: (*terminalmage*) Fixes for git.latest, git module integration tests, etc.
- #26577: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #26534: (*cachedout*) Bump required Tornado version to 4.2.1
- #26566: (*cachedout*) Don't stacktrace trying to publish without a master

- #26541: (*terminalmage*) Make winrepo execution module use the same code as the runner
- #26530: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #26570: (*cachedout*) Fix haproxy docs to be valid
- #26562: (*cachedout*) Fix suprious error message with systemd-detect
- #26557: (*jfindlay*) add docs to #26550
- #26544: (*nmadhok*) Do not raise KeyError when calling avail_images if VM/template is in disconnected state
- #26501: (*terminalmage*) Update git_pillar docs, add git.list_worktrees function
- #26521: (*terminalmage*) Work around upstream git bug when cloning repo as root
- #26518: (*krak3n*) Fix for `#25492`_
- #26514: (*evverx*) Unmask a runtime masked services too
- #26529: (*mnalt*) bugfix: fix service.enable for missing rc.conf
- #26516: (*techhat*) Move more path operations into SPM loader
- #26533: (*cachedout*) Fix too aggressive even init check
- #26522: (*cro*) Do not load package provider if its not a proxy
- #26531: (*cachedout*) Fix failing event tests and modify event init
- #26433: (*cro*) Add support for default proxy config options, change default location of proxy config and log to /etc/salt/proxy and /var/log/proxy
- #26504: (*nmadhok*) [Backport] Adding ability to specify the virtual hardware version when creating VM
- #26517: (*cachedout*) Better fix for opensuse tornado httpclient
- #26479: (*rallytime*) Don't allow VMs with duplicate names to be created in EC2/AWS
- #26488: (*cachedout*) Don't pass unsupported kwarg to tornado
- #26451: (*terminalmage*) Use `rpm -qa' instead of repoquery to list installed packages
- #26491: (*jacobhammons*) doc site css fix for tiny fonts that appeared in code or pre tags in ...
- #26442: (*rallytime*) Hide API Key from debug logs for Linode Driver
- #26441: (*rallytime*) Refactor a few linode functions to be useful with salt-cloud command
- #26485: (*s0undt3ch*) One more missed typo
- #26495: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #26492: (*cachedout*) Fix schedule test error on py26
- #26489: (*cachedout*) Fixing more tarfile tests on py2.6
- #26475: (*cachedout*) Better object checking on asyncreq cleanup
- #26477: (*cachedout*) Fix integration.modules.git.GitModuleTest.test_archive on py26
- #26469: (*jtand*) --annotate and --message aren't valid options in older versions of git.
- #26439: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #26464: (*rallytime*) Back-port #26456 to 2015.8
- #26463: (*rallytime*) Back-port #26455 to 2015.8
- #26449: (*s0undt3ch*) The CLI options are not meant to include underscores.

- #26270: (*sjorge*) salt.modules.network now supports SmartOS and SunOS < Solaris 11
- #26436: (*TheBigBear*) minor edits
- #26410: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #26427: (*anlutro*) git.latest with no rev: fix concatenation error (NoneType and str)
- #26307: (*cachedout*) Fix bug in top file ordering
- #26428: (*cro*) Update docs to reflect new pillar structure
- #26429: (*cachedout*) Add release note regarding tcp transport on freebsd
- #26418: (*driskell*) Fix forward-merged caching from 2015.5 into 2015.8 to be compatible with the new match_func
- #26252: (*DmitryKuzmenko*) Issues/24048 http client 2015.8
- #26413: (*evverx*) Fix service.{start,restart,reload,force-reload} for masked services
- #26393: (*dmurphy18*) Added option parameters to make_repo to allow for configuration settings
- #26422: (*TheBigBear*) no dots in SLS filename __AND__ any directories (incl git repos)
- #26323: (*0xf10e*) Fix Credentials used in *glance* Exec Module
- #26341: (*terminalmage*) Rewrite git state and execution modules
- #26419: (*terminalmage*) Only use pygit2.errors if it exists
- #26423: (*eliasp*) doc - Correct function name for peer configuration
- #26401: (*cachedout*) Adapt proxy minion to tornado (w/lint)
- #26400: (*rallytime*) Back-port #26318 to 2015.8
- #26397: (*s0undt3ch*) A single *isinstance()* check for all types is enough
- #26385: (*gtmanfred*) don't require volume endpoint in nova driver
- #26287: (*techhat*) Break out SPM components into loaders
- #26384: (*TheBigBear*) Fix shell quoting for cmd.run
- #26391: (*rallytime*) Back-port #26367 to 2015.8
- #26383: (*rallytime*) Allow the creation of a VM without a profile
- #26375: (*s0undt3ch*) [2015.8] Schema DictItem required attribute fixes
- #26363: (*garethgreenaway*) Fixes to mount state 2015.8
- #26347: (*0xf10e*) Load `pkgng' as `pkg' on FreeBSD 9 when *providers:pkg* == `pkgng'
- #26361: (*TronPaul*) sign security token
- #26346: (*TronPaul*) Fix s3 using IAM credentials
- #26331: (*mnalt*) fix bug in sysrc to allow for empty rc variables
- #26334: (*rallytime*) Call salt.utils.cloud.bootstrap in GCE Driver provisioning
- #26308: (*dmurphy18*) Support for environment overrides building packages
- #26279: (*TheScriptSage*) Merge changes for pull`#26083`_ and pull`#25632`_ into 2015.8
- #26224: (*cachedout*) Cleanup of a few cases to move to salt.utils.fopen
- #26260: (*nmadhok*) Correct spelling of integration in docs

- #26226: (*rallytime*) Fix `#25463`_
- #26248: (*nmadhok*) Initial commit of unit tests for vmware cloud driver
- #26228: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #26244: (*nmadhok*) Backport additions to VMware cloud driver from develop to 2015.8 branch
- #26235: (*sjorge*) salt.utils.is_smartos_zone, inverse of is_smartos_globalzone
- #26221: (*sjorge*) SmartOS grain fixes
- #26218: (*terminalmage*) Add warning about file.recurse unicode errors with vim swap files.
- #26214: (*rallytime*) Back-port #24878 to 2015.8
- #26211: (*techhat*) Move SPM to its own directory
- #26197: (*TronPaul*) Fix GitFS when whitelisting base
- #26200: (*anlutro*) Make it possible to run salt-cloud as current user
- #26201: (*kev009*) Avoid VBOX storage emulation bugs in FreeBSD disks grain
- #26188: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #26194: (*basepi*) Allow virtual grains to be generated even if virt-what is not available
- #26176: (*rallytime*) Back-port #26165 to 2015.8
- #26169: (*terminalmage*) Fix attribute error in gitfs' find_file functions
- #26170: (*nmadhok*) [Backport] Make sure variable is a dictionary before popping something from it.
- #26143: (*nmadhok*) VMware cloud driver fixes [forward port from 2015.5 into 2015.8]
- #26173: (*jacobhammons*) Updates to cloud docs for the provider > driver change
- #26125: (*evverx*) Use timedatectl set-timezone to tzsetting if available
- #26145: (*sjorge*) smartos_imgadm cleanup
- #26148: (*terminalmage*) Refactor winrepo support
- #26128: (*sjorge*) imgadm.avail should return multiple results
- #26109: (*jfindlay*) fix quote indent
- #26089: (*anlutro*) User state/module: fix coercing of None into string ``None'' in GECOS
- #26081: (*cachedout*) Move invocation routine up
- #26086: (*rallytime*) Back-port #26019 to 2015.8
- #26087: (*rallytime*) Back-port #26059 to 2015.8
- #26052: (*jtand*) Rh_ip fix
- #26078: (*cachedout*) Fix missing key in error return
- #26074: (*basepi*) [2015.8] Re-apply #25358 in 2015.8
- #26069: (*jfindlay*) fix win_firewall.delete_rule
- #26066: (*s0undt3ch*) [2015.8] Update to latest bootstrap stable release v2015.06.08
- #26049: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #26026: (*anlutro*) Fix httpasswd result false positive in test mode
- #26037: (*rallytime*) Back-port #25489 to 2015.8

- #26004: (*techhat*) Allow updating a single SPM repo at a time
- #26012: (*cachedout*) Merge kwargs into opts for tcp client
- #26007: (*anlutro*) file.managed: wrap os.remove in if isfile, don't remove on success
- #26009: (*terminalmage*) Add winrepo and dockerng information to 2015.8.0 release notes
- #26006: (*basepi*) Revert #25727 in favor of #25645
- #26001: (*cachedout*) Fix failing tests
- #25978: (*anlutro*) Correct service state changes in test mode
- #25982: (*sjorge*) salt.modules.smartos_* limit to global zone only
- #25989: (*rallytime*) Back-port #25832 to 2015.8
- #25988: (*cachedout*) Move #25642 to 2015.8
- #25999: (*s0undt3ch*) Include subschema defaults
- #25997: (*s0undt3ch*) Allow getting a defaults dictionary from schema defaults
- #25979: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #25902: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #25956: (*anlutro*) Fix user argument to cron functions
- #25946: (*sjorge*) Fix for salt.utils.decorators under esky
- #25957: (*anlutro*) Remove temporary file after file.managed with checkcmd
- #25874: (*rallytime*) Back-port #25668 to 2015.8
- #25929: (*sjorge*) salt.module.pkgin's __virtual__() should not return None if pkg_info is not present
- #25952: (*garethgreenaway*) Log when event.fire and event.fire_master fail 2015.8
- #25944: (*sjorge*) Smartos libcrypto nonesky fix
- #25906: (*dmurphy18*) Cherry-pick of pkgbuild changes from develop branch
- #25925: (*sjorge*) Create default log location in smartos esky buildscript
- #25928: (*cachedout*) Fix stacktrace for non-existant states
- #25922: (*jacksontj*) Correct max_wait -> max_auth_wait in MultiMinion
- #25907: (*rallytime*) Back-port #25892 to 2015.8
- #25910: (*terminalmage*) Pass osarch to check_32()
- #25849: (*basepi*) Repress template error for GPG renderer (can't seek an OrderedDict)
- #25868: (*rallytime*) Back-port #25404 to 2015.8
- #25896: (*cachedout*) Lint
- #25876: (*jacksontj*) Fixes for 2015.8
- #25867: (*rallytime*) Back-port #25370 to 2015.8
- #25845: (*jacobhammons*) updated versionadded
- #25836: (*jacksontj*) Keep track of SyncWrapper's IOLoop usage
- #25859: (*0xf10e*) warn_until(Carbon,...) instead of Boron
- #25505: (*0xf10e*) Glance state module for 2015.8 ``Beryllium''

- #25843: (*jtand*) Fixed a lint error in parsers.py
- #25835: (*techhat*) spm update_repo doesn't always require arguments
- #25837: (*jacobhammons*) regenerated man pages
- #25830: (*sjorge*) Loading of libcrypto on smartos esky fixed
- #25808: (*jfindlay*) add highstate opts to config/__init__.py, update docs
- #25820: (*sjorge*) Prerequisite to fix the smartos libcrypto loading
- #25781: (*anlutro*) Fix iptables.build_rule
- #25764: (*gtmanfred*) allow use of cloudnetworks in ssh_interface
- #25736: (*jfindlay*) insert explicit formatter number
- #25742: (*rallytime*) Back-port #25731 to 2015.8
- #25741: (*rallytime*) Back-port #25727 to 2015.8
- #25712: (*cachedout*) Fix outputter for state.apply
- #25698: (*rallytime*) Back-port #25659 to 2015.8
- #25690: (*anlutro*) Fix highstate duration alignment (again)
- #25684: (*davidjb*) Fix doc around Include/Exclude for states
- #25549: (*techhat*) Switch Scaleway to salt.utils.cloud.bootstrap()
- #25667: (*jfindlay*) add 2015.8.0rc2 autogenerated changelog
- #25653: (*anlutro*) Properly align highstate duration sum
- #25663: (*rallytime*) Back-port #25638 to 2015.8
- #25639: (*terminalmage*) Don't do pre-flight check on git_pillar if it is not configured
- #25587: (*cachedout*) Fix prereq in salt.state
- #25628: (*anlutro*) Highstate output: show duration in seconds instead of milliseconds when appropriate
- #25631: (*basepi*) Remove trailing whitespace
- #25627: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #25626: (*basepi*) Fix the highstate outputter if `duration' is not present
- #25601: (*terminalmage*) Fix error message when local bin pkg path is not absolute
- #25595: (*terminalmage*) Bring git_pillar up to feature parity with gitfs
- #25619: (*cachedout*) Lint stateconf changes
- #25578: (*davidjb*) Allow parent relative includes in state files
- #25610: (*s0undt3ch*) [2015.8] Update the bootstrap script to latest release v2015.07.22
- #25599: (*jfindlay*) fix transport settings in #25596
- #25596: (*jfindlay*) Tcp test
- #25591: (*garethgreenaway*) Return data for scheduled jobs in 2015.8 default to True.
- #25588: (*basepi*) Fix some of the retcode work from #23105
- #25583: (*jtand*) Fixed lint error where pprint wasn't imported.
- #25572: (*rallytime*) Back-port #25570 to 2015.8

- #25575: (*rallytime*) Make Sure Scaleway driver works with deprecation paths
- #25564: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #25566: (*techhat*) Fix download process for SPM repo updates
- #25553: (*techhat*) Switch SoftLayer to salt.utils.cloud.bootstrap()
- #25552: (*techhat*) Update pricing for SoftlayerHW
- #25547: (*techhat*) Switch Parallels to salt.utils.cloud.bootstrap()
- #25548: (*techhat*) Switch Proxmox to salt.utils.cloud.bootstrap()
- #25543: (*techhat*) Switch GCE to salt.utils.cloud.bootstrap()
- #25546: (*techhat*) Switch CloudStack to salt.utils.cloud.bootstrap()
- #25558: (*cachedout*) Lint config_test
- #25515: (*s0undt3ch*) salt.utils.schema fixes
- #25514: (*garethgreenaway*) fixes to schedule.add documentation in 2015.8
- #25508: (*s0undt3ch*) [2015.8] Update bootstrap script to latest stable release, v2015.07.17
- #25501: (*basepi*) Add optional job end time to the local_cache returner
- #25491: (*s0undt3ch*) Let's call it for what it is!
- #25462: (*rallytime*) Wrap is_profile_configrured calls in try/except block
- #25439: (*rallytime*) Reduce digital_ocean API call frequency
- #25451: (*s0undt3ch*) Salt-SSH Scan roster bugfixes (And Py3 support)
- #25449: (*ruzarowski*) Exclude dotfiles and directories from minion key lists (Fixes `#25448`_)
- #25421: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #25412: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #25415: (*bechtoldt*) [docs] declare YAML as code block
- #25407: (*rallytime*) Back-port #23236 to 2015.8
- #25409: (*rallytime*) Back-port #24422 to 2015.8
- #25394: (*rallytime*) Back-port #25355 to 2015.8
- #25393: (*rallytime*) Back-port #25289 to 2015.8
- #25387: (*cachedout*) Lint #25319
- #25319: (*ruzarowski*) [cloud:EC2] Move SourceDest logic to _update_enis and add alias for delete_interface_on_terminate
- #25310: (*anlutro*) Add an ``is list'' test to the jinja environment
- #25264: (*ruzarowski*) Fix AttributeError in fileserver update_opts
- #25372: (*rallytime*) Don't stacktrace when provisioning instances with softlayer* drivers
- #25315: (*ruzarowski*) [cloud:EC2] Move handling of AssociatePublicIpAddress to associate_eip/allocate_new_eip logic depending on value type
- #25312: (*ruzarowski*) [cloud:EC2] Introduce eni Name property to set name tag value after its creation
- #25311: (*ruzarowski*) [cloud:EC2] Add ability to attach an existing eni
- #25280: (*rallytime*) Remove deprecation warnings for Beryllium

- #25329: (*twangboy*) Fixed some documentation errors
- #25300: (*s0undt3ch*) Fix ordering issue & Added requirements support
- #25283: (*jfindlay*) ensure ret is always defined
- #25252: (*jfindlay*) make args optional with default values in win_firewall.delete_rule
- #25257: (*notpeter*) Document SourceDestCheck added in #25242.
- #25298: (*twangboy*) Continue if profile not found
- #25296: (*twangboy*) Fixed file.comment for windows
- #25254: (*rallytime*) Change versionadded/changed references from Beryllium to 2015.8.0
- #25285: (*thusoy*) Remove error logging of missing victorops keys
- #25266: (*ruzarowski*) cloud: EC2 eni property SourceDestCheck is a AttributeBooleanValue
- #25216: (*jfindlay*) replace shell code with native python code
- #25278: (*rallytime*) Don't require size for all cloud drivers when checking profile configs
- #25271: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #25263: (*techhat*) Allow non-standard HTTP requests on tornado
- #25253: (*s0undt3ch*) Remove the deprecation warning. The driver has been renamed.
- #25248: (*techhat*) Do not resize while iterating
- #25244: (*rallytime*) Remove parted deprecations and fix failing tests
- #25242: (*ruzarowski*) Make SourceDestCheck flag available to network interface definition
- #25226: (*nmadhok*) Backporting fix for issue `#25223`_ on 2015.8 branch
- #25234: (*krak3n*) Fix: Bug in boto_asg state argument passing to boto_asg module
- #25222: (*rallytime*) Back-port #25219 to 2015.8
- #25188: (*rallytime*) Use linode status descriptions instead of ints when logging status to CLI
- #25203: (*s0undt3ch*) Added DictConfig with tests & More tests
- #25189: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- #25184: (*rallytime*) Back-port #25126 to 2015.8
- #25172: (*s0undt3ch*) Comment out imports while the YAML and RST rendering is not in-place.
- #25158: (*s0undt3ch*) Comment out not implemented code
- #25145: (*s0undt3ch*) Implement *oneOf*, *anyOf*, *allOf* and *not* with unit tests
- #25140: (*s0undt3ch*) Make the detection code work under Python 3.4
- #25131: (*s0undt3ch*) Array support in salt.utils.config
- #25130: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8

The 2015.8.0 feature release of Salt contains several major new features. As usual the release notes are not exhaustive and primarily include the most notable additions and improvements. Hundreds of bugs have been fixed and many modules have been substantially updated and added.

### New SaltStack Installation Repositories

SaltStack now provides installation repositories for several platforms, with more to come. See the following links for instructions:

- *Red Hat / CentOS 5, 6, 7*
- *Debian 8*
- *Windows*
- *FreeBSD*

### Send Event on State Completion

A `fire_event` global state keyword argument was added that allows any state to send an event upon completion. Useful for custom progress bars and checking in on long state runs. See *fire_event*.

### ZeroMQ socket monitoring

If `zmq_monitor` is enabled, log all ZMQ events for socket monitoring purposes. Verbose, but useful.

### SPM (Salt Package Manager)

Allows Salt formulas to be packaged for ease of deployment. See *spm*.

---

**Note:** The spm executable was not included in the Debian or Ubuntu packages for the 2015.8.0 or the 2015.8.1 releases. This executable will be included in an upcoming release. As a workaround, copy the SPM script from the salt library installation into `/usr/local/bin` or your local equivalent.

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### Specify a Single Environment for Top Files

A new `default_top` option was added to load the state top file from a single, specific environment, rather than merging top data across all environments. Additionally, new `top_file_merge_strategy` and `env_order` options were added for more control over top file merging. See *The Top File*.

### Tornado TCP Transport

Implemented a pure-TCP transport, in addition to ZeroMQ and RAET. The new transport uses Tornado, which allows Salt to use a standardized set of libraries for asynchronous behavior, which should greatly improve reliability and performance.

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**Note:** Tornado is considered expiremental in this release. The following known issues were being investigated at the time of release:

- TCP tests show performance degredation over time (issue 26051)
- TCP transport stacktrace on windows minion: Future exception was never retrieved (issue 25718)
- [freebsd] TCP transport not working in 2015.8.0rc3 (issue 26364)

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### Proxy Minion Enhancements

Proxy Minions have undergone a significant overhaul in 2015.8, see Proxy Minion Enhancements.

### Engines

Salt engines are long-running, external processes that leverage Salt. See *Salt Engines*.

### Core Changes

- Add system version info to `versions_report`, which appears in both `salt --versions-report` and `salt '*' test.versions_report`. Also added is an alias `test.versions` to `test.versions_report`. (issue 21906)
- Add colorized console logging support. This is activated by using `%(colorlevel)s`, `%(colorname)s`, `%(colorprocess)s`, `%(colormsg)s` in `log_fmt_console` in the config file for any of `salt-master`, `salt-minion`, and `salt-cloud`.

### Git Pillar

The git external pillar has been rewritten to bring it up to feature parity with *`gitfs`*. Support for pygit2_ has been added, bringing with it the ability to access authenticated repositories.

Using the new features will require updates to the git ext_pillar configuration, further details can be found in the *pillar.git_pillar* docs.

### Salt Cloud Improvements

- Pricing data from several cloud providers (GCE, DigitalOcean, SoftLayer_HW, EC2)
- All cloud providers now use standardized bootstrapping code.
- Modified the Linode Salt Cloud driver to use Linode's native API instead of depending on apache-libcloud or linode-python.

### Salt Cloud Changes

- Changed the default behavior of `rename_on_destroy` to be set to `True` in the EC2 and AWS drivers.
- Changed the default behavior of the EC2 and AWS drivers to always check for duplicate names of VMs before trying to create a new VM. Will now throw an error similarly to other salt-cloud drivers when trying to create a VM of the same name, even if the VM is in the `terminated` state.
- When querying for VMs in `digital_ocean.py`, the number of VMs to include in a page was changed from 20 (default) to 200 to reduce the number of API calls to Digital Ocean.Ocean.

### State and Execution Module Improvements

- New and improved Docker state and execution modules (*`state`* and *`execution module`*).

### Git State and Execution Modules Rewritten

The git state and execution modules have gone through an extensive overhaul.

### Changes in the `git.latest` State

- The `branch` argument has been added, allowing for a custom branch name to be used in the local checkout maintained by the *`git.latest`* state. This can be helpful in avoiding ambiguous refs in the local checkout when a tag is used as the `rev` argument. If no `branch` is specified, then the state uses the value of `rev` as the branch name.
- The `always_fetch` argument no longer has any effect, and will be removed in a future release. The state now detects whether or not a fetch is needed based on comparisons made between the local and remote repositories.
- The `force_fetch` argument has been added to force a fetch if the fetch is not a fast-forward (for instance, if someone has done a reset and force-pushed to the remote repository).
- The `remote_name` argument has been deprecated and renamed to `remote`.
- The `force` argument has been deprecated and renamed to `force_clone` to reduce ambiguity with the other ``force'' arguments.
- Using SHA1 hashes (full or shortened) in the `rev` argument is now properly supported.
- Non-fast-forward merges are now detected before the repository is updated, and the state will not update the repository if the change is not a fast-forward. Non-fast-forward updates must be overridden with the `force_reset` argument. If `force_reset` is set to `True`, the state will only reset the repository if it cannot be fast-forwarded. This is in contrast to the earlier behavior, in which a hard-reset would be performed every time the state was run if `force_reset` was set to `True`.
- A `git pull` is no longer performed by this state, dropped in favor of a fetch-and-merge (or fetch-and-reset) workflow.

### `git.config_unset` state added

This state allows for configuration values (or entire keys) to be unset. See *`here`* for more information and example SLS.

### git.config State Renamed to `git.config_set`

To reduce confusion after the addition of *`git.config_unset`*, the git.config state has been renamed to *`git.config_set`*. The old config.get name will still work for a couple releases, allowing time for SLS files to be updated.

In addition, this state now supports managing multivar git configuration values. See *`here`* for more information and example SLS.

### Initial Support for Git Worktrees in Execution Module

Several functions have been added to the execution module to manage worktrees (a feature new to Git 2.5.0). State support does not exist yet, but will follow soon.

### New Functions in Git Execution Module

- git.config_get_regexp
- *git.config_unset*
- *git.is_worktree*
- *git.list_branches*
- *git.list_tags*
- *git.list_worktrees*
- *git.merge_base*
- *git.merge_tree*
- *git.rev_parse*
- *git.version*
- *git.worktree_rm*
- *git.worktree_add*
- *git.worktree_prune*

### Changes to Functions in Git Execution Module

#### git.add

- `--verbose` is now implied when running the `git add` command, to provide a list of the files added in the return data.

#### git.archive

- Now returns `True` when the `git archive` command was successful, and otherwise raises an error.
- The `overwrite` argument has been added to prevent an existing archive from being overwritten by this function.
- The `fmt` argument has been deprecated and renamed to `format`.
- Trailing slash no longer implied in `prefix` argument, must be included if this argument is passed.

#### git.checkout

- The `rev` argument is now optional when using `-b` or `-B` in `opts`, allowing for a branch to be created (or reset) using `HEAD` as the starting point.

#### git.clone

- The `name` argument has been added to specify the name of the directory in which to clone the repository. If this option is specified, then the clone will be made within the directory specified by the `cwd`, instead of at that location.

- The `repository` argument has been deprecated and renamed to `url`.

### git.config_get

- The `setting_name` argument has been deprecated and renamed to `key`.
- The `global` argument has been added, to query the global git configuration
- The `all` argument has been added to return a list of all values for the specified key, allowing for all values in a multivar to be returned.
- The `cwd` argument is now optional if `global` is set to `True`

### git.config_set

- The value(s) of the key being set are now returned
- The `setting_name` argument has been deprecated and renamed to `key`.
- The `setting_value` argument has been deprecated and renamed to `value`.
- The `is_global` argument has been deprecated and renamed to `global`.
- The `multivar` argument has been added to specify a list of values to set for the specified key. The `value` argument is not compatible with `multivar`.
- The `add` argument has been added to add a value to a key (this essentially just adds an `--add` to the `git config` command that is run to set the value).

### git.fetch

- The `force` argument has been added to force the fetch when it is not a fast-forward. This could have been achieved in previous Salt versions by including `--force` in the `opts` argument, this argument is just for convenience and to match the usage of other functions with `force` arguments.
- The `refspecs` argument has been added to allow for one or more refspecs to be provided which override the one(s) specified by the **remote.remote_name.fetch** git configuration option.

### git.ls_remote

- The `repository` argument has been deprecated and renamed to `remote`.
- The `branch` argument has been deprecated and renamed to `ref`.
- The `opts` argument has been added to allow for additional CLI options to be passed to the `git ls-remote` command.

### git.merge

- The `branch` argument has been deprecated and renamed to `rev`.

### git.status

- Return data has been changed from a list of lists to a dictionary containing lists of files in the modified, added, deleted, and untracked states.

### git.submodule

- Added the `command` argument to allow for operations other than `update` to be run on submodules, and deprecated the `init` argument. To do a submodule update with `init=True` moving forward, use `command=update opts='--init'`.
- OpenStack Glance API V2 execution module
- Amazon VPC state module
- RallyDev execution module
- BambooHR execution module
- Stormpath execution, state modules
- Remove unused argument `timeout` in jboss7.status.
- Deprecate `enabled` argument in `pkgrepo.managed` in favor of `disabled`.
- Archive module changes: In the `archive.tar` and `archive.cmd_unzip` module functions, remove the arbitrary prefixing of the options string with `-`. An options string beginning with a `--long-option`, would have uncharacteristically needed its first `-` removed under the former scheme. Also, tar will parse its options differently if short options are used with or without a preceding `-`, so it is better to not confuse the user into thinking they're using the non- `-` format, when really they are using the with- `-` format.
- Added `__states__` to state modules, for cross-calling states. This enables using existing states when writing custom states. See *cross calling states*.

#### Windows Improvements

- Enhanced the windows minion silent installation with command line parameters to configure the salt master and minion name. See *Silent Installer Options*.
- Improved user management with additional capabilities in the user module for Windows.
- Improved patch management with a new module for managing windows updates (`win_wua`).
- Turned on multi-processing by default for windows in minion configuration.

#### Windows Software Repo Changes

A next-generation (ng) windows software repo is available for 2015.8.0 and later minions. When using this new repository, the repo cache is compiled on the Salt Minion, which enables pillar, grains and other things to be available during compilation time.

See the *Windows Software Repository* documentation for more information.

### Changes to legacy Windows repository

If you have pre 2015.8 Windows minions connecting to your 2015.8 Salt master, you can continue to use the legacy Windows repository for these Salt minions.

If you were previously using this repository and have customized settings, be aware that several config options have been renamed to make their naming more consistent.

See the *Windows Software Repository* documentation for more information.

### Win System Module

The unit of the `timeout` parameter in the `system.halt`, `system.poweroff`, `system.reboot`, and `system.shutdown` functions has been changed from seconds to minutes in order to be consistent with the linux timeout setting. (issue 24411) Optionally, the unit can be reverted to seconds by specifying `in_seconds=True`.

### Other Improvements

- Sanitize sensitive fields in http.query
- Allow authorization to be read from Django and eauth
- Add templating to SMTP returner
- New REST module for SDB
- Added rest_timeout config option and timeout argument to jobs api call
- Provide config options for Raet lane and road buffer count. (Useful for BSD kernels)
- Implemented ZeroMQ socket monitor for master and minion
- Add end time to master job cache for jobs (optional, off by default)
- Tornado is now the default backend for http.request
- Support pillarenv selection as it's done for saltenv
- salt was updated to use python-crypto version 2.6.1, which removes the dependency on python-m2crypto.

### Deprecations

- The `digital_ocean.py` Salt Cloud driver was removed in favor of the `digital_ocean_v2.py` driver as DigitalOcean has removed support for APIv1. The `digital_ocean_v2.py` was renamed to `digital_ocean.py` and supports DigitalOcean's APIv2.
- The `vsphere.py` Salt Cloud driver has been deprecated in favor of the `vmware.py` driver.
- The `openstack.py` Salt Cloud driver has been deprecated in favor of the `nova.py` driver.
- The use of `provider` in Salt Cloud provider files to define cloud drivers has been deprecated in favor of using `driver`. Both terms will work until the Nitrogen release of Salt. Example provider file:

```
my-ec2-cloud-config:
  id: 'HJGRYCILJLKJYG'
  key: 'kdjgfsgm;woormgl/aserigjksjdhasdfgn'
  private_key: /etc/salt/my_test_key.pem
  keyname: my_test_key
```

```
securitygroup: default
driver: ec2
```

- The use of `lock` has been deprecated and from `salt.utils.fopen`. `salt.utils.flopen` should be used instead.
- The following args have been deprecated from the `rabbitmq_vhost.present` state: `user`, `owner`, `conf`, `write`, `read`, and `runas`.
- The use of `runas` has been deprecated from the `rabbitmq_vhost.absent` state.
- Support for `output` in `mine.get` was removed. `--out` should be used instead.
- The use of `delim` was removed from the following functions in the `match` execution module: `pillar_pcre`, `pillar`, `grain_pcre`,

### Security Fixes

CVE-2015-6918 - Git modules leaking HTTPS auth credentials to debug log

Updated the Git state and execution modules to no longer display HTTPS basic authentication credentials in loglevel debug output on the Salt master. These credentials are now replaced with `REDACTED` in the debug output. Thanks to Andreas Stieger <asteiger@suse.com> for bringing this to our attention.

### Major Bug Fixes

- Fixed minion failover to next master on DNS errors (issue 21082)
- Fixed memory consumption in SaltEvents (issue 25557)
- Don't lookup outside system path in which() util (issue 24085)
- Fixed broken jobs rest api call (issue 23408)
- Fixed stale grains data using in modules (issue 24073)
- Added ssh_identities_only config flag for ssh-agent configured environments (issue 24096)
- Fixed ``object has no attribute'' errors for Raet transport (issue 21640)
- Flush event returners before master exit (issue 22814)
- Fix CommandExecutionError in grains generation with lspci missing (issue 23342)
- Fix salt-ssh against CentOS 7 when python-zmq not installed (issue 23503)
- Fix salt-ssh issues related to out-of-date six module (issue 20949)
- Fix salt-ssh thin generation after previous run was interrupted (issue 24376)
- Use proper line endings on Windows with ``file.managed'' w/contents (issue 25675)
- Fixed broken comment/uncomment functions in file.py (issue 24620)
- Fixed problem with unicode when changing computer description (issue 12255)
- Fixed problem with chocolatey module not loading (issue 25717)
- Fixed problem adding users to groups with spaces in the name (issue 25144)
- Fixed problem adding full name to user account (issue 25206)
- Fixed gem module stack trace (issue 21041)

- Fixed problem with file.managed when test=True (issue 20441)
- Fixed problem with powershell hanging while waiting for user input (issue 13943)
- Fixed problem where the salt-minion service would not consistently start (issue 25272)
- Fixed problem where pkg.refresh_db would return True even when winrepo.p was not found (issue 18919)
- Could someone please provide end to end example for Proxy Minion with REST (issue 25500)
- Proxy minions stopped working between 2014.7 and 2015.5 (issue 25053)
- Proxy minion documentation includes outdated code sample (issue 24018)
- Proxy Minion documentation missing grains example (issue 18273)
- Improve process management in proxy minion (issue 12024)
- Proxy minion never comes up with message ` I am XXX and I am not supposed to start any proxies.' (issue 25908)
- Fixed an issue that caused an exception when using Salt mine from pillar. (issue 11509)

### 18.2.9 Salt 2015.8.1 Release Notes

Version 2015.8.1 is a bugfix release for *2015.8.0*.

#### Security Fixes

CVE-2015-6941 - `win_useradd` module and `salt-cloud` display passwords in debug log

Updated the `win_useradd` module return data to no longer include the password of the newly created user. The password is now replaced with the string `XXX-REDACTED-XXX`. Updated the Salt Cloud debug output to no longer display `win_password` and `sudo_password` authentication credentials. Also updated the Linode driver to no longer display authentication credentials in debug logs. These credentials are now replaced with `REDACTED` in the debug output.

CVE-2015-6918 - Git modules leaking HTTPS auth credentials to debug log

Updated the Git state and execution modules to no longer display HTTPS basic authentication credentials in loglevel debug output on the Salt master. These credentials are now replaced with `REDACTED` in the debug output. Thanks to Andreas Stieger <asteiger@suse.com> for bringing this to our attention.

#### Major Bug Fixes

- Add support for `spm.d/*.conf` configuration of SPM (issue 27010)
- Fix `proxy` grains breakage for non-proxy minions (issue 27039)
- Fix global key management for git state
- Fix passing http auth to `util.http` from `state.file` (issue 21917)
- Fix `multiprocessing: True` in windows (on by default`)
- Add `pkg.info` to pkg modules
- Fix name of `serial` grain (this was accidentally renamed in 2015.8.0`)
- Merge config values from `master.d`/`minion.d` conf files (rather than flat update`)
- Clean grains cache on grains sync (issue 19853)

- Remove streamed response for fileclient to avoid HTTP redirection problems (issue 27093)
- Fixed incorrect warning about `osrelease` grain (issue 27065)
- Fix authentication via Salt-API with tokens (issue 27270)
- Fix winrepo downloads from https locations (issue 27081)
- Fix potential error with salt-call as non-root user (issue 26889)
- Fix global minion provider overrides (issue 27209)
- Fix backward compatibility issues for pecl modules
- Fix Windows uninstaller to only remove `./bin`, `salt*`, `nssm.exe`, `uninst.exe` (issue 27383)
- Fix misc issues with mongo returner.
- Add sudo option to cloud config files (issue 27398)
- Fix regression in RunnerClient argument handling (issue 25107)
- Fix `dockerng.running` replacing creation hostconfig with runtime hostconfig (issue 27265)
- Fix dockerng.running replacing creation hostconfig with runtime hostconfig (issue 27265)
- Increased performance on boto asg/elb states due to `__states__` integration
- Windows minion no longer requires powershell to restart (issue 26629)
- Fix x509 module to support recent versions of OpenSSL (issue 27326)
- Some issues with proxy minions were corrected.

Known Issues:

- Proxy minions currently cannot execute a highstate because of the way the proxymodule is being loaded internally. This will be fixed in a future release.

### Changes for v2015.8.0..v2015.8.1

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2015-10-01T04:45:02Z*

Total Merges: **200**

Changes:

- **PR** #27584: (*jacobhammons*) added changes list to 2015.8.1 release notes
- **PR** #27575: (*rallytime*) Don't report existing instances as running only if they're actually terminated in EC2
- **PR** #27573: (*basepi*) [2015.8] Use the custom yaml serializer for minion_opts for salt-ssh
- **PR** #27514: (*clinta*) Recent Versions of OpenSSL don't allow importing incomplete PEMs
- **PR** #27564: (*jacobhammons*) Man pages
- **PR** #27522: (*twangboy*) Removed dependency on powershell to restart salt-minion
- **PR** #27550: (*rallytime*) [2015.8] Clean up salt-cloud logging and make it more useful
- **PR** #27517: (*jacobhammons*) Updated install docs
- **PR** #27526: (*eliasp*) Add missing newlines before param listing to fix doc rendering
- **PR** #27525: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8

- **PR** #27513: (*terminalmage*) Fix integration tests for worktree addition in git >= 2.6
- **PR** #27510: (*rallytime*) Merge #27475 with test fixes
- **PR** #27451: (*ticosax*) [dockerng] Enforce usage of host_config and require docker-py>=1.4.0
- **PR** #27461: (*cachedout*) Only clean context if it exists
- **PR** #27473: (*terminalmage*) salt.utils.gitfs: Don't use close_fds=True on Windows
- **PR** #27496: (*blueyed*) Fix version reporting of gitpython
- **PR** #27502: (*ticosax*) Add test to check we don't call inspect_image on absent images.
- **PR** #27497: (*blueyed*) dockerng: fix image_present for forced, non-existent image
- **PR** #27411: (*terminalmage*) Fix invocation of git.config_get and git.config_set
- **PR** #27477: (*terminalmage*) Don't append role to hash_cachedir
- **PR** #27474: (*whiteinge*) Add fake pymongo version attribute for the docs
- **PR** #27466: (*blueyed*) Fix version reporting of python-gnupg and mysql-python
- **PR** #27465: (*ticosax*) Fix usage of dockerng ``cmd'' was #27459
- **PR** #27417: (*whiteinge*) Backport #25243 into 2015.8
- **PR** #27423: (*dmurphy18*) Changes to support configurable repository for Debian / Ubuntu
- **PR** #27428: (*rallytime*) Back-port #27398 to 2015.8
- **PR** #27429: (*rallytime*) Back-port #27344 to 2015.8
- **PR** #27450: (*ticosax*) [dockerng] Fix typo in docstring
- **PR** #27430: (*jacksontj*) Fix bug introduced in eee0291ff8b65ff1e22f4dc2447a74aa28a3ce7f
- **PR** #27418: (*terminalmage*) Don't always remove dest path in salt.utils.files.rename()
- **PR** #27383: (*twangboy*) Uninstaller only removes specific files and dirs
- **PR** #27416: (*rallytime*) Back-port #27399 to 2015.8
- **PR** #27394: (*jacksontj*) Remove streamed response for fileclient to avoid HTTP redirection problems
- **PR** #27415: (*ryan-lane*) Backwards compat fixes for pecl module
- **PR** #27407: (*meggiebot*) Adding stretch label definition
- **PR** #27388: (*basepi*) [2015.8] Fix global provider overrides
- **PR** #27386: (*rallytime*) Document tty: True usage in salt-ssh roster file
- **PR** #27380: (*jtand*) Skipping Async tests
- **PR** #27382: (*terminalmage*) Revert ``fixes `#27217`_ clear_old_remotes clears wrong directory (gitfs)''
- **PR** #27361: (*cro*) Correct some issues with proxy minions
- **PR** #27364: (*ruzarowski*) SaltCloud[EC2] Fix missing credentials in modify_eni_properties api call
- **PR** #27349: (*jfindlay*) add freebsd install docs to release notes
- **PR** #27343: (*cachedout*) Close io loop before deleting attribute
- **PR** #27337: (*rallytime*) [2015.8] Fixup salt-cloud logging
- **PR** #27332: (*terminalmage*) Adjust dockerng/dockerio docstrings
- **PR** #27353: (*cachedout*) Fix case where var not set in config

- **PR** #27350: (*rallytime*) Allow IP-forwarding in GCE driver
- **PR** #27305: (*cachedout*) Re-init logging system on Windows when using multiprocessing
- **PR** #27331: (*terminalmage*) dockerng: Allow both cmd and command to be used to specify command
- **PR** #27327: (*isbm*) Fix a typo in the RPM output
- **PR** #27312: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #27303: (*jacobhammons*) Updated module doc index using https://github.com/saltstack/salt/pull...
- **PR** #27301: (*twangboy*) Pass ca_bundle for windows (fixes SSL Error)
- **PR** #27300: (*rallytime*) Back-port #27287 to 2015.8
- **PR** #27288: (*rallytime*) Filter on `name', not `id', when listing images
- **PR** #27283: (*jtand*) __grains__['osrelease'] returns a string
- **PR** #27276: (*rallytime*) Back-port #27218 to 2015.8
- **PR** #27275: (*rallytime*) Back-port #27213 to 2015.8
- **PR** #27274: (*rallytime*) Back-port #27272 to 2015.8
- **PR** #27271: (*isbm*) Bugfix: crash on token authentication via API
- **PR** #27251: (*rallytime*) Add support for post_uri in SoftLayer cloud drivers
- **PR** #27260: (*bechtoldt*) add missing module doc references
- **PR** #27254: (*jfindlay*) 2015.2,2015.8,Beryllium -> 2015.8.0
- **PR** #27245: (*rallytime*) If two ssh keynames are found in DigitalOcean, abort and warn the user.
- **PR** #27241: (*jfindlay*) osrelease is only an integer for fedora
- **PR** #27234: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #27240: (*isbm*) Backport of the fix of `pkg.info*' for Beryllium
- **PR** #27223: (*pprkut*) Support firewalld per interface zone config on rh7 systems
- **PR** #27238: (*bechtoldt*) salt.modules.disk.percent() throws KeyError when partition doesn't exist
- **PR** #27232: (*basepi*) [2015.8] Add stub release notes for 2015.8.1
- **PR** #27199: (*rallytime*) Avoid RunTimeError (dictionary changed size during iteration) with keys()
- **PR** #27206: (*rallytime*) Don't repeat GCE setup instructions, and make the use of .json files clearer
- **PR** #27210: (*rallytime*) Refactor some digital ocean functions
- **PR** #27197: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #27195: (*jacobhammons*) Fixed sphinx / latex build warnings and errors
- **PR** #27182: (*bernieke*) fix restart_on_error
- **PR** #27163: (*terminalmage*) Workaround upstream tornado bug affecting redirects
- **PR** #27177: (*rallytime*) Remove note - incorrect info
- **PR** #27173: (*rallytime*) Add the ability to specify multiple disks on the SoftLayer driver
- **PR** #27164: (*rallytime*) Make sure changes from #26824 to digital_ocean_v2.py driver make it to digital_ocean.py in 2015.8
- **PR** #27143: (*cachedout*) Clean grains cache on grains sync

- **PR** #27150: (*cachedout*) Merge config values from master.d/minion.d conf files
- **PR** #27137: (*jfindlay*) revert serial grain regression
- **PR** #27144: (*rallytime*) Don't stacktrace on softlayer_hw.show_all_prices if a code isn't supplied
- **PR** #27139: (*jacobhammons*) Updated key instruction on rhel7
- **PR** #27134: (*isbm*) Backport to 2015.8: ``pkg.info''
- **PR** #27119: (*l2ol33rt*) Boto dynamodb module should be using layer 2 abstractions
- **PR** #27092: (*perfinion*) salt/master: chdir to root not homedir
- **PR** #27131: (*jacobhammons*) Install docs
- **PR** #27124: (*jfindlay*) Backport #27123
- **PR** #27111: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #27122: (*terminalmage*) Fix broken link to git-config(1) docs
- **PR** #27115: (*jacobhammons*) Release docs
- **PR** #27110: (*rallytime*) Make sure -Q output is consistent across salt-cloud drivers
- **PR** #27050: (*twangboy*) Turned multiprocessing on
- **PR** #27086: (*techhat*) Document development of SPM loader modules
- **PR** #26941: (*msteed*) Make elasticsearch work as master job cache
- **PR** #27080: (*bechtoldt*) [Proposal] Add Github SPM label for issues
- **PR** #27064: (*twangboy*) Fixed user docs
- **PR** #27072: (*rallytime*) Back-port #26840 to 2015.8
- **PR** #27060: (*cro*) Fix grains breakage when hosts are not Linux, Windows, or SunOS
- **PR** #27051: (*rallytime*) Back-port #26953 to 2015.8
- **PR** #26864: (*terminalmage*) Only do git_pillar preflight checks on new-style git_pillar configs
- **PR** #26967: (*TheBigBear*) new URL for windows salt downloads
- **PR** #26921: (*terminalmage*) Get rid of error in legacy git pillar when using branch mapping notation
- **PR** #26923: (*rallytime*) Code clean up of cloud drivers and files
- **PR** #27010: (*rallytime*) Back-port #26988 to 2015.8
- **PR** #26985: (*rallytime*) Fix versionadded tag

### 18.2.10 Salt 2015.8.10 Release Notes

Version 2015.8.10 is a bugfix release for *2015.8.0*.

**Final Release of Debian 7 Packages**

Regular security support for Debian 7 ended on April 25th 2016. As a result, 2016.3.1 and 2015.8.10 will be the last Salt releases for which Debian 7 packages are created.

---

**Mint Linux: Important Post-Upgrade Instructions**

As a result of some upstream changes, the `os` grain on Mint Linux is now being detected as `LinuxMint` (issue 33295). Run the following command **after you upgrade to 2015.8.10** to reset the `os` grain to `Mint` and the `os_family` grain to `Debian`:

```
salt -G 'os:LinuxMint' grains.setvals "{'os': 'Mint', 'os_family': 'Debian'}"
```

---

### Changes for v2015.8.9..v2015.8.10

Salt 2015.8.10 includes fixes for the following known issues in 2015.8.9:

- issue 33376: pip state broken in 2015.8.9 with pip <6.0
- PR 33386: Fix traceback in logging for config validation

Since 2015.8.10 includes only two fixes, the 2015.8.9 changes list is included below for convenience:

---

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2016-05-17T17:09:39Z*

Total Merges: **145**

Changes:

- **PR** #33293: (*twangboy*) Fix minion start retry on Windows (2015.8)
- 22c4331 linux_acl: Allow `-` as a separation character in ACL permissions. Fixes **`#31270`**_ (#33172) (#33305)
- 7a181f2 Handle more ipv6 error as an exception **`#33299`**_ (#33300)
- eb47a15 Ignore retcode when checking service's status (#33294)
- **PR** #33274: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- 4f3596a Add comment for test=true w/o changes ret and add changes dict example (#33254)
- 2a30c48 Update Git Policy docs to match Contribution guide (#33252)
- 056c273 Fix **`#33238`**_ (#33239)
- 1cd34ab Properly report on invalid gitfs/git_pillar/winrepo repos (#33245)
- **PR** #33253: (*rallytime*) Update the release process docs
- 8c2c5b1 update 2015.8.9 release notes (#33251)
- 8ee8ee3 Handle ipv6 error as an exception (#33246)
- 855bed3 Check rendered YAML for invalid keys (#33213)
- 6fb25a8 Make note of files that begin with `_' in master.d or minion.d dirs (#33224)
- a6dc0d2 Gate jnpr imports in salt.proxy.junos.py (#33150)
- 64a89c4 Add docs for the http state (#33222)
- 0a32163 Don't stacktrace when using --out=highstate at CLI during staterun. (#33215)
- 04d714d propagate opts to salt.util.http call (#33219)
- c8236c0 update 2015.8.9 release notes (#33237)
- **PR** #33217: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8

- 730bec1 [2015.8] Merge forward from 2015.5 to 2015.8 (#33207)
- 379b151 Add a fetch when compiling git_pillar for masterless minions (#33204)
- b3805d8 cloud.clouds.ec2: cache each named node (#33164)
- 86db5df Properly handle failed git commands when redirect_stderr=True (#33203)
- 8a0950d Don't force use of global ssh_config when git identity file is specified (#33152)
- ce07133 update 2015.8.9 release notes (#33198)
- **PR** #33188: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- e9108e0 add 2015.8.9 release notes (#33161)
- 2d9919e [2015.8] Update to latest bootstrap script v2016.05.10 (#33156)
- 033bef2 Hash fileclients by opts (#33142)
- f520fa3 Back-port #31769 to 2015.8 (#33139)
- **PR** #33144: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #33140: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- ad607ef If cache_jobs: True is set, populate the local job cache when running salt-call (#33100)
- 64689a6 Fix broken parsing of usermgmt.conf on OpenBSD (#33135)
- 06a382e Add a check that the cmdline of the found proc matches (#33129)
- 10018e9 salt.utils.gitfs: fix formatting for warning messages (#33064)
- d45b599 Fix 33058 (#33099)
- **PR** #33106: (*abednarik*) Moved _finger_fail method to parent class.
- 20c7e10 clarify docs that map is designed to be run once. is not stateful (#33102)
- 558561d cloud.query needs to define mapper.opts (#33098)
- **PR** #33096: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- 22a327b salt-cloud: fix ipv6-only virtual machines (#32865)
- e788f7e modules.npm: do not log npm --version at info level (#33084)
- **PR** #33081: (*jfindlay*) ssh docs: install py-2.6 for RHEL 5
- **PR** #33088: (*isbm*) Bugfix: Restore boolean values from the repo configuration
- 2c6326f fix tests for file.blockplace to remove newline (#33082)
- **PR** #32892: (*isbm*) Resolve Zypper locks on asynchronous calls
- 3e0bf23 Add fun_args to scheduled return data (part of `#24237`_) (#33039)
- 264c0d4 Don't append a newline when creating new content with blockreplace (#33049)
- 54b783a Pass all data to batch.run() call when using --failhard (#33048)
- 2dbfa55 Display command output when command fails with batch + failhard options (#33050)
- add9199 Allow security_groups kwarg for boto_elb.present to be string or list (#33053)
- 111701c [2015.8] Merge forward from 2015.5 to 2015.8 (#33054)
- 1066063 File and User test fixes for 2015.8 on Fedora23 (#33056)
- f97b5d5 Back-port #33030 to 2015.8 (#33040)

- e90a501 Update the docs for saltutil.find_job to be more clear/accurate (#33017)
- d3d77ce Add saltenv to the cmd.script state function (#33031)
- 3434f44 Fix syndic regression (#33021)
- 4bb3ca5 Compare uid and gid instead of name and group (#32674)
- 9ca5b02 Allow batch mode to use verbose option, as well as show_jid. (#32996)
- 81c0fa4 Fixed glusterfs.peered output (#32955)
- 8c70d7a Clarify some arg docs (#32994)
- 00fbeab Fix boto_secgroup_test (#32986)
- 3362367 fix user cron on solarish operating systems (#32970)
- 07e38bc salt.log.setup: process user args before format (#32796)
- b2d7c81 doc.ref.states.ordering: clarify requisite change (#32934)
- df41d5d mode should default to `text' (#32928)
- f581a82 Remove FileClient class references from docs - it doesn't exist. (#32925)
- 31b96de Update contents_grains option with relevant docs (#32922)
- **PR** #32926: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- 1cd6a45 specify volume tags in profile configuration (#32908)
- 85ca86d Update docs to warn users that -1 isn't valid for iptables insert state (#32906)
- cb68706 Allow profile options to be specified in provider file when using maps (#32900)
- 1a55fcb Clarify service state opening docs - uses `service' virtualname (#32880)
- **PR** #32884: (*terminalmage*) Fix incorrect deprecation notice
- **PR** #32878: (*jacobhammons*) added note about updating the bootstrap script in salt-cloud using th…
- **PR** #32869: (*rallytime*) Use correct config setting in cloud syndic docs
- **PR** #32844: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- eb8fb6b Back-port #31139 to 2015.8 (#32868)
- 4bb5545 backport PR #32732 for issue `**#23714**`_ (#32847)
- 5ea003b Add pyvmomi version warning to Getting Started with VMware docs (#32845)
- 44f08d0 Pass None as memory limit. (#32841)
- feebe69 Back-port #32813 to 2015.8 (#32839)
- 3b81031 various improvements on cloud deploy script docs (#32659)
- bf85987 update bootstrap to 2016.04.18 release (#32668)
- 83dee63 Back-port #29322 to 2015.8 (#32785)
- **PR** #32787: (*rallytime*) Back-port #32722 to 2015.8
- **PR** #32786: (*rallytime*) Back-port #32703 to 2015.8
- a6a42740 Merge branch `pr-32775' into 2015.8
- cda00f4 Improve documentation on pygit2 versions (#32779)
- 1d6d234 Properly handle minion failback failure. (#32749)

- 3751a27 Document pillar cache options (#32643)
- 35c8af3 modules.win_dacl: consistent case of dacl constants (#32720)
- 2cd0817 Update external auth documentation to list supported matcher. (#32733)
- bba089d Check dependencies type before appling str operations (#32693)
- 3aa0605 Handle when beacon not configured and we try to enable/disable them (#32692)
- **PR** #32718: (*garethgreenaway*) Fixes to schedule.list in 2015.8
- **PR** #32684: (*captaininspiration*) Fix routes for redhat < 6
- 7cdd512 Handle a couple of arguments better (Azure) (#32683)
- aaa03bc Fix for issue 32523 (#32672)
- 21081b1 Don't access deprecated Exception.message attribute. (#32556)
- 5d1e9a4 Lower log level for pillar cache (#32655)
- **PR** #32588: (*anlutro*) Fix salt-ssh module function call argument type juggling by JSON encoding them
- 5e7edfc yumpkg: Ignore epoch in version comparison for explicit versions without an epoch (#32563)
- fea6056 Fixing critical bug to remove only the specified Host instead of the entire Host cluster (#32640)
- 0477f66 align OS grains from older SLES with current one (#32649)
- 8d46244 Prevent crash if pygit2 package is requesting re-compilation of the eâ (#32652)
- **PR** #32614: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #32616: (*rallytime*) Back-port #32547 to 2015.8
- 3047471 Fix comments value in salt.states.pkgrepo example (#32604)
- ab9da90 Revert PR #32480 and apply #32314 with fixes / documentation (#32558)
- c84c921 Better log message on minion restart if master couldn't be reached. (#32576)
- 3c81798 Don't return None from eval_master (#32555)
- **PR** #32536: (*rallytime*) Back-port #31898 to 2015.8
- d12a1c2 Fix binary search and replace (#32542)
- **PR** #32539: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #32531: (*ticosax*) [dockerng] Fix support of dockerng.volume_present when no volume is on present.
- 5d73d54 Enhance dockerng.wait() to control success on exit_code and on already stopped containers (#32475)
- 214f01e Bugfix: salt-key crashes if tries to generate keys to the directory w/o write access (#32436)
- 288839f Turn on exc_info when logging failed minion startup (#32515)
- 08a8020 Add ignore_epoch option to pkg.installed/removed/purged states (#32520)
- 492ebfc Isbm zypper list products sles11 crash (#32505)
- ae89882 Clear VCS fsbackend and git_pillar locks on master start (#32480)
- a6482a3 Use win32api to get Total System Memory (#32491)
- **PR** #32487: (*terminalmage*) Add explanation of nonzero epoch requirement to pkg.installed state documentation
- **PR** #32482: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8

- f5bd6bd Backport 31164 and 31364 (#32474)
- **PR** #32450: (*cachedout*) Pass parser options into batch mode
- b299835 Issue **`#28706`_**: Fix state user.present behavior. (#32448)
- cef33d5 Argument name in docs should match actual arg name (#32445)
- **PR** #32432: (*ticosax*) [dockerng] Fix Domainname introspection
- **PR** #32427: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #32423: (*jtand*) Update glusterfs_test to be inline with #32312
- **PR** #32425: (*cachedout*) Fix salt-cloud parallel provisioning
- 51fb2ac FreeBSD supports packages in format java/openjdk7 so the prior commit broke that functionality. Check freebsd/pkg`#1409`_ for more info.
- 709410a Improve git_pillar documentation/logging
- c53efc3 Update master config docs
- **PR** #32323: (*mcalmer*) fix sorting by latest version when called with an attribute
- **PR** #32376: (*amontalban*) Fixes saltstack/salt`#28262`_
- 0d9a06b Cleaner deprecation process with decorators
- 6979fda Correcty index glusterfs bricks
- **PR** #32393: (*jfindlay*) modules.win_timezone: don't list all zones in debug log
- **PR** #32372: (*rallytime*) Back-port #32358 to 2015.8
- **PR** #32392: (*multani*) Fix documentation on boto_asg and boto_elb modules and states
- **PR** #32373: (*cachedout*) Resolve memory leak in authentication
- **PR** #32126: (*cro*) Add a couple CLI examples for the highstate outputter.
- **PR** #32353: (*mcalmer*) Prevent metadata download when listing installed products
- **PR** #32321: (*abednarik*) Better message when minion fail to start
- **PR** #32345: (*nmadhok*) [2015.8] Check if profile key exists in **vm_** dict
- **PR** #32343: (*Ferbla*) Fixed win_wua example documentation
- **PR** #32360: (*rallytime*) Make sure hash_type is lowercase in master/minion config files
- **PR** #32361: (*cro*) SDB is no longer experimental
- **PR** #32336: (*rallytime*) Back-port #28639 to 2015.8
- **PR** #32332: (*rallytime*) Don't unsubscribe from open events on the CLI too early on long-running commands
- **PR** #32333: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #32289: (*rallytime*) New salt-cloud instances should not use old hash_type default.
- **PR** #32291: (*twangboy*) Fix bad output for chocolatey.version (fixes **`#14277`_**)
- **PR** #32295: (*rallytime*) Test the contents of `deploy_scripts_search_path' in salt.config.cloud_config
- **PR** #32315: (*ahus1*) fixing file.managed with requests lib
- **PR** #32316: (*vutny*) Update Salt Bootstrap tutorial
- **PR** #32325: (*bdrung*) Re-add shebang to ssh-id-wrapper shell script

- **PR** #32326: (*bdrung*) Fix typos
- **PR** #32300: (*twangboy*) Add documentation to disable winrepo/winrepo_ng
- **PR** #32288: (*terminalmage*) use dictupdate.merge instead of dict.update to merge CLI pillar overrides
- **PR** #32243: (*isbm*) Ensure latest pkg.info_installed ensure latest
- **PR** #32268: (*ticosax*) [dockerng] Improve detection for older versions of docker-py
- **PR** #32258: (*jacobhammons*) Replaces incorrect reference to *master_alive_check*
- **PR** #32254: (*twangboy*) Fix Display Name with spaces in win_servermanager
- **PR** #32248: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #32230: (*terminalmage*) systemd.py: Support both update-rc.d and chkconfig as managers of sysv services
- **PR** #32249: (*jacobhammons*) Fixes windows download paths to account for patch
- **PR** #32221: (*dmurphy18*) Fix version check, fix extracting Major and Minor versions from __ver...
- **PR** #32227: (*twangboy*) Remove list2cmdline usage from win_service.py
- **PR** #32239: (*anlutro*) Add state file name to warning log line
- **PR** #32215: (*DmitryKuzmenko*) rhel oscodename
- **PR** #32217: (*jacobhammons*) 2015.8.8.2 release notes
- **PR** #32212: (*rallytime*) Back-port #32197 to 2015.8
- **PR** #32211: (*rallytime*) Back-port #32210 to 2015.8
- **PR** #32209: (*rallytime*) Back-port #32208 to 2015.8
- **PR** #32204: (*ticosax*) [dockerng] Consider labels carried by the image when comparing user defined labels.
- **PR** #32186: (*rallytime*) Add some ``best practices'' information to test documentation
- **PR** #32176: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #32163: (*rallytime*) Update nacl.config docs to use key value instead of `None'
- **PR** #32166: (*vutny*) *salt.states.file*: correct examples with multiline YAML string
- **PR** #32168: (*rallytime*) Lint 2015.8
- **PR** #32165: (*terminalmage*) Make __virtual__ for rhservice.py more robust
- **PR** #32160: (*cachedout*) Fix beacon tutorial docs
- **PR** #32145: (*paclat*) fixes 29817
- **PR** #32133: (*basepi*) Pass eauth user/groups through salt-api to destination functions
- **PR** #32127: (*rallytime*) Add runners to __salt__ docs
- **PR** #32143: (*DmitryKuzmenko*) Set auth retry count to 0 if multimaster mode is failover.
- **PR** #32134: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #32091: (*clarkperkins*) Fixed the regression in 410da78
- **PR** #32135: (*rallytime*) [2015.8] Support multiple valid option types when performing type checks
- **PR** #31760: (*sakateka*) SMinion need wait future from eval_master
- **PR** #32106: (*jfindlay*) update suse master service patch
- **PR** #32130: (*jacobhammons*) Added known issues 32004 and 32044 to 2015.8.8 release notes

- **PR** #32105: (*clarkperkins*) Fixed invalid deploy_scripts_search_path
- **PR** #32117: (*tomlaredo*) Fixed validation type for file_ignore_glob
- **PR** #32113: (*sakateka*) Fix log message for AsyncAuth initialization
- **PR** #32116: (*ticosax*) Obtain default value of *memory_swap* from the container.
- **PR** #32098: (*rallytime*) Back-port #32083 to 2015.8
- **PR** #32099: (*jacobhammons*) 2015.8.8 release docs
- **PR** #32088: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #32074: (*Xiami2012*) Fix code for proto args in modules.iptables
- **PR** #32053: (*basepi*) [2015.8] Fix rabbitmq_user.present tag handling
- **PR** #32023: (*sbreidba*) Move constant declaration into member variable to avoid issues when m…
- **PR** #32026: (*techhat*) Don't require the decode_out file to already exist
- **PR** #32019: (*rallytime*) Back-port #32012 to 2015.8
- **PR** #32015: (*ticosax*) [dockerng] Fix ports exposition when protocol is passed.
- **PR** #31999: (*jacobhammons*) Fixes a doc build exception caused by missing mocks for modules.win_dacl
- **PR** #31992: (*notpeter*) salt-cloud: add D2 and G2 EC2 instance types
- **PR** #31981: (*lloydoliver*) include rotational disks in grains under linux
- **PR** #31970: (*twangboy*) Add apply_template_on_contents for windows
- **PR** #31960: (*aletourneau*) fixed ec2 get_console_output
- **PR** #31958: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- 3934c66 Merge branch `2015.5' into `2015.8'
- **PR** #31935: (*twangboy*) Back port nullsoft build script from 2015.8
- **PR** #31912: (*jfindlay*) log.mixins: remove extermporaneous .record

### 18.2.11 Salt 2015.8.11 Release Notes

Version 2015.8.11 is a bugfix release for *2015.8.0*.

#### Returner Changes

- Any returner which implements a `save_load` function is now required to accept a `minions` keyword argument. All returners which ship with Salt have been modified to do so.

#### New Configuration Parameter: `rotate_aes_key`

- `Rotate_aes_key` causes Salt to generate a new AES key whenever a minion key is deleted. This eliminates the chance that a deleted minion could continue to eavesdrop on communications with the master if it continues to run after its key is deleted. See the entry in the documentation for **`rotate_aes_key`_**.

#### Ubuntu 16.04 Packages

SaltStack is now providing official Salt 2015.8 packages for Ubuntu 16.04.

### Changes for v2015.8.10..v2015.8.11

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2016-07-14T21:16:18Z*

Total Merges: **122**

Changes:

- **PR** #34676: (*cachedout*) Revert ``Modify lodaer global test to use populated dunders''
- **PR** #34601: (*lorengordon*) Clarifies the proper way to reference states
- bc63f25 Lint 34644 (#34651)
- 5036026 Adjust the mine test a little bit to give it a better chance of success (#34647)
- **PR** #34642: (*jtand*) Check that mysqladmin exists before running mysql integration tests
- **PR** #34618: (*jtand*) Network state integration test test=True
- **PR** #34617: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- b90ae40 Add support for edge case when Cmd and Entrypoint can't be blanked (#34593)
- 12b579c When sorting list actual_data, make it a list (#34590)
- 7dd8035 Gate docker unit test to check for docker (#34591)
- ae38c87 Add a bunch of documentation on getting files from other environments (#34560)
- **PR** #34531: (*terminalmage*) Support ignore_epoch argument in version comparisons
- **PR** #34545: (*terminalmage*) Handle cases where Docker Remote API returns an empty ExecutionDriver
- **PR** #34546: (*rallytime*) Rename unit.states.boto_secgroup to unit.states.boto_secgroup_test
- **PR** #34537: (*rallytime*) Rename tests.unit.simple to tests.unit.simple_test
- fbab2f8 [2015.8] Update bootstrap script to latest stable (#34527)
- 6b8c76a Prevent many errors in the test suite in loader tests (#34521)
- c2f296c Fix wrong order of retention_policy_exists (#34507)
- **PR** #34518: (*terminalmage*) Fix pkg.latest integration test for non-LTS ubuntu
- **PR** #34513: (*cachedout*) Lower the log level for modules which cannot be loaded to trace
- **PR** #34498: (*rallytime*) Use -O in the wget example in the bootstrap tutorial for the develop branch
- 3ebba02 Rename some unit test files by adding _test (#34503)
- 8722257 Improve top file merging documentation (#34505)
- 6ce7cb9 Gracefully handle non-XML output in GlusterFS execution module. (#34492)
- 7529945 Use skipTest for network state integration test (#34489)
- 0f3f87f Update dnsmasq.get_config docs to use correct config_file param. (#34488)
- **PR** #34462: (*terminalmage*) Use --always when available to git describe
- **PR** #34467: (*rallytime*) Back-port #34457 to 2015.8
- **PR** #34432: (*twangboy*) Fix file.append
- **PR** #34429: (*terminalmage*) Skip version checking for targeted packages in pkg.latest state
- 0a26459 Forgot reference to inotify (#34455)

- **PR** #34451: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #34401: (*terminalmage*) Use rpmdev-vercmp as a fallback for version comparison on RHEL5
- **PR** #34366: (*steverweber*) Update service.py
- **PR** #34426: (*cro*) Document that inotify is Linux only
- **PR** #34392: (*cro*) Clarify that salt-cloud doesn't get installed by bootstrap
- **PR** #34373: (*jtand*) Network state integration test
- d6af1de Optimize pkg integration tests and add a couple new tests (#34377)
- **PR** #34368: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- 94e0946 Back-port #34324 to 2015.8 (#34344)
- 11dc020 Making salt-ssh pass proper return codes for jinja rendering errors (#34342)
- f6bd1ad Revert py3modernize lint changes (#34339)
- **PR** #34306: (*ghedo*) Fix iptables.flush state: Do not force `filter' table when flushing
- 0c60fea Doc clarifications to file modules, addition of new *profile* log level to docs, fixed example in dnsmasq (#34323)
- b793426 Remove unnecessarily-disabled sanity check (#34325)
- **PR** #34335: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- a6d3cc6 Typo in dockerio doc (#34319)
- **PR** #34312: (*rallytime*) [2015.8] Update to latest bootstrap script v2016.06.27
- **PR** #34307: (*rallytime*) Fix test example in integration testing docs
- **PR** #34233: (*thegoodduke*) ipset: fix the comment containing blank
- **PR** #34257: (*rallytime*) Use `config_dir' setting instead of CONFIG_DIR in gpg renderer
- **PR** #34274: (*clinta*) Don't escape source before calling managed
- **PR** #34258: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #34093: (*terminalmage*) Catch CommandExecutionError in pkg states
- **PR** #34136: (*meaksh*) Fixed behavior for SUSE OS grains in 2015.8
- 56c7267 fix regression from #33681 which causes pulling a list of s3 objects via s3.query to fail (#34208)
- 02eb331 Fix a pair of gitfs bugs (#34218)
- **PR** #34182: (*rallytime*) Handle child PIDs differently depending on the availability of psutils
- 5d3ec31 Clarify pkg.list_repo_pkgs docstring for held packages (#34188)
- 5bca5c4 Change target for dockerng assuming default status to Nitrogen release (#34206)
- **PR** #34184: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #34176: (*rallytime*) Back-port #34103 to 2015.8
- **PR** #34179: (*terminalmage*) Raise the correct exception when gitfs lockfile is empty
- **PR** #34178: (*terminalmage*) Remove unnecesssary comment
- 6387d16 fix salt --summary to count not responding minions correctly (#34165)
- e5949ea doc: add missing dot (#34175)

- 47595d6 Typo fix (#34174)
- **PR** #34077: (*rallytime*) Add some grains targeting tests
- **PR** #34142: (*isbm*) Move log message from INFO to DEBUG.
- 79a719b Update documentation on ``refresh'' behavior in pkg states (#34100)
- 6d0d52f modules.pkg int tests: skip refresh_db upon error (#34072)
- **PR** #34069: (*rallytime*) Add a test to check for disconnected minion messaging
- **PR** #34048: (*terminalmage*) RFC: proposed fix for multiple fileserver updates in masterless runs
- **PR** #34011: (*rallytime*) Back-port #33948 and #34009 to 2015.8
- bca4371 Fixed a bug in the consul.py module that was preventing services (#34051)
- **PR** #34045: (*jacobhammons*) Updated latest release version
- f9bfcde Always make changes to minion config if set (#34020)
- e25dba4 More YAML indentation fixes in state module examples (#34030)
- **PR** #34018: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- 7d940ae states.file: fix indentation in YAML examples (#34003)
- 4c7fac0 Remove loader test for pam module (#34002)
- **PR** #33990: (*jacobhammons*) Adds links to several current Salt-related projects
- **PR** #33983: (*twangboy*) Clarify the *account_exists* parameter
- **PR** #33951: (*jfindlay*) modules.gem int tests: more fixes
- **PR** #33984: (*jfindlay*) Add docs and tests to disk state
- **PR** #33985: (*rallytime*) Write some more simple batch command tests
- 6080846 acl.ClientACL: add unit tests (#33684)
- a74f1b8 ZD 762 (#33942)
- **PR** #33946: (*rallytime*) Back-port #33698 to 2015.8
- **PR** #33952: (*rallytime*) Add base argument to salt-ssh grains wrapper for filter_by func
- 4a80649 Adds a ``Generated on <timestamp>'' line to the footer of each doc html page in the doc (#33962)
- b3ec39d Correct issue with ping on rotate with minion cache (#33765)
- **PR** #33888: (*jfindlay*) random.org checks
- 2dc1914 Add connecting_settings to boto_elb state attributes list (#33936)
- 91a2184 Wait for up to a minute for sync_after_install (#33917)
- **PR** #33877: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #33827: (*cachedout*) Fix broken locate.locate function
- **PR** #33839: (*cachedout*) Fix another unit test stacktrace in pkg_resource
- **PR** #33840: (*cachedout*) Remove matcher tests
- **PR** #33836: (*cachedout*) Fixing more stupid unit tests
- **PR** #33805: (*jfindlay*) states.pkg int tests: skip if pkg mgr unavailable
- **PR** #33808: (*jfindlay*) fix some problems with the gem module integration tests

- **PR** #33770: (*jfindlay*) service state integration tests
- **PR** #33691: (*jtand*) Gem integration test
- **PR** #33777: (*sodium-chloride*) Fix minor docstring issue of arg being missing
- **PR** #33759: (*cachedout*) Catch no minions exception in batch mode
- **PR** #33719: (*cachedout*) Catch oserror for race condition
- **PR** #33712: (*meaksh*) Fix for groupadd execution module failures in SLES11 systems
- **PR** #33718: (*rallytime*) Back-port #33700 to 2015.8
- **PR** #33727: (*terminalmage*) Fix git_pillar edge case for remote repos without a master branch
- **PR** #33728: (*jfindlay*) Make *configurable_test_state* configurable in test mode
- **PR** #33729: (*twangboy*) Add exclude option to win_servermanager
- **PR** #33743: (*vutny*) Debian installation docs: drop section about community-maintained repo
- 56c0a42 Create missing jid dir if it doesn't exist (#33653)
- **PR** #33654: (*twangboy*) Fix win servermanager
- **PR** #33679: (*terminalmage*) Only compile the template contents if they evaluate to True
- **PR** #33685: (*jfindlay*) modules.cp.get_url: add test for https://
- **PR** #33581: (*dincamihai*) Call zypper refresh after adding/modifying a repository
- **PR** #33681: (*rallytime*) Back-port #33599 to 2015.8
- **PR** #33396: (*babilen*) Issue 33393
- **PR** #33652: (*terminalmage*) Lower the log level for failed auths
- **PR** #33615: (*danslimmon*) Fix crash on unconnectable MySQL server (resolves `#33582`_)
- **PR** #33558: (*twangboy*) Fix win servermanager
- **PR** #33555: (*cachedout*) Fix crashing Maintenence process
- **PR** #33501: (*meaksh*) unit tests for rpm.checksum() and zypper.download()
- **PR** #33513: (*rallytime*) Add a section to the jinja docs about escaping jinja
- **PR** #33520: (*jacobhammons*) Updated version numbers in the docs for the 2016.3.0 release
- **PR** #33507: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #33503: (*rallytime*) Add docs about minion config file in standalone minion docs
- **PR** #33474: (*cachedout*) Fix diskusage beacon
- **PR** #33465: (*meaksh*) jobs.exit_success allow one to check if a job has executed and exit successfully
- **PR** #33487: (*jtand*) Add docstring examples to glance.py and nova.py [2015.8]
- **PR** #33481: (*rallytime*) Fix docs about etcd config options and add pillar_opts doc
- **PR** #33490: (*rallytime*) Document the postgres.psql_query function
- **PR** #33480: (*jfindlay*) states.service: minor doc updates
- 4f96cc1 Return full pending computer name (#33483)
- a89be5e Use six.string_types in jobs runner (#33499)
- **PR** #33491: (*BlaineAtAffirm*) fix jobs.list_jobs failing with search_target

- **PR** #33478: (*rallytime*) Back-port #32484 to 2015.8
- **PR** #33457: (*rallytime*) Make doc formatting consistent and use correct versionadded
- 1dfa956 Don't allow a ``repo'' kwarg for pkgrepo.managed (#33477)
- b4071b0 Allow for config entry to be a list in a dict for beacons (#33476)
- **PR** #33469: (*meaksh*) check the RPM signature of zypper pkg.download packages and report errors
- 00f9090 Add docs about PyYAML's 1024 character limitations for simple keys (#33459)
- 3b12f39 Prevent several minion processes on the same machine (#33464)
- c8b4f33 Make --gpg-auto-import-keys a global param when calling zypper (#33432)
- 0c4e38c Fix the saltutil.wheel function and add integration tests (#33414)
- e4f00f9 Make sure the path we're removing is present first - avoid an OSError (#33440)
- 93fd00b Avoid a syntax error by using '' instead of escaped ` (#33443)
- ec60b9c Fix virtual function (#33436)
- **PR** #33438: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- c9d0de4 Documentation update in file.serialize. (#33421)
- f8a90eb Fix LVM parameter devices as a pure list. Comma separated lists are câ¦ (#33398)
- 3989e5b Spelling correction. (#33406)
- 9accb53 Update windows pkg.[install|remove] error logic (#33321)
- 04ac89d Add note about reload_modules functionality for pkg.installed (#33374)
- 637c2af Add note to absolute_imports practice about __future__ import (#33377)
- d35b81d Document how to set the alias file location for alias state (#33380)
- **PR** #33403: (*jacobhammons*) 2015.8.10 release notes
- **PR** #33381: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- 946d27e Fix traceback in logging for config validation (#33386)
- 38fbcf8 Add note about name parameter in git_pillar docs (#33369)
- 4925199 Add win_pkg to list of modules that support ``version'' in pkg.installed (#33362)
- 7a400a9 Add note to docs about api settings for Hipchat API v2 (#33365)
- 37e1930 Add initscripts, SystemD service units and environment files for Debian (#32857)
- **PR** #33370: (*jacobhammons*) Update docs version to 2015.8.9
- **PR** #33366: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- f248003 Remove mentions of windows not supporting pkgs param (#33361)
- 4fdb097 Update job_cache and keep_jobs docs to be more specific to their behavior (#33328)
- 2f06918 Properly detect newer Linux Mint distros (#33359)
- d85096c Fix UnboundLocalError in git.latest (#33340)
- e602446 Describes parameters in register_instances function (#33339)
- 5c29c65 Fix some link errors in the test writing tutorial (#33347)
- e532e58 Fix network.managed for windows (#33312)

- 11a2525 Bp 28467 calm mine (#33327)
- b897f2c import ps from psutil_compat in beacons (#33334)
- 089c1a2 remove redundant, incorrect sudo_runas config documentation (#33318)
- 1f7fda2 Disambiguate non-exact matches when checking if sysv service is enabled (#33324)
- 8c1f19a Allow concurrency mode in state runs if using sudo (#33325)
- ed14ef2 Fix master hanging after a request from minion with removed key. (#33333)
- daafa27 Cleanup comments in smbios.get output (fixes **`#33266`**_) (#33306)
- bfe12d9 Fix iptables --match-set (**`#23643`**_) (#33314)
- **PR** #33308: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8

### 18.2.12 Salt 2015.8.12 Release Notes

Version 2015.8.12 is a bugfix release for *2015.8.0*.

#### Changes for v2015.8.11..v2015.8.12

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2016-08-19T16:06:27Z*

Total Merges: **57**

Changes:

- **PR** #35611: (rallytime*) Everything in the sample master config file should be commented out
- **PR** #35569: (*rallytime) Write test for multiple unless commands where 1st cmd passes and 2nd fails
- **PR** #35600: (*rallytime) Update release notes for 2015.8.12
- **PR** #35599: (*rallytime*) Update release notes for 2015.8.12
- **PR** #35584: (*terminalmage*) Update linux_sysctl tests to reflect new context key
- **PR** #35575: (*terminalmage*) Add warning about AWS flagging of nmap usage
- **PR** #35577: (*terminalmage*) Unit file changes for 2015.8.12, 2016.3.3
- **PR** #35566: (*rallytime*) Back-port #35545 to 2015.8
- **PR** #35545: (*hu-dabao*) fix-35384, fix cmd.run unless
- **PR** #35492: (*terminalmage*) Clarify config.get docstring
- **PR** #35483: (*gtmanfred*) use __utils__ in salt.cloud
- **PR** #35546: (*whiteinge*) Salt api eauth fail gracefully
- **PR** #35525: (*UtahDave*) add missing glob import
- **PR** #35540: (*rallytime*) Whitespace fix for 2015.8
- **PR** #35510: (*terminalmage*) Better systemd integration
- **PR** #35513: (*cachedout*) Might be a good idea to be able to download the software we make
- **PR** #35302: (*Ch3LL*) Add job cache test
- **PR** #35512: (*cachedout*) Fixup 35419

- **PR** #35497: (*deepakhj*) Fixes spacing in requirements files
- **PR** #35508: (*terminalmage*) Add Carbon to versionadded for git.diff
- **PR** #35486: (*rallytime*) Update bootstrap script to latest stable (2016.08.16)
- **PR** #35413: (*cachedout*) Resolve path issues with cp.push
- **PR** #35476: (*cachedout*) Fixup SSH bug where sudo without sudo user would break
- **PR** #35471: (*terminalmage*) win_pkg: Fix traceback when package is not installed
- **PR** #35448: (*isbm*) Add ignore_repo_failure option to suppress zypper's exit code 106 on ...
- **PR** #35451: (*isbm*) Bugfix: zypper mod repo unchanged
- **PR** #35453: (*theothergraham*) fixes #34279 - disk cache ttl expiry
- **PR** #35459: (*thatch45*) Ensure that output for salt-ssh gets back
- **PR** #35460: (*rallytime*) [2015.8] Update bootstrap script to latest stable (2016.08.15)
- **PR** #35442: (*cachedout*) Fix cp.push_dir pushing empty dirs
- **PR** #35436: (*cachedout*) Minor doc fixup
- **PR** #35132: (*sjorge*) fixes , causing lots of mayham (onchange) with 2016.3.2 for me
- **PR** #35394: (*rallytime*) Back-port #34573 to 2015.8
- **PR** #34573: (*cedwards*) Update freebsd.rst
- **PR** #35359: (*terminalmage*) Clean up open filehandles
- **PR** #35339: (*isbm*) Bugfix: Prevent continuous restart, if a dependency wasn't installed
- **PR** #35357: (*twangboy*) Fix file.recurse with clean: True on Windows (2015.8)
- **PR** #35323: (*thatch45*) Fix issue with bad error check in salt-vt
- **PR** #35325: (*kev009*) Fix freebsd netstat route on fbsd 10+
- **PR** #35301: (*bobrik*) Pass port to ssh.check_known_host, closes #35264
- **PR** #35309: (*terminalmage*) file.recurse: Do not convert octal mode string to int
- **PR** #35290: (*terminalmage*) Resolve a couple bugs in orchestration output
- **PR** #35211: (*cachedout*) Alternative sudo users for salt-ssh
- **PR** #35271: (*bobrik*) Default state_output_profile to True everywhere, closes #35166
- **PR** #35233: (*terminalmage*) Do not attempt to get fqdn_ip{4,6} grains when ipv{4,6} grains are empty
- **PR** #35202: (*multani*) doc: fix broken links in the test documentation page
- **PR** #35236: (*rallytime*) Back-port #35119 to 2015.8
- **PR** #35119: (*derekmaciel*) Assume two EVRs are equal if E and V are equal but one R is missing.
- **PR** #35240: (*derekmaciel*) Backport #35225 to 2015.8
- **PR** #35225: (*derekmaciel*) Add missing documentation for pkg.installed
- **PR** #35241: (*terminalmage*) Ensure max recursion in gitfs results in no blob object being returned.
- **PR** #35245: (*rallytime*) Back-port #35039 to 2015.8
- **PR** #35039: (*whiteinge*) Add saltenv support to module.run
- **PR** #35249: (*terminalmage*) Fix regression in git.latest

- **PR** #35174: (*rallytime*) Back-port #35146 to 2015.8
- **PR** #35146: (*cachedout*) Don't discard running beacons config when listing becaons
- **PR** #34827: (*thatch45*) fix beacon list to include all beacons being processed
- **PR** #35173: (*rallytime*) Back-port #35135 to 2015.8
- **PR** #35135: (*rallytime*) Add missing CLI Examples to aws_sqs module funcs
- **PR** #35145: (*jacobhammons*) doc version update to 2015.8.11, updates to release notes
- **PR** #35114: (*terminalmage*) Add clarification docs on a common git_pillar misconfiguration
- **PR** #34768: (*hrumph*) Fixes #34767
- **PR** #35043: (*rallytime*) Start release notes file for 2015.8.12
- **PR** #35050: (*terminalmage*) [orchestration] Properly handle runner/wheel funcs which accept a `saltdev' argument
- **PR** #35066: (*jfindlay*) returners.postgres_local_cache: do not log in __virtual__
- **PR** #35024: (*bobrik*) Cache systemd unit update check per unit, closes #34927
- **PR** #35026: (*cachedout*) Expressly deny a minion if a key cannot be found
- **PR** #35000: (*rallytime*) Back-port #33875 and #34999 to 2015.8
- **PR** #33875: (*jmesquita*) Fix naive fileserver map diff algorithm
- **PR** #34994: (*rallytime*) Back-port #34835 to 2015.8
- **PR** #34835: (*thatch45*) Make the mine and publish combine minion and master opts in salt-ssh
- **PR** #34991: (*cachedout*) SSH timeout
- **PR** #34976: (*cachedout*) Refine errors in client
- **PR** #34831: (*thatch45*) If the thin does not match, then redeploy, don't error
- **PR** #34916: (*cachedout*) Master performance improvement
- **PR** #34911: (*cachedout*) Backport #34906
- **PR** #34906: (*cachedout*) Set timeout for run_salt in test suite
- **PR** #34898: (*hrumph*) Stop multiple refreshes during call to pkg.list_upgrades
- **PR** #34606: (*isbm*) Bugfix: Exit on configuration read (backport)
- **PR** #34862: (*thatch45*) Fix salt-ssh cacheing issue
- **PR** #34869: (*terminalmage*) Fail git.latest states with uncommitted changes when force_reset=False
- **PR** #34859: (*cachedout*) Fix wheel test
- **PR** #34822: (*thatch45*) Fix salt-ssh state.high and state.low
- **PR** #34847: (*cachedout*) Add an option to skip the verification of client_acl users
- **PR** #34827: (*thatch45*) fix beacon list to include all beacons being processed
- **PR** #34833: (*rallytime*) Back-port #28521 to 2015.8
- **PR** #28521: (*gongled*) SPM: packaging doesn't work in Python 2.6. Fixed.
- **PR** #34823: (*rallytime*) Back-port #25276 to 2015.8
- **PR** #25276: (*jacobhammons*) copy spm.1 man page during setup

- **PR** #34828: (*thatch45*) Fix #34648
- **PR** #34818: (*jtand*) Skip mysql state test if mysqladmin is not available
- **PR** #34642: (*jtand*) Check that mysqladmin exists before running mysql integration tests
- **PR** #34803: (*junovitch*) salt/state.py: set **`chunk['order'] = 0' with `order: first'; fixes `#24744`_**
- **PR** #34773: (*randomed*) Bugfix: Startup states on minions are not being written to mysql returner
- **PR** #34751: (*cachedout*) Remove unnedeed config test
- **PR** #34606: (*isbm*) Bugfix: Exit on configuration read (backport)
- **PR** #34754: (*cachedout*) Disable test
- **PR** #34741: (*rallytime*) Back-port #34726 to 2015.8
- **PR** #34726: (*martinhoefling*) Always loop over updated keys in non recursive update
- **PR** #34721: (*rallytime*) Add output_file option to master config docs
- **PR** #34689: (*Azidburn*) fix second run problems with pkg.installed using sources
- **PR** #34695: (*isbm*) Bugfix: Zypper *pkg.list_products* returns False on some empty values (2015.8)

### 18.2.13 Salt 2015.8.13 Release Notes

Version 2015.8.13 is a bugfix release for *2015.8.0*.

#### Security Fixes

CVE-2017-5192: local_batch client external authentication not respected

The `LocalClient.cmd_batch()` method client does not accept `external_auth` credentials and so access to it from salt-api has been removed for now. This vulnerability allows code execution for already-authenticated users and is only in effect when running salt-api as the `root` user.

CVE-2017-5200: Salt-api allows arbitrary command execution on a salt-master via Salt's ssh_client

Users of Salt-API and salt-ssh could execute a command on the salt master via a hole when both systems were enabled.

We recommend everyone on the 2015.8 branch upgrade to a patched release as soon as possible.

#### Changes for v2015.8.12..v2015.8.13

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2017-01-09T21:17:06Z*

Statistics:

- Total Merges: **3**
- Total Issue references: **3**
- Total PR references: **5**

Changes:

- 3428232 Clean up tests and docs for batch execution

- 3d8f3d1 Remove batch execution from NetapiClient and Saltnado
- 97b0f64 Lintfix
- d151666 Add explanation comment
- 62f2c87 Add docstring
- 9b0a786 Explain what it is about and how to configure that
- 5ea3579 Pick up a specified roster file from the configured locations
- 3a8614c Disable custom rosters in API
- c0e5a11 Add roster disable flag

### 18.2.14 Salt 2015.8.14 Release Notes

Version 2015.8.14 is a bugfix release for *2015.8.0*.

### 18.2.15 Salt 2015.8.2 Release Notes

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**Note:** A significant orchestrate issue #29110 was discovered during the release process of 2015.8.2, so it has not been officially released. Please use 2015.8.3 instead.

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Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2015-11-13T17:24:04Z*

Total Merges: **378**

Changes:

- **PR** #28730: (*garethgreenaway*) Fixes to how return_job is handled in the scheduler for the salt master.
- **PR** #28848: (*cro*) Lint
- **PR** #28842: (*cachedout*) Add transport setting to shell test
- **PR** #28837: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #28827: (*jacksontj*) Cleanup virtual_timer in loader
- **PR** #28836: (*cachedout*) Cast to dict to fix wheel tests in tcp
- **PR** #28834: (*cachedout*) Fix breakage in tcp server
- **PR** #28804: (*cachedout*) TCP test fixes
- **PR** #28826: (*basepi*) [2015.8] Add new tornado deps to salt-ssh thin
- **PR** #28759: (*jfindlay*) simplify stdin use of stdin in at.present state
- **PR** #28824: (*rallytime*) Back-port #28778 and #28820 to 2015.8
- **PR** #28803: (*jfindlay*) decode strings to utf-8
- **PR** #28782: (*rallytime*) Fixes to rabbitmq user state
- **PR** #28789: (*nmadhok*) Provide ability to enable/disable customization for newly create VMs using VMware salt-cloud driver
- **PR** #28768: (*mrosedale*) 2015.8

- **PR** #28772: (*rallytime*) rabbitmq.list_user_permissions returns a dict, not a list. Don't expect a list.
- **PR** #28774: (*rallytime*) Back-port #28725 to 2015.8
- **PR** #28775: (*rallytime*) Back-port #28740 to 2015.8
- **PR** #28755: (*rallytime*) Move most vmware driver list_* functions to use salt.utils.vmware functions
- **PR** #28744: (*jfindlay*) import gate elementtree
- **PR** #28758: (*jfindlay*) remove redundant logic in useradd execution module
- **PR** #28757: (*mbarrien*) Bug fix: pip command to not quote spaces in cmd line args
- **PR** #28764: (*multani*) Various documentation fixes
- **PR** #28752: (*aboe76*) Update openSUSE grain for tumbleweed
- **PR** #28713: (*hexedpackets*) Rename consul.list to consul.list_keys.
- **PR** #28719: (*jacobhammons*) removed dependencies info from docs
- **PR** #28709: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #28710: (*rallytime*) Pass kwargs correctly to _get_group from get_group_id
- **PR** #28698: (*rallytime*) Back-port #28530 to 2015.8
- **PR** #28700: (*rallytime*) Back-port #28679 to 2015.8
- **PR** #28695: (*s0undt3ch*) [2015.8] Update to latest bootstrap script v2015.11.09
- **PR** #28656: (*clarkperkins*) `#28526`_ fixed yumpkg module issue with pkg.installed
- **PR** #28672: (*jfindlay*) add OS grain support for SuSE Leap
- **PR** #28673: (*jfindlay*) add hidden_opts to mount.mounted
- **PR** #28667: (*cro*) saltutil.sync_all should sync proxymodules as well as the rest.
- **PR** #28665: (*jfindlay*) fixes to windows execution and state modules
- **PR** #28660: (*techhat*) Don't sign empty regions
- **PR** #28632: (*terminalmage*) Fixes/improvements to pkgbuild state/modules
- **PR** #28658: (*techhat*) Remove _pkgdb_fun() references
- **PR** #28653: (*rallytime*) Provide possible parameters for boto_rds.present engine values
- **PR** #28649: (*bdrung*) Fix OS related grains on Debian
- **PR** #28646: (*rallytime*) Back-port #28614 to 2015.8
- **PR** #28647: (*rallytime*) Back-port #28624 to 2015.8
- **PR** #28648: (*rallytime*) Merge branch `2015.5' into `2015.8'
- **PR** #28638: (*anlutro*) Salt-SSH: Return more concise error when SSH command fails
- **PR** #28644: (*pass-by-value*) Make sure versionchanged is correct
- **PR** #28615: (*The-Loeki*) Fixes to FreeBSD pkg
- **PR** #28613: (*cachedout*) Add facility to deepcopy bound methods in Py2.6 and apply to grains
- **PR** #28612: (*rallytime*) Remove unsupported storage_type argument for parity with boto_rds module
- **PR** #28611: (*rallytime*) [2015.8] Be explicit about salt.utils.vmware function calls
- **PR** #28610: (*pass-by-value*) Lxc config additions

- **PR** #28602: (*nasenbaer13*) Allow setting of custom dimensions in asg alarm specification
- **PR** #28596: (*rallytime*) Merge branch `2015.5' into `2015.8'
- **PR** #28593: (*blueyed*) doc: fix typo with salt.states.file: s/preseve/preserve/
- **PR** #28578: (*twangboy*) Fixed the script... something got broke...
- **PR** #28579: (*jfindlay*) fix __virtual__ returns: tls,uptime mods
- **PR** #28584: (*rallytime*) If AssociatePublicIpAddress is set to True, don't auto-assign eip.
- **PR** #28576: (*jacksontj*) Only encode the zmq message once
- **PR** #28587: (*cachedout*) Reset yaml rendering hooks to avoid leaks
- **PR** #28581: (*basepi*) Revert b4875e585a165482c4c1ddc8987d76b0a71ef1b0
- **PR** #28573: (*jacksontj*) Add *body* to salt.utils.http.query returns
- **PR** #28564: (*s0undt3ch*) [2015.8] Update to latest bootstrap script v2015.11.04
- **PR** #28561: (*Oro*) Issue `#28527`_ boto_rds.create does not work
- **PR** #28560: (*bdrung*) Fix various typos
- **PR** #28550: (*jfindlay*) check timedatectl errno and return stdout on failure
- **PR** #28545: (*jfindlay*) pass on concurrent create of jid_dir in local_cache
- **PR** #28544: (*rallytime*) Start moving some vmware.py cloud funcs to utils/vmware.py
- **PR** #28543: (*gtmanfred*) clean up changes for pkg.uptodate and supervisord.dead
- **PR** #28538: (*jfindlay*) decode path and url to utf-8 in url.create
- **PR** #28533: (*jfindlay*) decode highstate error messages to utf-8
- **PR** #28547: (*nmadhok*) [Backport] [2015.8] Tasks can be in queued state instead of running
- **PR** #28535: (*techhat*) Fail gracefully if 169.254* isn't available
- **PR** #28536: (*cro*) Default configuration file for proxy minions.
- **PR** #28534: (*rallytime*) Add versionadded directive for vpc_name arg in boto_secgroup.present
- **PR** #28516: (*rallytime*) Back-port #28489 to 2015.8
- **PR** #28506: (*basepi*) [2015.8] Log minion list for all rosters, at debug level
- **PR** #28514: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #28502: (*cachedout*) Lint #28427
- **PR** #28464: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #28486: (*rallytime*) Back-port #26945 to 2015.8
- **PR** #28472: (*gtmanfred*) overwrite more than one value with names
- **PR** #28493: (*rallytime*) Back-port #28492 to 2015.8
- **PR** #28494: (*whiteinge*) Fix filter_by passing incorrect parameters to match functions
- **PR** #28491: (*rallytime*) Back-port #28388 to 2015.8
- **PR** #28465: (*twangboy*) Fix `#12363`_: Password Expiration in Windows
- **PR** #28485: (*nasenbaer13*) Fix invalid usage of _get_conn causing `#28484`_
- **PR** #28454: (*sdm24*) Fixed nodegroup doc formatting to correctly link to pillar_opts in the master config

- **PR** #28487: (*cachedout*) Lint 28456
- **PR** #28457: (*sdm24*) Clarified comments for grains/core.py for ip_interfaces, ip4_interfac...
- **PR** #28473: (*anlutro*) Show check_cmd output on failure
- **PR** #28460: (*jtand*) Skipped wipefs test if wipefs does not exist on OS
- **PR** #28426: (*terminalmage*) pkgbuild.built: make template engine optional
- **PR** #28422: (*cachedout*) Handle windows logging on thread_multi [WIP]
- **PR** #28425: (*twangboy*) Fix **`#13513`_** - Reflection
- **PR** #28417: (*rallytime*) Add note about azure sdk version to getting started docs
- **PR** #28410: (*jacksontj*) Add retries to the zeromq.AsyncReqMessageClient
- **PR** #28404: (*rallytime*) Back-port #28395 to 2015.8
- **PR** #28405: (*opdude*) Detect legacy versions of chocolatey correctly
- **PR** #28187: (*sjansen*) fix at.present
- **PR** #28375: (*merll*) Merge pillar includes correctly
- **PR** #28376: (*ryan-lane*) Support update of route53 records with multiple values
- **PR** #28377: (*terminalmage*) Deprecate `always' in favor of `force' in pkgbuild.built
- **PR** #28380: (*cro*) Add missing call for service provider
- **PR** #28348: (*jfindlay*) salt.utils.alias informs user they are using a renamed function
- **PR** #28364: (*jtand*) In CentOS 5 the .split() causes a stacktrace.
- **PR** #28361: (*rallytime*) Back-port #28087 to 2015.8
- **PR** #28360: (*multani*) Various documentation fixes
- **PR** #28370: (*rallytime*) Back-port #28276 to 2015.8
- **PR** #28353: (*merll*) Consider each pillar match only once.
- **PR** #28334: (*anlutro*) iptables needs -m comment for --comment to work
- **PR** #28340: (*jfindlay*) sdecode file and dir lists in fileclient
- **PR** #28344: (*ryan-lane*) Fix iptables state for non-filter tables
- **PR** #28343: (*rallytime*) Back-port #28342 to 2015.8
- **PR** #28330: (*rallytime*) Back-port #28305 to 2015.8
- **PR** #28270: (*rallytime*) Refactor RabbitMQ Plugin State to correctly use test=true and format errors
- **PR** #28269: (*rallytime*) Refactor rabbitmq_user state to use test=True correctly
- **PR** #28299: (*rallytime*) Add test for availability_zone check to boto_vpc_tests
- **PR** #28306: (*sdm24*) Updated the Nodegroup docs to include how to target nodegroups in SLS Jinja
- **PR** #28308: (*rallytime*) Firewalld state services should use --add-service, not --new-service
- **PR** #28302: (*DmitryKuzmenko*) Always close socket even if there is no stream.
- **PR** #28282: (*keesbos*) Fix for __env__ in legacy git_pillar
- **PR** #28258: (*pass-by-value*) Add service module for ssh proxy example
- **PR** #28294: (*bechtoldt*) correct a bad default value in http utility

- **PR** #28185: (*jtand*) Added single package return for latest_version, fixed other bug.
- **PR** #28297: (*cachedout*) Lint fix proxy junos
- **PR** #28210: (*terminalmage*) Fix for ext_pillar being compiled twice in legacy git_pillar code
- **PR** #28265: (*jfindlay*) fix blockdev execution and state modules
- **PR** #28266: (*rallytime*) Back-port #28260 to 2015.8
- **PR** #28253: (*rallytime*) Back-port #28063 to 2015.8
- **PR** #28231: (*rallytime*) Make sure we're compairing strings when getting images in the DO driver
- **PR** #28224: (*techhat*) Optimize create_repo for large packages
- **PR** #28214: (*rallytime*) Don't stacktrace if invalid credentials are passed to boto_route53 state
- **PR** #28228: (*rallytime*) Back-port #27562 to 2015.8
- **PR** #28232: (*rallytime*) Add documentation to supply the ssh_username: freebsd config to DO docs
- **PR** #28198: (*jacobhammons*) Added note regarding missing spm exe on Debian/Ubuntu
- **PR** #28182: (*erchn*) Some fixes for nova driver for Rackspace
- **PR** #28181: (*rallytime*) Revamp firewalld state to be more stateful.
- **PR** #28176: (*cro*) Add ping function
- **PR** #28167: (*The-Loeki*) file.serialize needs to add a final newline to serialized files
- **PR** #28168: (*rallytime*) Make sure availability zone gets passed in boto_vpc module when creating subnet
- **PR** #28148: (*basepi*) [2015.8] Only expand nodegroups to lists if there is a nested nodegroup
- **PR** #28155: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #28149: (*pass-by-value*) Add clarification to cloud profile doc about host
- **PR** #28146: (*cachedout*) Lint dracr.py
- **PR** #28141: (*rallytime*) Don't use RAM for root disk size in linode.py
- **PR** #28143: (*jtand*) Removed blank line at end of chassis.py
- **PR** #28021: (*blueyed*) Handle includes in *include_config* recursively
- **PR** #28095: (*rallytime*) Back-port #28001 to 2015.8
- **PR** #28096: (*rallytime*) Back-port #28061 to 2015.8
- **PR** #28139: (*rallytime*) Back-port #28103 to 2015.8
- **PR** #28098: (*jacksontj*) For all multi-part messages, check the headers. If the header is not ...
- **PR** #28134: (*bernieke*) fix unicode pillar values **`#3436`_**
- **PR** #28076: (*redmcg*) Replace option `i' with an explicit queryformat
- **PR** #28119: (*jacksontj*) Check if the remote exists before casting to a string.
- **PR** #28105: (*jfindlay*) add reason for not loading localemod
- **PR** #28108: (*cachedout*) Set logfile permsissions correctly
- **PR** #27922: (*cro*) WIP States/Modules for managing Dell FX2 chassis via salt-proxy
- **PR** #28104: (*pass-by-value*) Add documentation for proxy minion ssh
- **PR** #28020: (*DmitryKuzmenko*) LazyLoader deepcopy fix.

- **PR** #27933: (*eliasp*) Provide all git pillar dirs in *opts[pillar_roots]*
- **PR** #28013: (*rallytime*) Back-port #27891 to 2015.8
- **PR** #28018: (*rallytime*) Add example to Writing Grains of how grains can be loaded twice
- **PR** #28084: (*cachedout*) #28069 with lint
- **PR** #28079: (*The-Loeki*) Fix for trace dump on failing imports for win32com & pythoncom 4 win_task
- **PR** #28081: (*The-Loeki*) fix for glance state trace error on import failure
- **PR** #28066: (*jacksontj*) Use the generic *text* attribute, not .body of the handler
- **PR** #28019: (*rallytime*) Clean up version added and deprecated msgs to be accurate
- **PR** #28058: (*rallytime*) Back-port #28041 to 2015.8
- **PR** #28055: (*rallytime*) Back-port #28043 to 2015.8
- **PR** #28046: (*pass-by-value*) Add pkg install and remove functions
- **PR** #28050: (*ryan-lane*) Use a better method for checking dynamodb table existence
- **PR** #28042: (*jfindlay*) fix repo path in ubuntu installation documentation
- **PR** #28033: (*twangboy*) Fixed win_useradd.py
- **PR** #28027: (*cro*) Make ssh conn persistent.
- **PR** #28029: (*jacobhammons*) Updated release notes with additional CVE information
- **PR** #28022: (*jacobhammons*) Updated Debian and Ubuntu repo paths with new structure for 2015.8.1
- **PR** #27983: (*rallytime*) Pip state run result should be False, not None, if installation error occurs.
- **PR** #27991: (*twangboy*) Fix for **`#20678`_**
- **PR** #27997: (*rallytime*) Remove note about pip bug with pip v1 vs pip v2 return codes
- **PR** #27994: (*jtand*) Fix schedule_test failure
- **PR** #27992: (*cachedout*) Make load beacon config into list
- **PR** #28003: (*twangboy*) Fix **`#26336`_**
- **PR** #27984: (*rallytime*) Versionadded for clean_file option for pkgrepo
- **PR** #27989: (*ryan-lane*) Do not try to remove the main route table association
- **PR** #27982: (*pass-by-value*) Add example for salt-proxy over SSH
- **PR** #27985: (*jacobhammons*) Changed current release to 8.1 and added CVEs to release notes
- **PR** #27979: (*cachedout*) Fix regression with key whitespace
- **PR** #27977: (*cachedout*) Decode unicode names in fileclient/server
- **PR** #27981: (*jtand*) Fixed trailing whitespace lint
- **PR** #27969: (*jeffreyctang*) fix parse of { on next line
- **PR** #27978: (*terminalmage*) Add note about dockerng.inspect_image usage
- **PR** #27955: (*pass-by-value*) Bp 27868
- **PR** #27953: (*The-Loeki*) Fix CloudStack cloud for new `driver' syntax
- **PR** #27965: (*ryan-lane*) Fail in boto_asg.present if alarms fail
- **PR** #27958: (*twangboy*) Added new functionality to win_task.py

- **PR** #27959: (*techhat*) Change __opts__ to self.opts
- **PR** #27943: (*rallytime*) Back-port #27910 to 2015.8
- **PR** #27944: (*rallytime*) Back-port #27909 to 2015.8
- **PR** #27946: (*jtand*) Changed grain to look at osmajorrelease instead of osrelease
- **PR** #27914: (*rallytime*) Use eipalloc instead of eni in EC2 interface properties example
- **PR** #27926: (*rallytime*) Back-port #27905 to 2015.8
- **PR** #27927: (*ryan-lane*) Do not manage ingress or egress rules if set to None
- **PR** #27928: (*rallytime*) Back-port #27908 to 2015.8
- **PR** #27676: (*ticosax*) [dockerng] WIP No more runtime args passed to docker.start()
- **PR** #27885: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #27882: (*twangboy*) Created win_task.py module
- **PR** #27802: (*terminalmage*) Correct warning logging when update lock is present for git_pillar/winrepo, add runner function for clearing git_pillar/winrepo locks
- **PR** #27886: (*rallytime*) Handle group lists as well as comma-separated group strings.
- **PR** #27746: (*anlutro*) timezone module: handle timedatectl errors
- **PR** #27816: (*anlutro*) Make system.reboot use *shutdown -r* when available
- **PR** #27874: (*rallytime*) Add mention of Periodic Table naming scheme to deprecation docs
- **PR** #27883: (*terminalmage*) Work around --is-ancestor not being present in git-merge-base before git 1.8.0
- **PR** #27877: (*rallytime*) Back-port #27774 to 2015.8
- **PR** #27878: (*rallytime*) Use apache2ctl binary on SUSE in apache module
- **PR** #27879: (*cro*) Add docs for 2015.8.2+ changes to proxies
- **PR** #27731: (*cro*) Add __proxy__ to replace opts['proxymodule']
- **PR** #27745: (*anlutro*) Add pip_upgrade arg to virtualenv.managed state
- **PR** #27809: (*ticosax*) [dockerng] Remove dockerng.ps caching
- **PR** #27859: (*ticosax*) [dockerng] Clarify doc port bindings
- **PR** #27748: (*multani*) Fix `#8646`_
- **PR** #27850: (*rallytime*) Back-port #27722 to 2015.8
- **PR** #27851: (*rallytime*) Back-port #27771 to 2015.8
- **PR** #27833: (*jfindlay*) decode path before string ops in fileclient
- **PR** #27837: (*jfindlay*) reverse truth in python_shell documentation
- **PR** #27860: (*flavio*) Fix OS related grains on openSUSE and SUSE Linux Enterprise
- **PR** #27768: (*rallytime*) Clean up bootstrap function to be slightly cleaner
- **PR** #27797: (*isbm*) Zypper module clusterfix
- **PR** #27849: (*rallytime*) Don't require a size parameter for proxmox profiles
- **PR** #27827: (*techhat*) Add additional error checking to SPM
- **PR** #27826: (*martinhoefling*) Fixes `#27825`_

- **PR** #27824: (*techhat*) Update Azure errors
- **PR** #27795: (*eguven*) better change reporting for postgres_user groups
- **PR** #27799: (*terminalmage*) Fix usage of identity file in git.latest
- **PR** #27717: (*pass-by-value*) Proxy beacon example
- **PR** #27793: (*anlutro*) update code that changes log level of salt-ssh shim command
- **PR** #27761: (*terminalmage*) Merge git pillar data instead of using dict.update()
- **PR** #27741: (*ticosax*) [dockerng] pass filters argument to dockerng.ps
- **PR** #27760: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #27757: (*jfindlay*) fix virtual fcn return doc indentation
- **PR** #27754: (*rallytime*) Change test.nop version directive to 2015.8.1
- **PR** #27734: (*jacobhammons*) Updated saltstack2 theme to add SaltConf16 banner
- **PR** #27727: (*rallytime*) Merge #27719 w/pylint fix
- **PR** #27724: (*jfindlay*) update __virtual__ return documentation
- **PR** #27725: (*basepi*) Fix global injection for state cross calls
- **PR** #27628: (*ticosax*) [dockerng] Add support of *labels* parameter for dockerng
- **PR** #27704: (*jacobhammons*) Update compound matcher docs to clarify the usage of alternate delimi…
- **PR** #27705: (*rallytime*) Merge #27602 with final pylint fix
- **PR** #27691: (*notpeter*) Faster timeout (3s vs 2min) for instance metadata lookups. **`#13850`_**.
- **PR** #27696: (*blueyed*) loader.proxy: call *_modules_dirs* only once
- **PR** #27630: (*ticosax*) Expose container_id in mine.get_docker
- **PR** #27600: (*blueyed*) dockerng: use docker.version=auto by default
- **PR** #27689: (*rallytime*) Merge #27448 with test fixes
- **PR** #27693: (*jacobhammons*) initial engines topic, updates to windows repo docs
- **PR** #27601: (*blueyed*) dockerng: handle None in container.Names
- **PR** #27596: (*blueyed*) gitfs: fix UnboundLocalError for `msg'
- **PR** #27651: (*eliasp*) Check for existence of `subnetId' key in subnet dict
- **PR** #27639: (*rallytime*) Docement version added for new artifactory options
- **PR** #27677: (*rallytime*) Back-port #27675 to 2015.8
- **PR** #27637: (*rallytime*) Back-port #27604 to 2015.8
- **PR** #27657: (*garethgreenaway*) Fix to pkg state module
- **PR** #27632: (*rallytime*) Back-port #27539 to 2015.8
- **PR** #27633: (*rallytime*) Back-port #27559 to 2015.8
- **PR** #27579: (*rallytime*) Change boto_route53 region default to `universal' to avoid problems with boto library
- **PR** #27581: (*tkwilliams*) Add support for `vpc_name' tag in boto_secgroup module and state
- **PR** #27624: (*nasenbaer13*) Wait for sync is not passed to boto_route53 state
- **PR** #27614: (*blueyed*) doc: minor fixes to doc and comments

- **PR** #27627: (*eyj*) Fix crash in boto_asg.get_instances if the requested attribute is None
- **PR** #27616: (*jacobhammons*) Updated windows software repository docs
- **PR** #27569: (*lomeroe*) boto_vpc.get_subnet_association now returns a dict w/key of vpc_id, a…
- **PR** #27567: (*whiteinge*) Use getattr to fetch psutil.version_info
- **PR** #27583: (*tkwilliams*) Fixup zypper module
- **PR** #27597: (*blueyed*) gitfs: remove unused variable ``bad_per_remote_conf''
- **PR** #27585: (*ryan-lane*) Fix undefined variable in cron state module

### 18.2.16 Salt 2015.8.3 Release Notes

#### Security Fix

CVE-2015-8034: Saving `state.sls` cache data to disk with insecure permissions

This affects users of the `state.sls` function. The state run cache on the minion was being created with incorrect permissions. This file could potentially contain sensitive data that was inserted via jinja into the state SLS files. The permissions for this file are now being set correctly. Thanks to @zmalone for bringing this issue to our attention.

#### Changes

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2015-11-25T00:03:40Z*

Merges: **452**

Changes:

- **PR** #29172: (*basepi*) [2015.8] Backport new philips_hue proxy features from develop
- **PR** #29167: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #29141: (*optix2000*) Add test case for require: sls with only import statements
- **PR** #29072: (*terminalmage*) Several gitfs/git_pillar fixes
- **PR** #29118: (*ticosax*) [dockerng] Add networking capabilities
- **PR** #29145: (*anlutro*) Remove duplicate import of salt.utils.s3
- **PR** #29148: (*lomeroe*) correcting parameter calls to boto get_zone/create_zone functions in …
- **PR** #29108: (*lorengordon*) Enforce length as an int, fixes **`#29107`_**
- **PR** #29125: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #29126: (*fcrozat*) Fix deployment when umask is non-standard
- **PR** #29124: (*rallytime*) Back-port #28130 to 2015.8
- **PR** #29076: (*RealKelsar*) We can't query installed use flags for a non installed pkg
- **PR** #29097: (*rallytime*) Back-port #29070 to 2015.8
- **PR** #29090: (*gtmanfred*) clean up novaclient module
- **PR** #29095: (*terminalmage*) Add warning about pygit2 API instability

- **PR** #28919: (*cro*) Update Philips Hue proxy minion to support __proxy__ instead of proxymodule stored in __opts__
- **PR** #29065: (*cachedout*) Handle failures inside python's inspect if a module is reloaded
- **PR** #29057: (*paulnivin*) Add local file support for file.managed source list
- **PR** #29017: (*jfindlay*) pagerduty runner: add missing salt.utils import
- **PR** #29039: (*anlutro*) Allow passing list of pip packages to virtualenv.managed
- **PR** #29047: (*schwing*) Fix salt.modules.gpg.import_key exception: `GPG_1_3_1 referenced before assignment'
- **PR** #29050: (*terminalmage*) Make git_pillar global config option docs more prominent
- **PR** #29048: (*nmadhok*) Fix incorrect debug log statement
- **PR** #29024: (*jfindlay*) cache runner test: add new unit tests
- **PR** #28967: (*cro*) Fix some issues with password changes
- **PR** #29020: (*basepi*) [2015.8] Add special list-only nodegroup support to salt-ssh
- **PR** #28970: (*terminalmage*) Properly handle non-string saltenvs
- **PR** #28959: (*rallytime*) Add blade password example and make note of timeout
- **PR** #29000: (*kiorky*) [Mergeable] Fix up LXC
- **PR** #29014: (*jfindlay*) systemd module: remove unneeded col command
- **PR** #28983: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #28969: (*rallytime*) Back-port #28825 to 2015.8
- **PR** #28787: (*chrigl*) closes **`#28784`**_
- **PR** #28944: (*rallytime*) The ret result must contain `name', not `chassis_name' for the state compiler.
- **PR** #28957: (*terminalmage*) Fix version number for new state option
- **PR** #28950: (*DmitryKuzmenko*) PR 28812 which test fix
- **PR** #28812: (*isbm*) Enhance `which' decorator reliability
- **PR** #28934: (*terminalmage*) git.latest: Add update_head option to prevent local HEAD from being updated
- **PR** #28937: (*rallytime*) Update dellchassis state example to use correct jinja syntax
- **PR** #28889: (*jfindlay*) state compiler: relax aggregate conditional check
- **PR** #28921: (*rallytime*) Back-port #25470 to 2015.8
- **PR** #28922: (*rallytime*) Change 2015.8.2 release note title to reflect proper version
- **PR** #28891: (*jfindlay*) rh_service module: fix logic in _chkconfig_is_enabled
- **PR** #28892: (*jfindlay*) grains.core: correctly identify SLES 11 distrib_id
- **PR** #28910: (*lorengordon*) Fix winrepo command in windows pkg mgmt doc
- **PR** #28896: (*rallytime*) Back-port #28855 to 2015.8
- **PR** #28895: (*rallytime*) Back-port #28823 to 2015.8
- **PR** #28885: (*kt97679*) fix for: service.enabled fails on xen server **`#28754`**_
- **PR** #28880: (*terminalmage*) Add ``profile'' loglevel
- **PR** #28882: (*basepi*) [2015.8] salt-ssh: Check return type to make sure it's an error

- **PR** #28867: (*rallytime*) [fx2 grains] Grains functions should return dictionaries
- **PR** #28863: (*mhoogendoorn*) Fix ebuild.install causing extra refresh_db calls.
- **PR** #28865: (*jfindlay*) add 2015.8.2 release notes
- **PR** #28730: (*garethgreenaway*) Fixes to how return_job is handled in the scheduler for the salt master.
- **PR** #28848: (*cro*) Lint
- **PR** #28842: (*cachedout*) Add transport setting to shell test
- **PR** #28837: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #28827: (*jacksontj*) Cleanup virtual_timer in loader
- **PR** #28836: (*cachedout*) Cast to dict to fix wheel tests in tcp
- **PR** #28834: (*cachedout*) Fix breakage in tcp server
- **PR** #28804: (*cachedout*) TCP test fixes
- **PR** #28826: (*basepi*) [2015.8] Add new tornado deps to salt-ssh thin
- **PR** #28759: (*jfindlay*) simplify stdin use of stdin in at.present state
- **PR** #28824: (*rallytime*) Back-port #28778 and #28820 to 2015.8
- **PR** #28803: (*jfindlay*) decode strings to utf-8
- **PR** #28782: (*rallytime*) Fixes to rabbitmq user state
- **PR** #28789: (*nmadhok*) Provide ability to enable/disable customization for newly create VMs using VMware salt-cloud driver
- **PR** #28768: (*mrosedale*) 2015.8
- **PR** #28772: (*rallytime*) rabbitmq.list_user_permissions returns a dict, not a list. Don't expect a list.
- **PR** #28774: (*rallytime*) Back-port #28725 to 2015.8
- **PR** #28775: (*rallytime*) Back-port #28740 to 2015.8
- **PR** #28755: (*rallytime*) Move most vmware driver list_* functions to use salt.utils.vmware functions
- **PR** #28744: (*jfindlay*) import gate elementtree
- **PR** #28758: (*jfindlay*) remove redundant logic in useradd execution module
- **PR** #28757: (*mbarrien*) Bug fix: pip command to not quote spaces in cmd line args
- **PR** #28764: (*multani*) Various documentation fixes
- **PR** #28752: (*aboe76*) Update openSUSE grain for tumbleweed
- **PR** #28713: (*hexedpackets*) Rename consul.list to consul.list_keys.
- **PR** #28719: (*jacobhammons*) removed dependencies info from docs
- **PR** #28709: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #28710: (*rallytime*) Pass kwargs correctly to _get_group from get_group_id
- **PR** #28698: (*rallytime*) Back-port #28530 to 2015.8
- **PR** #28700: (*rallytime*) Back-port #28679 to 2015.8
- **PR** #28695: (*s0undt3ch*) [2015.8] Update to latest bootstrap script v2015.11.09
- **PR** #28656: (*clarkperkins*) `#28526`_ fixed yumpkg module issue with pkg.installed

- **PR** #28672: (*jfindlay*) add OS grain support for SuSE Leap
- **PR** #28673: (*jfindlay*) add hidden_opts to mount.mounted
- **PR** #28667: (*cro*) saltutil.sync_all should sync proxymodules as well as the rest.
- **PR** #28665: (*jfindlay*) fixes to windows execution and state modules
- **PR** #28660: (*techhat*) Don't sign empty regions
- **PR** #28632: (*terminalmage*) Fixes/improvements to pkgbuild state/modules
- **PR** #28658: (*techhat*) Remove _pkgdb_fun() references
- **PR** #28653: (*rallytime*) Provide possible parameters for boto_rds.present engine values
- **PR** #28649: (*bdrung*) Fix OS related grains on Debian
- **PR** #28646: (*rallytime*) Back-port #28614 to 2015.8
- **PR** #28647: (*rallytime*) Back-port #28624 to 2015.8
- **PR** #28648: (*rallytime*) Merge branch `2015.5' into `2015.8'
- **PR** #28638: (*anlutro*) Salt-SSH: Return more concise error when SSH command fails
- **PR** #28644: (*pass-by-value*) Make sure versionchanged is correct
- **PR** #28615: (*The-Loeki*) Fixes to FreeBSD pkg
- **PR** #28613: (*cachedout*) Add facility to deepcopy bound methods in Py2.6 and apply to grains
- **PR** #28612: (*rallytime*) Remove unsupported storage_type argument for parity with boto_rds module
- **PR** #28611: (*rallytime*) [2015.8] Be explicit about salt.utils.vmware function calls
- **PR** #28610: (*pass-by-value*) Lxc config additions
- **PR** #28602: (*nasenbaer13*) Allow setting of custom dimensions in asg alarm specification
- **PR** #28596: (*rallytime*) Merge branch `2015.5' into `2015.8'
- **PR** #28593: (*blueyed*) doc: fix typo with salt.states.file: s/preseve/preserve/
- **PR** #28578: (*twangboy*) Fixed the script... something got broke...
- **PR** #28579: (*jfindlay*) fix __virtual__ returns: tls,uptime mods
- **PR** #28584: (*rallytime*) If AssociatePublicIpAddress is set to True, don't auto-assign eip.
- **PR** #28576: (*jacksontj*) Only encode the zmq message once
- **PR** #28587: (*cachedout*) Reset yaml rendering hooks to avoid leaks
- **PR** #28581: (*basepi*) Revert b4875e585a165482c4c1ddc8987d76b0a71ef1b0
- **PR** #28573: (*jacksontj*) Add *body* to salt.utils.http.query returns
- **PR** #28564: (*s0undt3ch*) [2015.8] Update to latest bootstrap script v2015.11.04
- **PR** #28561: (*Oro*) Issue `#28527`_ boto_rds.create does not work
- **PR** #28560: (*bdrung*) Fix various typos
- **PR** #28550: (*jfindlay*) check timedatectl errno and return stdout on failure
- **PR** #28545: (*jfindlay*) pass on concurrent create of jid_dir in local_cache
- **PR** #28544: (*rallytime*) Start moving some vmware.py cloud funcs to utils/vmware.py
- **PR** #28543: (*gtmanfred*) clean up changes for pkg.uptodate and supervisord.dead

- **PR** #28538: (*jfindlay*) decode path and url to utf-8 in url.create
- **PR** #28533: (*jfindlay*) decode highstate error messages to utf-8
- **PR** #28547: (*nmadhok*) [Backport] [2015.8] Tasks can be in queued state instead of running
- **PR** #28535: (*techhat*) Fail gracefully if 169.254* isn't available
- **PR** #28536: (*cro*) Default configuration file for proxy minions.
- **PR** #28534: (*rallytime*) Add versionadded directive for vpc_name arg in boto_secgroup.present
- **PR** #28516: (*rallytime*) Back-port #28489 to 2015.8
- **PR** #28506: (*basepi*) [2015.8] Log minion list for all rosters, at debug level
- **PR** #28514: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #28502: (*cachedout*) Lint #28427
- **PR** #28464: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #28486: (*rallytime*) Back-port #26945 to 2015.8
- **PR** #28472: (*gtmanfred*) overwrite more than one value with names
- **PR** #28493: (*rallytime*) Back-port #28492 to 2015.8
- **PR** #28494: (*whiteinge*) Fix filter_by passing incorrect parameters to match functions
- **PR** #28491: (*rallytime*) Back-port #28388 to 2015.8
- **PR** #28465: (*twangboy*) Fix **`#12363`**_: Password Expiration in Windows
- **PR** #28485: (*nasenbaer13*) Fix invalid usage of _get_conn causing **`#28484`**_
- **PR** #28454: (*sdm24*) Fixed nodegroup doc formatting to correctly link to pillar_opts in the master config
- **PR** #28487: (*cachedout*) Lint 28456
- **PR** #28457: (*sdm24*) Clarified comments for grains/core.py for ip_interfaces, ip4_interfac...
- **PR** #28473: (*anlutro*) Show check_cmd output on failure
- **PR** #28460: (*jtand*) Skipped wipefs test if wipefs does not exist on OS
- **PR** #28426: (*terminalmage*) pkgbuild.built: make template engine optional
- **PR** #28422: (*cachedout*) Handle windows logging on thread_multi [WIP]
- **PR** #28425: (*twangboy*) Fix **`#13513`**_ - Reflection
- **PR** #28417: (*rallytime*) Add note about azure sdk version to getting started docs
- **PR** #28410: (*jacksontj*) Add retries to the zeromq.AsyncReqMessageClient
- **PR** #28404: (*rallytime*) Back-port #28395 to 2015.8
- **PR** #28405: (*opdude*) Detect legacy versions of chocolatey correctly
- **PR** #28187: (*sjansen*) fix at.present
- **PR** #28375: (*merll*) Merge pillar includes correctly
- **PR** #28376: (*ryan-lane*) Support update of route53 records with multiple values
- **PR** #28377: (*terminalmage*) Deprecate `always' in favor of `force' in pkgbuild.built
- **PR** #28380: (*cro*) Add missing call for service provider
- **PR** #28348: (*jfindlay*) salt.utils.alias informs user they are using a renamed function

- **PR** #28364: (*jtand*) In CentOS 5 the .split() causes a stacktrace.
- **PR** #28361: (*rallytime*) Back-port #28087 to 2015.8
- **PR** #28360: (*multani*) Various documentation fixes
- **PR** #28370: (*rallytime*) Back-port #28276 to 2015.8
- **PR** #28353: (*merll*) Consider each pillar match only once.
- **PR** #28334: (*anlutro*) iptables needs -m comment for --comment to work
- **PR** #28340: (*jfindlay*) sdecode file and dir lists in fileclient
- **PR** #28344: (*ryan-lane*) Fix iptables state for non-filter tables
- **PR** #28343: (*rallytime*) Back-port #28342 to 2015.8
- **PR** #28330: (*rallytime*) Back-port #28305 to 2015.8
- **PR** #28270: (*rallytime*) Refactor RabbitMQ Plugin State to correctly use test=true and format errors
- **PR** #28269: (*rallytime*) Refactor rabbitmq_user state to use test=True correctly
- **PR** #28299: (*rallytime*) Add test for availability_zone check to boto_vpc_tests
- **PR** #28306: (*sdm24*) Updated the Nodegroup docs to include how to target nodegroups in SLS Jinja
- **PR** #28308: (*rallytime*) Firewalld state services should use --add-service, not --new-service
- **PR** #28302: (*DmitryKuzmenko*) Always close socket even if there is no stream.
- **PR** #28282: (*keesbos*) Fix for __env__ in legacy git_pillar
- **PR** #28258: (*pass-by-value*) Add service module for ssh proxy example
- **PR** #28294: (*bechtoldt*) correct a bad default value in http utility
- **PR** #28185: (*jtand*) Added single package return for latest_version, fixed other bug.
- **PR** #28297: (*cachedout*) Lint fix proxy junos
- **PR** #28210: (*terminalmage*) Fix for ext_pillar being compiled twice in legacy git_pillar code
- **PR** #28265: (*jfindlay*) fix blockdev execution and state modules
- **PR** #28266: (*rallytime*) Back-port #28260 to 2015.8
- **PR** #28253: (*rallytime*) Back-port #28063 to 2015.8
- **PR** #28231: (*rallytime*) Make sure we're compairing strings when getting images in the DO driver
- **PR** #28224: (*techhat*) Optimize create_repo for large packages
- **PR** #28214: (*rallytime*) Don't stacktrace if invalid credentials are passed to boto_route53 state
- **PR** #28228: (*rallytime*) Back-port #27562 to 2015.8
- **PR** #28232: (*rallytime*) Add documentation to supply the ssh_username: freebsd config to DO docs
- **PR** #28198: (*jacobhammons*) Added note regarding missing spm exe on Debian/Ubuntu
- **PR** #28182: (*erchn*) Some fixes for nova driver for Rackspace
- **PR** #28181: (*rallytime*) Revamp firewalld state to be more stateful.
- **PR** #28176: (*cro*) Add ping function
- **PR** #28167: (*The-Loeki*) file.serialize needs to add a final newline to serialized files
- **PR** #28168: (*rallytime*) Make sure availability zone gets passed in boto_vpc module when creating subnet

- **PR** #28148: (*basepi*) [2015.8] Only expand nodegroups to lists if there is a nested nodegroup
- **PR** #28155: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #28149: (*pass-by-value*) Add clarification to cloud profile doc about host
- **PR** #28146: (*cachedout*) Lint dracr.py
- **PR** #28141: (*rallytime*) Don't use RAM for root disk size in linode.py
- **PR** #28143: (*jtand*) Removed blank line at end of chassis.py
- **PR** #28021: (*blueyed*) Handle includes in *include_config* recursively
- **PR** #28095: (*rallytime*) Back-port #28001 to 2015.8
- **PR** #28096: (*rallytime*) Back-port #28061 to 2015.8
- **PR** #28139: (*rallytime*) Back-port #28103 to 2015.8
- **PR** #28098: (*jacksontj*) For all multi-part messages, check the headers. If the header is not ...
- **PR** #28134: (*bernieke*) fix unicode pillar values **`#3436`_**
- **PR** #28076: (*redmcg*) Replace option `i' with an explicit queryformat
- **PR** #28119: (*jacksontj*) Check if the remote exists before casting to a string.
- **PR** #28105: (*jfindlay*) add reason for not loading localemod
- **PR** #28108: (*cachedout*) Set logfile permsissions correctly
- **PR** #27922: (*cro*) WIP States/Modules for managing Dell FX2 chassis via salt-proxy
- **PR** #28104: (*pass-by-value*) Add documentation for proxy minion ssh
- **PR** #28020: (*DmitryKuzmenko*) LazyLoader deepcopy fix.
- **PR** #27933: (*eliasp*) Provide all git pillar dirs in *opts[pillar_roots]*
- **PR** #28013: (*rallytime*) Back-port #27891 to 2015.8
- **PR** #28018: (*rallytime*) Add example to Writing Grains of how grains can be loaded twice
- **PR** #28084: (*cachedout*) #28069 with lint
- **PR** #28079: (*The-Loeki*) Fix for trace dump on failing imports for win32com & pythoncom 4 win_task
- **PR** #28081: (*The-Loeki*) fix for glance state trace error on import failure
- **PR** #28066: (*jacksontj*) Use the generic *text* attribute, not .body of the handler
- **PR** #28019: (*rallytime*) Clean up version added and deprecated msgs to be accurate
- **PR** #28058: (*rallytime*) Back-port #28041 to 2015.8
- **PR** #28055: (*rallytime*) Back-port #28043 to 2015.8
- **PR** #28046: (*pass-by-value*) Add pkg install and remove functions
- **PR** #28050: (*ryan-lane*) Use a better method for checking dynamodb table existence
- **PR** #28042: (*jfindlay*) fix repo path in ubuntu installation documentation
- **PR** #28033: (*twangboy*) Fixed win_useradd.py
- **PR** #28027: (*cro*) Make ssh conn persistent.
- **PR** #28029: (*jacobhammons*) Updated release notes with additional CVE information
- **PR** #28022: (*jacobhammons*) Updated Debian and Ubuntu repo paths with new structure for 2015.8.1

- **PR** #27983: (*rallytime*) Pip state run result should be False, not None, if installation error occurs.
- **PR** #27991: (*twangboy*) Fix for `#20678`_
- **PR** #27997: (*rallytime*) Remove note about pip bug with pip v1 vs pip v2 return codes
- **PR** #27994: (*jtand*) Fix schedule_test failure
- **PR** #27992: (*cachedout*) Make load beacon config into list
- **PR** #28003: (*twangboy*) Fix `#26336`_
- **PR** #27984: (*rallytime*) Versionadded for clean_file option for pkgrepo
- **PR** #27989: (*ryan-lane*) Do not try to remove the main route table association
- **PR** #27982: (*pass-by-value*) Add example for salt-proxy over SSH
- **PR** #27985: (*jacobhammons*) Changed current release to 8.1 and added CVEs to release notes
- **PR** #27979: (*cachedout*) Fix regression with key whitespace
- **PR** #27977: (*cachedout*) Decode unicode names in fileclient/server
- **PR** #27981: (*jtand*) Fixed trailing whitespace lint
- **PR** #27969: (*jeffreyctang*) fix parse of { on next line
- **PR** #27978: (*terminalmage*) Add note about dockerng.inspect_image usage
- **PR** #27955: (*pass-by-value*) Bp 27868
- **PR** #27953: (*The-Loeki*) Fix CloudStack cloud for new `driver' syntax
- **PR** #27965: (*ryan-lane*) Fail in boto_asg.present if alarms fail
- **PR** #27958: (*twangboy*) Added new functionality to win_task.py
- **PR** #27959: (*techhat*) Change __opts__ to self.opts
- **PR** #27943: (*rallytime*) Back-port #27910 to 2015.8
- **PR** #27944: (*rallytime*) Back-port #27909 to 2015.8
- **PR** #27946: (*jtand*) Changed grain to look at osmajorrelease instead of osrelease
- **PR** #27914: (*rallytime*) Use eipalloc instead of eni in EC2 interface properties example
- **PR** #27926: (*rallytime*) Back-port #27905 to 2015.8
- **PR** #27927: (*ryan-lane*) Do not manage ingress or egress rules if set to None
- **PR** #27928: (*rallytime*) Back-port #27908 to 2015.8
- **PR** #27676: (*ticosax*) [dockerng] WIP No more runtime args passed to docker.start()
- **PR** #27885: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #27882: (*twangboy*) Created win_task.py module
- **PR** #27802: (*terminalmage*) Correct warning logging when update lock is present for git_pillar/winrepo, add runner function for clearing git_pillar/winrepo locks
- **PR** #27886: (*rallytime*) Handle group lists as well as comma-separated group strings.
- **PR** #27746: (*anlutro*) timezone module: handle timedatectl errors
- **PR** #27816: (*anlutro*) Make system.reboot use *shutdown -r* when available
- **PR** #27874: (*rallytime*) Add mention of Periodic Table naming scheme to deprecation docs

- **PR** #27883: (*terminalmage*) Work around --is-ancestor not being present in git-merge-base before git 1.8.0
- **PR** #27877: (*rallytime*) Back-port #27774 to 2015.8
- **PR** #27878: (*rallytime*) Use apache2ctl binary on SUSE in apache module
- **PR** #27879: (*cro*) Add docs for 2015.8.2+ changes to proxies
- **PR** #27731: (*cro*) Add __proxy__ to replace opts['proxymodule']
- **PR** #27745: (*anlutro*) Add pip_upgrade arg to virtualenv.managed state
- **PR** #27809: (*ticosax*) [dockerng] Remove dockerng.ps caching
- **PR** #27859: (*ticosax*) [dockerng] Clarify doc port bindings
- **PR** #27748: (*multani*) Fix **`#8646`**_
- **PR** #27850: (*rallytime*) Back-port #27722 to 2015.8
- **PR** #27851: (*rallytime*) Back-port #27771 to 2015.8
- **PR** #27833: (*jfindlay*) decode path before string ops in fileclient
- **PR** #27837: (*jfindlay*) reverse truth in python_shell documentation
- **PR** #27860: (*flavio*) Fix OS related grains on openSUSE and SUSE Linux Enterprise
- **PR** #27768: (*rallytime*) Clean up bootstrap function to be slightly cleaner
- **PR** #27797: (*isbm*) Zypper module clusterfix
- **PR** #27849: (*rallytime*) Don't require a size parameter for proxmox profiles
- **PR** #27827: (*techhat*) Add additional error checking to SPM
- **PR** #27826: (*martinhoefling*) Fixes **`#27825`**_
- **PR** #27824: (*techhat*) Update Azure errors
- **PR** #27795: (*eguven*) better change reporting for postgres_user groups
- **PR** #27799: (*terminalmage*) Fix usage of identity file in git.latest
- **PR** #27717: (*pass-by-value*) Proxy beacon example
- **PR** #27793: (*anlutro*) update code that changes log level of salt-ssh shim command
- **PR** #27761: (*terminalmage*) Merge git pillar data instead of using dict.update()
- **PR** #27741: (*ticosax*) [dockerng] pass filters argument to dockerng.ps
- **PR** #27760: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #27757: (*jfindlay*) fix virtual fcn return doc indentation
- **PR** #27754: (*rallytime*) Change test.nop version directive to 2015.8.1
- **PR** #27734: (*jacobhammons*) Updated saltstack2 theme to add SaltConf16 banner
- **PR** #27727: (*rallytime*) Merge #27719 w/pylint fix
- **PR** #27724: (*jfindlay*) update __virtual__ return documentation
- **PR** #27725: (*basepi*) Fix global injection for state cross calls
- **PR** #27628: (*ticosax*) [dockerng] Add support of *labels* parameter for dockerng
- **PR** #27704: (*jacobhammons*) Update compound matcher docs to clarify the usage of alternate delimi…
- **PR** #27705: (*rallytime*) Merge #27602 with final pylint fix

- **PR** #27691: (*notpeter*) Faster timeout (3s vs 2min) for instance metadata lookups. `#13850`_.
- **PR** #27696: (*blueyed*) loader.proxy: call *_modules_dirs* only once
- **PR** #27630: (*ticosax*) Expose container_id in mine.get_docker
- **PR** #27600: (*blueyed*) dockerng: use docker.version=auto by default
- **PR** #27689: (*rallytime*) Merge #27448 with test fixes
- **PR** #27693: (*jacobhammons*) initial engines topic, updates to windows repo docs
- **PR** #27601: (*blueyed*) dockerng: handle None in container.Names
- **PR** #27596: (*blueyed*) gitfs: fix UnboundLocalError for `msg'
- **PR** #27651: (*eliasp*) Check for existence of `subnetId' key in subnet dict
- **PR** #27639: (*rallytime*) Docement version added for new artifactory options
- **PR** #27677: (*rallytime*) Back-port #27675 to 2015.8
- **PR** #27637: (*rallytime*) Back-port #27604 to 2015.8
- **PR** #27657: (*garethgreenaway*) Fix to pkg state module
- **PR** #27632: (*rallytime*) Back-port #27539 to 2015.8
- **PR** #27633: (*rallytime*) Back-port #27559 to 2015.8
- **PR** #27579: (*rallytime*) Change boto_route53 region default to `universal' to avoid problems with boto library
- **PR** #27581: (*tkwilliams*) Add support for `vpc_name' tag in boto_secgroup module and state
- **PR** #27624: (*nasenbaer13*) Wait for sync is not passed to boto_route53 state
- **PR** #27614: (*blueyed*) doc: minor fixes to doc and comments
- **PR** #27627: (*eyj*) Fix crash in boto_asg.get_instances if the requested attribute is None
- **PR** #27616: (*jacobhammons*) Updated windows software repository docs
- **PR** #27569: (*lomeroe*) boto_vpc.get_subnet_association now returns a dict w/key of vpc_id, a…
- **PR** #27567: (*whiteinge*) Use getattr to fetch psutil.version_info
- **PR** #27583: (*tkwilliams*) Fixup zypper module
- **PR** #27597: (*blueyed*) gitfs: remove unused variable ``bad_per_remote_conf''
- **PR** #27585: (*ryan-lane*) Fix undefined variable in cron state module

### 18.2.17 Salt 2015.8.4 Release Notes

#### Known Issues

`in_` requisites (issue 30820)

This issue affects all users targeting an explicit `-name: <name>` with a `_in` requisite (such as `watch_in` or `require_in`). If you are not using explicit `-name: <name>` arguments, are targeting with the state ID instead of the name, or are not using `_in` requisites, then you should be safe to upgrade to 2015.8.4.

This issue is resolved in the *2015.8.5* release.

### Security Fix

CVE-2016-1866: Improper handling of clear messages on the minion, which could result in executing commands not sent by the master.

This issue affects only the 2015.8.x releases of Salt. In order for an attacker to use this attack vector, they would have to execute a successful attack on an existing TCP connection between minion and master on the pub port. It does not allow an external attacker to obtain the shared secret or decrypt any encrypted traffic between minion and master. Thank you to Sebastian Krahmer <krahmer@suse.com> for bringing this issue to our attention.

We recommend everyone upgrade to 2015.8.4 as soon as possible.

### Core Changes

- **PR** #28994: *timcharper* Salt S3 module has learned how to assume IAM roles
- Added option `mock=True` for *`state.sls`* and *`state.highstate`*. This allows the salt state compiler to process sls data in a state run without actually calling the state functions, thus providing feedback on the validity of the arguments used for the functions beyond the preprocessing validation provided by `state.show_sls` (issue 30118 and issue 30189).

```
salt '*' state.sls core,edit.vim mock=True
salt '*' state.highstate mock=True
salt '*' state.apply edit.vim mock=True
```

### Changes for v2015.8.3..v2015.8.4

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2016-01-25T17:48:35Z*

Total Merges: **320**

Changes:

- **PR** #30613: (*basepi*) Fix minion/syndic clearfuncs
- **PR** #30609: (*seanjnkns*) Fix documentation for pillar_merge_lists which default is False, not ...
- **PR** #30584: (*julianbrost*) file.line state: add missing colon in docstring
- **PR** #30589: (*terminalmage*) Merge 2015.5 into 2015.8
- **PR** #30599: (*multani*) Documentation formatting fixes
- **PR** #30554: (*rallytime*) Make the salt-cloud actions output more verbose and helpful
- **PR** #30549: (*techhat*) Salt Virt cleanup
- **PR** #30553: (*techhat*) AWS: Support 17-character IDs
- **PR** #30532: (*whiteinge*) Add execution module for working in sls files
- **PR** #30529: (*terminalmage*) Merge 2015.5 into 2015.8
- **PR** #30526: (*twangboy*) Added FlushKey to make sure it's changes are saved to disk
- **PR** #30521: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #30485: (*jtand*) Updated pip_state to work with pip 8.0 on 2015.8
- **PR** #30494: (*isbm*) Zypper: info_installed — `errors' flag change to type `boolean'

- **PR** #30506: (*jacksontj*) Properly remove newlines after reading the file
- **PR** #30508: (*rallytime*) Fix Linode driver cloning functionality
- **PR** #30522: (*terminalmage*) Update git.list_worktree tests to reflect new return data
- **PR** #30483: (*borgstrom*) Pyobjects recursive import support (for 2015.8)
- **PR** #30491: (*jacksontj*) Add multi-IP support to network state
- **PR** #30496: (*anlutro*) Fix KeyError when adding ignored pillars
- **PR** #30359: (*kingsquirrel152*) Removes suspected copy/paste error for zmq_filtering functionailty
- **PR** #30448: (*cournape*) Fix osx scripts location
- **PR** #30457: (*rallytime*) Remove fsutils references from modules list
- **PR** #30453: (*rallytime*) Make sure private AND public IPs are listed for Linode driver
- **PR** #30458: (*rallytime*) Back-port #30062 to 2015.8
- **PR** #30468: (*timcharper*) make note of s3 role assumption in upcoming changelog
- **PR** #30470: (*whiteinge*) Add example of the match_dict format to accept_dict wheel function
- **PR** #30450: (*gtmanfred*) fix extension loading in novaclient
- **PR** #30212: (*abednarik*) Fix incorrect file permissions in file.line
- **PR** #29947: (*jfindlay*) fileclient: decode file list from master
- **PR** #30363: (*terminalmage*) Use native ``list'' subcommand to list git worktrees
- **PR** #30445: (*jtand*) Boto uses False for is_default instead of None
- **PR** #30406: (*frioux*) Add an example of how to use file.managed/check_cmd
- **PR** #30424: (*isbm*) Check if byte strings are properly encoded in UTF-8
- **PR** #30405: (*jtand*) Updated glusterfs.py for python2.6 compatibility.
- **PR** #30396: (*pass-by-value*) Remove hardcoded val
- **PR** #30391: (*jtand*) Added else statements
- **PR** #30375: (*rallytime*) Wrap formatted log statements with six.u() in cloud/__init__.py
- **PR** #30384: (*isbm*) Bugfix: info_available does not work correctly on SLE 11 series
- **PR** #30376: (*pritambaral*) Fix FLO_DIR path in 2015.8
- **PR** #30389: (*jtand*) Older versions of ipset don't support comments
- **PR** #30373: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #30372: (*jacobhammons*) Updated man pages for 2015.8.4, updated copyright to 2016
- **PR** #30370: (*rallytime*) Remove incomplete function
- **PR** #30366: (*rallytime*) Back-port #28702 to 2015.8
- **PR** #30361: (*cro*) Flip the sense of the test for proxymodule imports, add more fns for esxi proxy
- **PR** #30267: (*isbm*) Fix RPM issues with the date/time and add package attributes filtering
- **PR** #30360: (*jfindlay*) file.remove, file.absent: mention recursive dir removal
- **PR** #30221: (*mbarrien*) No rolcatupdate for user_exist in Postgres>=9.5 `#26845`_
- **PR** #30358: (*terminalmage*) Add libgit2 version to versions-report

- **PR** #30346: (*pass-by-value*) Prevent orphaned volumes
- **PR** #30349: (*rallytime*) Back-port #30347 to 2015.8
- **PR** #30354: (*anlutro*) Make sure all ignore_missing SLSes are caught
- **PR** #30356: (*nmadhok*) Adding code author
- **PR** #30340: (*jtand*) Updated seed_test.py for changes made to seed module
- **PR** #30339: (*jfindlay*) Backport #26511
- **PR** #30343: (*rallytime*) Fix 2015.8 from incomplete back-port
- **PR** #30342: (*eliasp*) Correct whitespace placement in error message
- **PR** #30308: (*rallytime*) Back-port #30257 to 2015.8
- **PR** #30187: (*rallytime*) Back-port #27606 to 2015.8
- **PR** #30223: (*serge-p*) adding support for DragonFly BSD
- **PR** #30238: (*rallytime*) Reinit crypto before calling RSA.generate when generating keys.
- **PR** #30246: (*dmacvicar*) Add missing return data to scheduled jobs (`#24237`_)
- **PR** #30292: (*thegoodduke*) ipset: fix test=true & add comment for every entry
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- **PR** #30328: (*cachedout*) Fix file test
- **PR** #30310: (*pass-by-value*) Empty bucket fix
- **PR** #30211: (*techhat*) Execute chroot on the correct path
- **PR** #30309: (*rallytime*) Back-port #30304 to 2015.8
- **PR** #30278: (*nmadhok*) If datacenter is specified in the config, then look for managed objects under it
- **PR** #30305: (*jacobhammons*) Changed examples to use the ``example.com'' domain instead of ``mycompan...
- **PR** #30249: (*mpreziuso*) Fixes performance and timeout issues on win_pkg.install
- **PR** #30217: (*pass-by-value*) Make sure cloud actions can be called via salt run
- **PR** #30268: (*terminalmage*) Optimize file_tree ext_pillar and update file.managed to allow for binary contents
- **PR** #30245: (*rallytime*) Boto secgroup/iam_role: Add note stating us-east-1 is default region
- **PR** #30299: (*rallytime*) ESXi Proxy minions states are located at salt.states.esxi, not vsphere.
- **PR** #30202: (*opdude*) Fixed the periodic call to beacons
- **PR** #30303: (*jacobhammons*) Changed notes to indicate that functions are matched using regular ex...
- **PR** #30284: (*terminalmage*) salt.utils.gitfs: Fix Dulwich env detection and submodule handling
- **PR** #30280: (*jfindlay*) add state mocking to release notes
- **PR** #30273: (*rallytime*) Back-port #30121 to 2015.8
- **PR** #30301: (*cachedout*) Accept whatever comes into hightstate mock for state tests
- **PR** #30282: (*cachedout*) Fix file.append logic
- **PR** #30289: (*cro*) Fix problems with targeting proxies by grains
- **PR** #30293: (*cro*) Ensure we don't log stuff we shouldn't
- **PR** #30279: (*cachedout*) Allow modules to be packed into boto utils

- **PR** #30186: (*rallytime*) Update CLI Examples in boto_ec2 module to reflect correct arg/kwarg positioning
- **PR** #30156: (*abednarik*) Add option in file.append to ignore_whitespace.
- **PR** #30189: (*rallytime*) Back-port #30185 to 2015.8
- **PR** #30215: (*jacobhammons*) Assorted doc bug fixes
- **PR** #30206: (*cachedout*) Revert ``Fix incorrect file permissions in file.line''
- **PR** #30190: (*jacobhammons*) Updated doc site banners
- **PR** #30180: (*jfindlay*) modules.x509._dec2hex: add fmt index for 2.6 compat
- **PR** #30179: (*terminalmage*) Backport #26962 to 2015.8 branch
- **PR** #29693: (*abednarik*) Handle missing source file in ssh_auth.
- **PR** #30155: (*rallytime*) Update boto_secgroup and boto_iam_role docs to only use region OR profile
- **PR** #30158: (*rallytime*) Move _option(value) calls to __salt__['config.option'] in boto utils
- **PR** #30160: (*dmurphy18*) Fix parsing disk usage for line with no number and AIX values in Kilos
- **PR** #30162: (*rallytime*) Update list_present and append grains state function docs to be more clear.
- **PR** #30163: (*rallytime*) Add warning about using ``='' in file.line function
- **PR** #30164: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #30168: (*abednarik*) Fix incorrect file permissions in file.line
- **PR** #30154: (*Oro*) Fix file serialize on windows
- **PR** #30144: (*rallytime*) Added generic ESXCLI command ability to ESXi Proxy Minion
- **PR** #30142: (*terminalmage*) Fix dockerng.push, and allow for multiple images
- **PR** #30075: (*joejulian*) Convert glusterfs module to use xml
- **PR** #30129: (*optix2000*) Clean up _uptodate() in git state
- **PR** #30139: (*rallytime*) Back-port #29589 to 2015.8
- **PR** #30124: (*abednarik*) Update regex to detect ip alias in OpenBSD.
- **PR** #30133: (*stanislavb*) Fix typo in gpgkey URL
- **PR** #30126: (*stanislavb*) Log S3 API error message
- **PR** #30128: (*oeuftete*) Log retryable transport errors as warnings
- **PR** #30096: (*cachedout*) Add rm_special to crontab module
- **PR** #30106: (*techhat*) Ensure last dir
- **PR** #30101: (*gtmanfred*) fix bug where nova driver exits with no adminPass
- **PR** #30090: (*techhat*) Add argument to isdir()
- **PR** #30094: (*rallytime*) Fix doc formatting for cloud.create example in module.py state
- **PR** #30095: (*rallytime*) Add the list_nodes_select function to linode driver
- **PR** #30082: (*abednarik*) Fixed saltversioninfo grain return
- **PR** #30084: (*rallytime*) Back-port #29987 to 2015.8
- **PR** #30071: (*rallytime*) Merge branch `2015.5' into `2015.8'
- **PR** #30067: (*ryan-lane*) Pass in kwargs to boto_secgroup.convert_to_group_ids explicitly

- **PR** #30069: (*techhat*) Ensure that pki_dir exists
- **PR** #30064: (*rallytime*) Add Syndic documentation to miscellaneous Salt Cloud config options
- **PR** #30049: (*rallytime*) Add some more unit tests for the vsphere execution module
- **PR** #30060: (*rallytime*) Back-port #27104 to 2015.8
- **PR** #30048: (*jacobhammons*) Remove internal APIs from rest_cherrypy docs.
- **PR** #30043: (*rallytime*) Be explicit about importing from salt.utils.jinja to avoid circular imports
- **PR** #30038: (*rallytime*) Back-port #30017 to 2015.8
- **PR** #30036: (*rallytime*) Back-port #29995 to 2015.8
- **PR** #30035: (*rallytime*) Back-port #29895 to 2015.8
- **PR** #30034: (*rallytime*) Back-port #29893 to 2015.8
- **PR** #30033: (*rallytime*) Back-port #29876 to 2015.8
- **PR** #30029: (*terminalmage*) git.latest: Fix handling of nonexistent branches
- **PR** #30016: (*anlutro*) Properly normalize locales in locale.gen_locale
- **PR** #30015: (*anlutro*) locale module: don't escape the slash in \n
- **PR** #30022: (*gqgunhed*) Two minor typos fixed
- **PR** #30026: (*anlutro*) states.at: fix wrong variable being used
- **PR** #29966: (*multani*) Fix bigip state/module documentation + serializers documentation
- **PR** #29904: (*twangboy*) Improvements to osx packaging scripts
- **PR** #29950: (*multani*) boto_iam: fix deletion of IAM users when using delete_keys=true
- **PR** #29937: (*multani*) Fix states.boto_iam group users
- **PR** #29934: (*multani*) Fix state.boto_iam virtual name
- **PR** #29943: (*cachedout*) Check args correctly in boto_rds
- **PR** #29924: (*gqgunhed*) fixed: uptime now working on non-US Windows
- **PR** #29883: (*serge-p*) fix for nfs mounts in _active_mounts_openbsd()
- **PR** #29894: (*techhat*) Support Saltfile in SPM
- **PR** #29856: (*rallytime*) Added some initial unit tests for the salt.modules.vsphere.py file
- **PR** #29855: (*rallytime*) Back-port #29740 to 2015.8
- **PR** #29890: (*multani*) Various documentation fixes
- **PR** #29850: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #29811: (*anlutro*) influxdb: add retention policy module functions
- **PR** #29814: (*basepi*) [2015.8][Windows] Fix multi-master on windows
- **PR** #29819: (*rallytime*) Add esxi module and state to docs build
- **PR** #29832: (*jleimbach*) Fixed typo in order to use the keyboard module for RHEL without systemd
- **PR** #29803: (*rallytime*) Add vSphere module to doc ref module tree
- **PR** #29767: (*abednarik*) Hosts file update in mod_hostname.
- **PR** #29772: (*terminalmage*) pygit2: skip submodules when traversing tree

- **PR** #29765: (*gtmanfred*) allow nova driver to be boot from volume
- **PR** #29773: (*l2ol33rt*) Append missing wget in debian installation guide
- **PR** #29800: (*rallytime*) Back-port #29769 to 2015.8
- **PR** #29775: (*paulnivin*) Change listen requisite resolution from name to ID declaration
- **PR** #29754: (*rallytime*) Back-port #29719 to 2015.8
- **PR** #29713: (*The-Loeki*) Pillar-based cloud providers still forcing use of deprecated `provider'
- **PR** #29729: (*rallytime*) Further clarifications on ``unless'' and ``onlyif'' requisites.
- **PR** #29737: (*akissa*) fix pillar sqlite3 documentation examples
- **PR** #29743: (*akissa*) fix pillar sqlite not honouring config options
- **PR** #29723: (*rallytime*) Clarify db_user and db_password kwargs for postgres_user.present state function
- **PR** #29722: (*rallytime*) Link ``stateful'' kwargs to definition of what ``stateful'' means for cmd state.
- **PR** #29724: (*rallytime*) Add examples of using multiple matching levels to Pillar docs
- **PR** #29726: (*cachedout*) Disable some boto tests per resolution of moto issue
- **PR** #29708: (*lagesag*) Fix test=True for file.directory with recurse ignore_files/ignore_dirs.
- **PR** #29642: (*cachedout*) Correctly restart deamonized minions on failure
- **PR** #29599: (*cachedout*) Clean up minion shutdown
- **PR** #29675: (*clinta*) allow returning all refs
- **PR** #29683: (*rallytime*) Catch more specific error to pass the error message through elegantly.
- **PR** #29687: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #29681: (*clinta*) fix bare/mirror in git.latest
- **PR** #29644: (*rallytime*) Fixed a couple more ESXi proxy minion bugs
- **PR** #29645: (*rallytime*) Back-port #29558 to 2015.8
- **PR** #29632: (*jfindlay*) reduce severity of tls module __virtual__ logging
- **PR** #29606: (*abednarik*) Fixed duplicate mtu entry in RedHat 7 network configuration.
- **PR** #29613: (*rallytime*) Various ESXi Proxy Minion Bug Fixes
- **PR** #29628: (*DmitryKuzmenko*) Don't create io_loop before fork
- **PR** #29609: (*basepi*) [2015.8][salt-ssh] Add ability to set salt-ssh command umask in roster
- **PR** #29603: (*basepi*) Fix orchestration failure-checking
- **PR** #29597: (*terminalmage*) dockerng: Prevent exception when API response contains empty dictionary
- **PR** #29596: (*rallytime*) Back-port #29587 to 2015.8
- **PR** #29588: (*rallytime*) Added ESXi Proxy Minion Tutorial
- **PR** #29572: (*gtmanfred*) [nova] use old discover_extensions if available
- **PR** #29545: (*terminalmage*) git.latest: init submodules if not yet initialized
- **PR** #29548: (*rallytime*) Back-port #29449 to 2015.8
- **PR** #29547: (*rallytime*) Refactored ESXCLI-based functions to accept a list of esxi_hosts
- **PR** #29563: (*anlutro*) Fix a call to deprecated method in python-influxdb

- **PR** #29565: (*bdrung*) Fix typos and missing release note
- **PR** #29540: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #29499: (*rallytime*) Initial commit of ESXi Proxy Minion
- **PR** #29526: (*jfindlay*) 2015.8.2 notes: add note about not being released
- **PR** #29531: (*jfindlay*) grains.core: handle undefined variable
- **PR** #29538: (*basepi*) [2015.8] [salt-ssh] Remove umask around actual execution for salt-ssh
- **PR** #29505: (*rallytime*) Update boto_rds state docs to include funky yaml syntax for ``tags'' option.
- **PR** #29513: (*bdrung*) Drop obsolete syslog.target from systemd services
- **PR** #29500: (*rallytime*) Back-port #29467 to 2015.8
- **PR** #29463: (*abednarik*) Add **kwargs to debconf.set.
- **PR** #29399: (*jfindlay*) modules.status: add human_readable option to uptime
- **PR** #29433: (*cro*) Files for building .pkg files for MacOS X
- **PR** #29455: (*jfindlay*) modules.nova.__init__: do not return `None`
- **PR** #29454: (*jfindlay*) rh_service module __virtual__ return error messages
- **PR** #29476: (*tbaker57*) Doc fix - route_table_present needs subnet_names (not subnets) as a key
- **PR** #29487: (*rallytime*) Back-port #29450 to 2015.8
- **PR** #29441: (*rallytime*) Make sure docs line up with blade_idrac function specs
- **PR** #29440: (*rallytime*) Back-port #28925 to 2015.8
- **PR** #29435: (*galet*) Grains return wrong OS version and other OS related values for Oracle Linux
- **PR** #29430: (*rall0r*) Fix host.present state limitation
- **PR** #29417: (*jacobhammons*) Repo install updates
- **PR** #29402: (*techhat*) Add rate limiting to linode
- **PR** #29400: (*twangboy*) Fix #19332
- **PR** #29398: (*cachedout*) Lint 29288
- **PR** #29331: (*DmitryKuzmenko*) Bugfix - #29116 raet dns error
- **PR** #29390: (*jacobhammons*) updated version numbers in documentation
- **PR** #29381: (*nmadhok*) No need to deepcopy since six.iterkeys() creates a copy
- **PR** #29349: (*cro*) Fix mis-setting chassis names
- **PR** #29334: (*rallytime*) Back-port #29237 to 2015.8
- **PR** #29300: (*ticosax*) [dockerng] Add support for volume management in dockerng
- **PR** #29218: (*clan*) check service enable state in test mode
- **PR** #29315: (*jfindlay*) dev tutorial doc: fix markup errors
- **PR** #29317: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #29240: (*clan*) handle acl_type [[d]efault:][user|group|mask|other]
- **PR** #29305: (*lorengordon*) Add `file' as a source_hash proto
- **PR** #29272: (*jfindlay*) win_status module: handle 12 hour time in uptime

- **PR** #29289: (*terminalmage*) file.managed: Allow local file sources to use source_hash
- **PR** #29264: (*anlutro*) Prevent ssh_auth.absent from running when test=True
- **PR** #29277: (*terminalmage*) Update git_pillar runner to support new git ext_pillar config schema
- **PR** #29283: (*cachedout*) Single-quotes and use format
- **PR** #29139: (*thomaso-mirodin*) [salt-ssh] Add a range roster and range targeting options for the flat roster
- **PR** #29282: (*cachedout*) dev docs: add development tutorial
- **PR** #28994: (*timcharper*) add support to s3 for aws role assumption
- **PR** #29278: (*techhat*) Add verify_log to SPM
- **PR** #29067: (*jacksontj*) Fix infinite recursion in state compiler for prereq of SLSs
- **PR** #29207: (*jfindlay*) do not shadow ret function argument
- **PR** #29215: (*rallytime*) Back-port #29192 to 2015.8
- **PR** #29217: (*clan*) show duration only if state_output_profile is False
- **PR** #29221: (*ticosax*) [dokcerng] Docu network mode
- **PR** #29269: (*jfindlay*) win_status module: fix function names in docs
- **PR** #29213: (*rallytime*) Move _wait_for_task func from vmware cloud to vmware utils
- **PR** #29271: (*techhat*) Pass full path for digest (SPM)
- **PR** #29244: (*isbm*) List products consistently across all SLES systems
- **PR** #29255: (*garethgreenaway*) fixes to consul module
- **PR** #29208: (*whytewolf*) Glance more profile errors
- **PR** #29200: (*jfindlay*) mount state: unmount by device is optional
- **PR** #29205: (*trevor-h*) Fixes #29187 - using winrm on EC2
- **PR** #29170: (*cachedout*) Migrate pydsl tests to integration test suite
- **PR** #29198: (*jfindlay*) rh_ip module: only set the mtu once
- **PR** #29135: (*jfindlay*) ssh_known_hosts.present state: catch not found exc
- **PR** #29196: (*s0undt3ch*) We need novaclient imported to compare versions
- **PR** #29059: (*terminalmage*) Work around upstream pygit2 bug
- **PR** #29112: (*eliasp*) Prevent backtrace (KeyError) in *ssh_known_hosts.present* state
- **PR** #29178: (*whytewolf*) Profile not being passed to keystone.endpoint_get in _auth. so if a p…

### 18.2.18 Salt 2015.8.5 Release Notes

**About this Release**

Salt 2015.8.5 is identical to the 2015.8.4 release with the addition of a fix for issue 30820, fixed by **PR** #30833. For convenience, the content from the 2015.8.4 release notes is included below.

### Known Issue in `boto_*` execution modules

This release contains an issue that causes the `boto_*` execution modules to display a `__salt__ not defined` error (issue 30300). This issue will be fixed in an upcoming release, but can be manually resolved by completing the following:

1. Download the `boto_*` execution modules that you would like to update from the 2015.8 branch of Salt. A complete list of affected modules with the specific changes is available in **PR** #30867.

   A simple way to get the updated modules is to download a zip file of the 2015.8 branch from GitHub. The updated modules are in the `salt\modules` directory.

2. Copy the `boto_*` modules to the `\srv\salt\_modules` directory on your Salt master.

3. Run the following command to sync these modules to all Salt minions:

```
salt '*' saltutil.sync_modules
```

---

**2015.8.4 Release Notes**

### Security Fix

CVE-2016-1866: Improper handling of clear messages on the minion, which could result in executing commands not sent by the master.

This issue affects only the 2015.8.x releases of Salt. In order for an attacker to use this attack vector, they would have to execute a successful attack on an existing TCP connection between minion and master on the pub port. It does not allow an external attacker to obtain the shared secret or decrypt any encrypted traffic between minion and master. Thank you to Sebastian Krahmer <krahmer@suse.com> for bringing this issue to our attention.

We recommend everyone upgrade to 2015.8.4 as soon as possible.

### Core Changes

- **PR** #28994: *timcharper* Salt S3 module has learned how to assume IAM roles
- Added option `mock=True` for *`state.sls`* and *`state.highstate`*. This allows the salt state compiler to process sls data in a state run without actually calling the state functions, thus providing feedback on the validity of the arguments used for the functions beyond the preprocessing validation provided by `state.show_sls` (issue 30118 and issue 30189).

```
salt '*' state.sls core,edit.vim mock=True
salt '*' state.highstate mock=True
salt '*' state.apply edit.vim mock=True
```

### Changes for v2015.8.3..v2015.8.4

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2016-01-25T17:48:35Z*

Total Merges: **320**

Changes:

- **PR** #30613: (*basepi*) Fix minion/syndic clearfuncs

- **PR** #30609: (*seanjnkns*) Fix documentation for pillar_merge_lists which default is False, not ...
- **PR** #30584: (*julianbrost*) file.line state: add missing colon in docstring
- **PR** #30589: (*terminalmage*) Merge 2015.5 into 2015.8
- **PR** #30599: (*multani*) Documentation formatting fixes
- **PR** #30554: (*rallytime*) Make the salt-cloud actions output more verbose and helpful
- **PR** #30549: (*techhat*) Salt Virt cleanup
- **PR** #30553: (*techhat*) AWS: Support 17-character IDs
- **PR** #30532: (*whiteinge*) Add execution module for working in sls files
- **PR** #30529: (*terminalmage*) Merge 2015.5 into 2015.8
- **PR** #30526: (*twangboy*) Added FlushKey to make sure it's changes are saved to disk
- **PR** #30521: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #30485: (*jtand*) Updated pip_state to work with pip 8.0 on 2015.8
- **PR** #30494: (*isbm*) Zypper: info_installed — `errors' flag change to type `boolean'
- **PR** #30506: (*jacksontj*) Properly remove newlines after reading the file
- **PR** #30508: (*rallytime*) Fix Linode driver cloning functionality
- **PR** #30522: (*terminalmage*) Update git.list_worktree tests to reflect new return data
- **PR** #30483: (*borgstrom*) Pyobjects recursive import support (for 2015.8)
- **PR** #30491: (*jacksontj*) Add multi-IP support to network state
- **PR** #30496: (*anlutro*) Fix KeyError when adding ignored pillars
- **PR** #30359: (*kingsquirrel152*) Removes suspected copy/paste error for zmq_filtering functionailty
- **PR** #30448: (*cournape*) Fix osx scripts location
- **PR** #30457: (*rallytime*) Remove fsutils references from modules list
- **PR** #30453: (*rallytime*) Make sure private AND public IPs are listed for Linode driver
- **PR** #30458: (*rallytime*) Back-port #30062 to 2015.8
- **PR** #30468: (*timcharper*) make note of s3 role assumption in upcoming changelog
- **PR** #30470: (*whiteinge*) Add example of the match_dict format to accept_dict wheel function
- **PR** #30450: (*gtmanfred*) fix extension loading in novaclient
- **PR** #30212: (*abednarik*) Fix incorrect file permissions in file.line
- **PR** #29947: (*jfindlay*) fileclient: decode file list from master
- **PR** #30363: (*terminalmage*) Use native ``list'' subcommand to list git worktrees
- **PR** #30445: (*jtand*) Boto uses False for is_default instead of None
- **PR** #30406: (*frioux*) Add an example of how to use file.managed/check_cmd
- **PR** #30424: (*isbm*) Check if byte strings are properly encoded in UTF-8
- **PR** #30405: (*jtand*) Updated glusterfs.py for python2.6 compatibility.
- **PR** #30396: (*pass-by-value*) Remove hardcoded val
- **PR** #30391: (*jtand*) Added else statements

- **PR** #30375: (*rallytime*) Wrap formatted log statements with six.u() in cloud/__init__.py
- **PR** #30384: (*isbm*) Bugfix: info_available does not work correctly on SLE 11 series
- **PR** #30376: (*pritambaral*) Fix FLO_DIR path in 2015.8
- **PR** #30389: (*jtand*) Older versions of ipset don't support comments
- **PR** #30373: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #30372: (*jacobhammons*) Updated man pages for 2015.8.4, updated copyright to 2016
- **PR** #30370: (*rallytime*) Remove incomplete function
- **PR** #30366: (*rallytime*) Back-port #28702 to 2015.8
- **PR** #30361: (*cro*) Flip the sense of the test for proxymodule imports, add more fns for esxi proxy
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- **PR** #30221: (*mbarrien*) No rolcatupdate for user_exist in Postgres>=9.5 `#26845`_
- **PR** #30358: (*terminalmage*) Add libgit2 version to versions-report
- **PR** #30346: (*pass-by-value*) Prevent orphaned volumes
- **PR** #30349: (*rallytime*) Back-port #30347 to 2015.8
- **PR** #30354: (*anlutro*) Make sure all ignore_missing SLSes are caught
- **PR** #30356: (*nmadhok*) Adding code author
- **PR** #30340: (*jtand*) Updated seed_test.py for changes made to seed module
- **PR** #30339: (*jfindlay*) Backport #26511
- **PR** #30343: (*rallytime*) Fix 2015.8 from incomplete back-port
- **PR** #30342: (*eliasp*) Correct whitespace placement in error message
- **PR** #30308: (*rallytime*) Back-port #30257 to 2015.8
- **PR** #30187: (*rallytime*) Back-port #27606 to 2015.8
- **PR** #30223: (*serge-p*) adding support for DragonFly BSD
- **PR** #30238: (*rallytime*) Reinit crypto before calling RSA.generate when generating keys.
- **PR** #30246: (*dmacvicar*) Add missing return data to scheduled jobs (`#24237`_)
- **PR** #30292: (*thegoodduke*) ipset: fix test=true & add comment for every entry
- **PR** #30275: (*abednarik*) Add permanent argument in firewalld.
- **PR** #30328: (*cachedout*) Fix file test
- **PR** #30310: (*pass-by-value*) Empty bucket fix
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- **PR** #30278: (*nmadhok*) If datacenter is specified in the config, then look for managed objects under it
- **PR** #30305: (*jacobhammons*) Changed examples to use the ``example.com'' domain instead of ``mycompan...
- **PR** #30249: (*mpreziuso*) Fixes performance and timeout issues on win_pkg.install
- **PR** #30217: (*pass-by-value*) Make sure cloud actions can be called via salt run

- **PR** #30268: (*terminalmage*) Optimize file_tree ext_pillar and update file.managed to allow for binary contents
- **PR** #30245: (*rallytime*) Boto secgroup/iam_role: Add note stating us-east-1 is default region
- **PR** #30299: (*rallytime*) ESXi Proxy minions states are located at salt.states.esxi, not vsphere.
- **PR** #30202: (*opdude*) Fixed the periodic call to beacons
- **PR** #30303: (*jacobhammons*) Changed notes to indicate that functions are matched using regular ex…
- **PR** #30284: (*terminalmage*) salt.utils.gitfs: Fix Dulwich env detection and submodule handling
- **PR** #30280: (*jfindlay*) add state mocking to release notes
- **PR** #30273: (*rallytime*) Back-port #30121 to 2015.8
- **PR** #30301: (*cachedout*) Accept whatever comes into hightstate mock for state tests
- **PR** #30282: (*cachedout*) Fix file.append logic
- **PR** #30289: (*cro*) Fix problems with targeting proxies by grains
- **PR** #30293: (*cro*) Ensure we don't log stuff we shouldn't
- **PR** #30279: (*cachedout*) Allow modules to be packed into boto utils
- **PR** #30186: (*rallytime*) Update CLI Examples in boto_ec2 module to reflect correct arg/kwarg positioning
- **PR** #30156: (*abednarik*) Add option in file.append to ignore_whitespace.
- **PR** #30189: (*rallytime*) Back-port #30185 to 2015.8
- **PR** #30215: (*jacobhammons*) Assorted doc bug fixes
- **PR** #30206: (*cachedout*) Revert ``Fix incorrect file permissions in file.line''
- **PR** #30190: (*jacobhammons*) Updated doc site banners
- **PR** #30180: (*jfindlay*) modules.x509._dec2hex: add fmt index for 2.6 compat
- **PR** #30179: (*terminalmage*) Backport #26962 to 2015.8 branch
- **PR** #29693: (*abednarik*) Handle missing source file in ssh_auth.
- **PR** #30155: (*rallytime*) Update boto_secgroup and boto_iam_role docs to only use region OR profile
- **PR** #30158: (*rallytime*) Move _option(value) calls to __salt__['config.option'] in boto utils
- **PR** #30160: (*dmurphy18*) Fix parsing disk usage for line with no number and AIX values in Kilos
- **PR** #30162: (*rallytime*) Update list_present and append grains state function docs to be more clear.
- **PR** #30163: (*rallytime*) Add warning about using ``='' in file.line function
- **PR** #30164: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #30168: (*abednarik*) Fix incorrect file permissions in file.line
- **PR** #30154: (*Oro*) Fix file serialize on windows
- **PR** #30144: (*rallytime*) Added generic ESXCLI command ability to ESXi Proxy Minion
- **PR** #30142: (*terminalmage*) Fix dockerng.push, and allow for multiple images
- **PR** #30075: (*joejulian*) Convert glusterfs module to use xml
- **PR** #30129: (*optix2000*) Clean up _uptodate() in git state
- **PR** #30139: (*rallytime*) Back-port #29589 to 2015.8
- **PR** #30124: (*abednarik*) Update regex to detect ip alias in OpenBSD.

- **PR** #30133: (*stanislavb*) Fix typo in gpgkey URL
- **PR** #30126: (*stanislavb*) Log S3 API error message
- **PR** #30128: (*oeuftete*) Log retryable transport errors as warnings
- **PR** #30096: (*cachedout*) Add rm_special to crontab module
- **PR** #30106: (*techhat*) Ensure last dir
- **PR** #30101: (*gtmanfred*) fix bug where nova driver exits with no adminPass
- **PR** #30090: (*techhat*) Add argument to isdir()
- **PR** #30094: (*rallytime*) Fix doc formatting for cloud.create example in module.py state
- **PR** #30095: (*rallytime*) Add the list_nodes_select function to linode driver
- **PR** #30082: (*abednarik*) Fixed saltversioninfo grain return
- **PR** #30084: (*rallytime*) Back-port #29987 to 2015.8
- **PR** #30071: (*rallytime*) Merge branch `2015.5' into `2015.8'
- **PR** #30067: (*ryan-lane*) Pass in kwargs to boto_secgroup.convert_to_group_ids explicitly
- **PR** #30069: (*techhat*) Ensure that pki_dir exists
- **PR** #30064: (*rallytime*) Add Syndic documentation to miscellaneous Salt Cloud config options
- **PR** #30049: (*rallytime*) Add some more unit tests for the vsphere execution module
- **PR** #30060: (*rallytime*) Back-port #27104 to 2015.8
- **PR** #30048: (*jacobhammons*) Remove internal APIs from rest_cherrypy docs.
- **PR** #30043: (*rallytime*) Be explicit about importing from salt.utils.jinja to avoid circular imports
- **PR** #30038: (*rallytime*) Back-port #30017 to 2015.8
- **PR** #30036: (*rallytime*) Back-port #29995 to 2015.8
- **PR** #30035: (*rallytime*) Back-port #29895 to 2015.8
- **PR** #30034: (*rallytime*) Back-port #29893 to 2015.8
- **PR** #30033: (*rallytime*) Back-port #29876 to 2015.8
- **PR** #30029: (*terminalmage*) git.latest: Fix handling of nonexistent branches
- **PR** #30016: (*anlutro*) Properly normalize locales in locale.gen_locale
- **PR** #30015: (*anlutro*) locale module: don't escape the slash in \n
- **PR** #30022: (*gqgunhed*) Two minor typos fixed
- **PR** #30026: (*anlutro*) states.at: fix wrong variable being used
- **PR** #29966: (*multani*) Fix bigip state/module documentation + serializers documentation
- **PR** #29904: (*twangboy*) Improvements to osx packaging scripts
- **PR** #29950: (*multani*) boto_iam: fix deletion of IAM users when using delete_keys=true
- **PR** #29937: (*multani*) Fix states.boto_iam group users
- **PR** #29934: (*multani*) Fix state.boto_iam virtual name
- **PR** #29943: (*cachedout*) Check args correctly in boto_rds
- **PR** #29924: (*gqgunhed*) fixed: uptime now working on non-US Windows

- **PR** #29883: (*serge-p*) fix for nfs mounts in _active_mounts_openbsd()
- **PR** #29894: (*techhat*) Support Saltfile in SPM
- **PR** #29856: (*rallytime*) Added some initial unit tests for the salt.modules.vsphere.py file
- **PR** #29855: (*rallytime*) Back-port #29740 to 2015.8
- **PR** #29890: (*multani*) Various documentation fixes
- **PR** #29850: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #29811: (*anlutro*) influxdb: add retention policy module functions
- **PR** #29814: (*basepi*) [2015.8][Windows] Fix multi-master on windows
- **PR** #29819: (*rallytime*) Add esxi module and state to docs build
- **PR** #29832: (*jleimbach*) Fixed typo in order to use the keyboard module for RHEL without systemd
- **PR** #29803: (*rallytime*) Add vSphere module to doc ref module tree
- **PR** #29767: (*abednarik*) Hosts file update in mod_hostname.
- **PR** #29772: (*terminalmage*) pygit2: skip submodules when traversing tree
- **PR** #29765: (*gtmanfred*) allow nova driver to be boot from volume
- **PR** #29773: (*l2ol33rt*) Append missing wget in debian installation guide
- **PR** #29800: (*rallytime*) Back-port #29769 to 2015.8
- **PR** #29775: (*paulnivin*) Change listen requisite resolution from name to ID declaration
- **PR** #29754: (*rallytime*) Back-port #29719 to 2015.8
- **PR** #29713: (*The-Loeki*) Pillar-based cloud providers still forcing use of deprecated `provider'
- **PR** #29729: (*rallytime*) Further clarifications on ``unless'' and ``onlyif'' requisites.
- **PR** #29737: (*akissa*) fix pillar sqlite3 documentation examples
- **PR** #29743: (*akissa*) fix pillar sqlite not honouring config options
- **PR** #29723: (*rallytime*) Clarify db_user and db_password kwargs for postgres_user.present state function
- **PR** #29722: (*rallytime*) Link ``stateful'' kwargs to definition of what ``stateful'' means for cmd state.
- **PR** #29724: (*rallytime*) Add examples of using multiple matching levels to Pillar docs
- **PR** #29726: (*cachedout*) Disable some boto tests per resolution of moto issue
- **PR** #29708: (*lagesag*) Fix test=True for file.directory with recurse ignore_files/ignore_dirs.
- **PR** #29642: (*cachedout*) Correctly restart deamonized minions on failure
- **PR** #29599: (*cachedout*) Clean up minion shutdown
- **PR** #29675: (*clinta*) allow returning all refs
- **PR** #29683: (*rallytime*) Catch more specific error to pass the error message through elegantly.
- **PR** #29687: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #29681: (*clinta*) fix bare/mirror in git.latest
- **PR** #29644: (*rallytime*) Fixed a couple more ESXi proxy minion bugs
- **PR** #29645: (*rallytime*) Back-port #29558 to 2015.8
- **PR** #29632: (*jfindlay*) reduce severity of tls module __virtual__ logging

- **PR** #29606: (*abednarik*) Fixed duplicate mtu entry in RedHat 7 network configuration.
- **PR** #29613: (*rallytime*) Various ESXi Proxy Minion Bug Fixes
- **PR** #29628: (*DmitryKuzmenko*) Don't create io_loop before fork
- **PR** #29609: (*basepi*) [2015.8][salt-ssh] Add ability to set salt-ssh command umask in roster
- **PR** #29603: (*basepi*) Fix orchestration failure-checking
- **PR** #29597: (*terminalmage*) dockerng: Prevent exception when API response contains empty dictionary
- **PR** #29596: (*rallytime*) Back-port #29587 to 2015.8
- **PR** #29588: (*rallytime*) Added ESXi Proxy Minion Tutorial
- **PR** #29572: (*gtmanfred*) [nova] use old discover_extensions if available
- **PR** #29545: (*terminalmage*) git.latest: init submodules if not yet initialized
- **PR** #29548: (*rallytime*) Back-port #29449 to 2015.8
- **PR** #29547: (*rallytime*) Refactored ESXCLI-based functions to accept a list of esxi_hosts
- **PR** #29563: (*anlutro*) Fix a call to deprecated method in python-influxdb
- **PR** #29565: (*bdrung*) Fix typos and missing release note
- **PR** #29540: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #29499: (*rallytime*) Initial commit of ESXi Proxy Minion
- **PR** #29526: (*jfindlay*) 2015.8.2 notes: add note about not being released
- **PR** #29531: (*jfindlay*) grains.core: handle undefined variable
- **PR** #29538: (*basepi*) [2015.8] [salt-ssh] Remove umask around actual execution for salt-ssh
- **PR** #29505: (*rallytime*) Update boto_rds state docs to include funky yaml syntax for ``tags'' option.
- **PR** #29513: (*bdrung*) Drop obsolete syslog.target from systemd services
- **PR** #29500: (*rallytime*) Back-port #29467 to 2015.8
- **PR** #29463: (*abednarik*) Add **kwargs to debconf.set.
- **PR** #29399: (*jfindlay*) modules.status: add human_readable option to uptime
- **PR** #29433: (*cro*) Files for building .pkg files for MacOS X
- **PR** #29455: (*jfindlay*) modules.nova.__init__: do not return `None`
- **PR** #29454: (*jfindlay*) rh_service module __virtual__ return error messages
- **PR** #29476: (*tbaker57*) Doc fix - route_table_present needs subnet_names (not subnets) as a key
- **PR** #29487: (*rallytime*) Back-port #29450 to 2015.8
- **PR** #29441: (*rallytime*) Make sure docs line up with blade_idrac function specs
- **PR** #29440: (*rallytime*) Back-port #28925 to 2015.8
- **PR** #29435: (*galet*) Grains return wrong OS version and other OS related values for Oracle Linux
- **PR** #29430: (*rall0r*) Fix host.present state limitation
- **PR** #29417: (*jacobhammons*) Repo install updates
- **PR** #29402: (*techhat*) Add rate limiting to linode
- **PR** #29400: (*twangboy*) Fix #19332

- **PR** #29398: (*cachedout*) Lint 29288
- **PR** #29331: (*DmitryKuzmenko*) Bugfix - #29116 raet dns error
- **PR** #29390: (*jacobhammons*) updated version numbers in documentation
- **PR** #29381: (*nmadhok*) No need to deepcopy since six.iterkeys() creates a copy
- **PR** #29349: (*cro*) Fix mis-setting chassis names
- **PR** #29334: (*rallytime*) Back-port #29237 to 2015.8
- **PR** #29300: (*ticosax*) [dockerng] Add support for volume management in dockerng
- **PR** #29218: (*clan*) check service enable state in test mode
- **PR** #29315: (*jfindlay*) dev tutorial doc: fix markup errors
- **PR** #29317: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #29240: (*clan*) handle acl_type [[d]efault:][user|group|mask|other]
- **PR** #29305: (*lorengordon*) Add `file' as a source_hash proto
- **PR** #29272: (*jfindlay*) win_status module: handle 12 hour time in uptime
- **PR** #29289: (*terminalmage*) file.managed: Allow local file sources to use source_hash
- **PR** #29264: (*anlutro*) Prevent ssh_auth.absent from running when test=True
- **PR** #29277: (*terminalmage*) Update git_pillar runner to support new git ext_pillar config schema
- **PR** #29283: (*cachedout*) Single-quotes and use format
- **PR** #29139: (*thomaso-mirodin*) [salt-ssh] Add a range roster and range targeting options for the flat roster
- **PR** #29282: (*cachedout*) dev docs: add development tutorial
- **PR** #28994: (*timcharper*) add support to s3 for aws role assumption
- **PR** #29278: (*techhat*) Add verify_log to SPM
- **PR** #29067: (*jacksontj*) Fix infinite recursion in state compiler for prereq of SLSs
- **PR** #29207: (*jfindlay*) do not shadow ret function argument
- **PR** #29215: (*rallytime*) Back-port #29192 to 2015.8
- **PR** #29217: (*clan*) show duration only if state_output_profile is False
- **PR** #29221: (*ticosax*) [dokcerng] Docu network mode
- **PR** #29269: (*jfindlay*) win_status module: fix function names in docs
- **PR** #29213: (*rallytime*) Move _wait_for_task func from vmware cloud to vmware utils
- **PR** #29271: (*techhat*) Pass full path for digest (SPM)
- **PR** #29244: (*isbm*) List products consistently across all SLES systems
- **PR** #29255: (*garethgreenaway*) fixes to consul module
- **PR** #29208: (*whytewolf*) Glance more profile errors
- **PR** #29200: (*jfindlay*) mount state: unmount by device is optional
- **PR** #29205: (*trevor-h*) Fixes #29187 - using winrm on EC2
- **PR** #29170: (*cachedout*) Migrate pydsl tests to integration test suite
- **PR** #29198: (*jfindlay*) rh_ip module: only set the mtu once

- **PR** #29135: (*jfindlay*) ssh_known_hosts.present state: catch not found exc
- **PR** #29196: (*s0undt3ch*) We need novaclient imported to compare versions
- **PR** #29059: (*terminalmage*) Work around upstream pygit2 bug
- **PR** #29112: (*eliasp*) Prevent backtrace (KeyError) in *ssh_known_hosts.present* state
- **PR** #29178: (*whytewolf*) Profile not being passed to keystone.endpoint_get in _auth. so if a p…

### 18.2.19 Salt 2015.8.7 Release Notes

**Note:** Salt 2015.8.4, 2015.8.5, and 2015.8.7 were all released within a short period due to regressions found soon after the releases of 2015.8.4 and 2015.8.5. These release notes contain all of the changes since 2015.8.3 to make it easier to see everything that has changed recently.

#### Changes for v2015.8.4..v2015.8.7

For *pkg.installed* states, on Linux distributions which use yum/dnf, packages which have a non-zero epoch in the version number now require this epoch to be included when specifying an exact version for a package. For example:

```
vim-enhanced:
  pkg.installed:
    - version: 2:7.4.160-1.el7
```

The *pkg.latest_version* and *pkg.list_repo_pkgs* functions can be used to get the correct version string to use, as they will now contain the epoch when it is non-zero.

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2016-02-11T22:13:51Z*

Statistics:

- Total Merges: **2**
- Total Issue references: **0**
- Total PR references: **3**

Changes:

- **PR** #31111: (*jtand*) Fixes failing npm test on arch. @ *2016-02-10T21:51:47Z*
  - 8d84c63 Merge pull request #31111 from jtand/8_4_npm_fix
  - b0a48e5 Fixes failing npm test on arch.
  - 733c6ab Some 3rd-party modules (e.g. gnupg) define custom log levels that emit at INFO level and above. This patch sets the color data lookups to default to TextFormat(`reset') rather than producing a stack trace every time a log message is generated from an affected module.
  - 3f71fd0 Revert #30217
    - **PR** #30217: (*pass-by-value*) Make sure cloud actions can be called via salt run
- **PR** #31092: (*terminalmage*) Apply PR #31031 to 2015.8.4.follow_up @ *2016-02-10T20:54:37Z*

- 5a6a93e Merge pull request #31092 from terminalmage/issue31014-2015.8.4.follow_up * 2767a4e Don't handle epoch specially for dnf
  - e5dfcc0 More efficient way to add the epoch before version number
  - ed74627 include possible epoch in version for rpm
- 6c6b66a Comment multiprocessing line in minion config
- 1f7dfef Set multiprocessing to true in config.py
- 433c645 Fix remove placeholder files
- 7103756 Remove placeholder files
- 20b381f Set overwrite to off
- ca50f56 Fix boto_secgroup
- fd571d2 Fix boto test failures
- cfb6588 Fix regression when contents_pillar/contents_grains is a list.
- 881d866 utils.aws: use time lib to conver to epoch seconds
- 3141292 The call to cp.get_url needs the saltenv, if you're using environments other than base, it will fail.
- a869401 Fix regression in git_pillar when multiple remotes are configured
- 2243f25 Properly set the default value for pillar_merge_lists
- c7472ff Lint
- d868711 Fix failing boto_vpc module unit tests
- ed09516 Fix failing state module tests
- fd0e940 Pylint fix
- bc780a7 Don't use pack=pack. Just pass in pack=__salt__ always.
- 1ae022d Pass in `pack' variable to utils.boto.assign_funcs function from ALL boto modules.
- 1efaff1 Remove bad symlinks in osx pkg dirs
- c7db435 Fix regression in scanning for state with `name' param

---

### Security Fix

CVE-2016-1866: Improper handling of clear messages on the minion, which could result in executing commands not sent by the master.

This issue affects only the 2015.8.x releases of Salt. In order for an attacker to use this attack vector, they would have to execute a successful attack on an existing TCP connection between minion and master on the pub port. It does not allow an external attacker to obtain the shared secret or decrypt any encrypted traffic between minion and master. Thank you to Sebastian Krahmer <krahmer@suse.com> for bringing this issue to our attention.

We recommend everyone upgrade to 2015.8.4 as soon as possible.

### Core Changes

- **PR** #28994: *timcharper* Salt S3 module has learned how to assume IAM roles
- Added option `mock=True` for *`state.sls`* and *`state.highstate`*. This allows the salt state compiler to process sls data in a state run without actually calling the state functions, thus providing feedback on the validity of the arguments used for the functions beyond the preprocessing validation provided by `state.show_sls` (issue 30118 and issue 30189).

```
salt '*' state.sls core,edit.vim mock=True
salt '*' state.highstate mock=True
salt '*' state.apply edit.vim mock=True
```

### Changes for v2015.8.3..v2015.8.4

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2016-01-25T17:48:35Z*

Total Merges: **320**

Changes:

- **PR** #30613: (*basepi*) Fix minion/syndic clearfuncs
- **PR** #30609: (*seanjnkns*) Fix documentation for pillar_merge_lists which default is False, not ...
- **PR** #30584: (*julianbrost*) file.line state: add missing colon in docstring
- **PR** #30589: (*terminalmage*) Merge 2015.5 into 2015.8
- **PR** #30599: (*multani*) Documentation formatting fixes
- **PR** #30554: (*rallytime*) Make the salt-cloud actions output more verbose and helpful
- **PR** #30549: (*techhat*) Salt Virt cleanup
- **PR** #30553: (*techhat*) AWS: Support 17-character IDs
- **PR** #30532: (*whiteinge*) Add execution module for working in sls files
- **PR** #30529: (*terminalmage*) Merge 2015.5 into 2015.8
- **PR** #30526: (*twangboy*) Added FlushKey to make sure it's changes are saved to disk
- **PR** #30521: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #30485: (*jtand*) Updated pip_state to work with pip 8.0 on 2015.8
- **PR** #30494: (*isbm*) Zypper: info_installed — `errors' flag change to type `boolean'
- **PR** #30506: (*jacksontj*) Properly remove newlines after reading the file
- **PR** #30508: (*rallytime*) Fix Linode driver cloning functionality
- **PR** #30522: (*terminalmage*) Update git.list_worktree tests to reflect new return data
- **PR** #30483: (*borgstrom*) Pyobjects recursive import support (for 2015.8)
- **PR** #30491: (*jacksontj*) Add multi-IP support to network state
- **PR** #30496: (*anlutro*) Fix KeyError when adding ignored pillars
- **PR** #30359: (*kingsquirrel152*) Removes suspected copy/paste error for zmq_filtering functionailty
- **PR** #30448: (*cournape*) Fix osx scripts location

- **PR** #30457: (*rallytime*) Remove fsutils references from modules list
- **PR** #30453: (*rallytime*) Make sure private AND public IPs are listed for Linode driver
- **PR** #30458: (*rallytime*) Back-port #30062 to 2015.8
- **PR** #30468: (*timcharper*) make note of s3 role assumption in upcoming changelog
- **PR** #30470: (*whiteinge*) Add example of the match_dict format to accept_dict wheel function
- **PR** #30450: (*gtmanfred*) fix extension loading in novaclient
- **PR** #30212: (*abednarik*) Fix incorrect file permissions in file.line
- **PR** #29947: (*jfindlay*) fileclient: decode file list from master
- **PR** #30363: (*terminalmage*) Use native ``list'' subcommand to list git worktrees
- **PR** #30445: (*jtand*) Boto uses False for is_default instead of None
- **PR** #30406: (*frioux*) Add an example of how to use file.managed/check_cmd
- **PR** #30424: (*isbm*) Check if byte strings are properly encoded in UTF-8
- **PR** #30405: (*jtand*) Updated glusterfs.py for python2.6 compatibility.
- **PR** #30396: (*pass-by-value*) Remove hardcoded val
- **PR** #30391: (*jtand*) Added else statements
- **PR** #30375: (*rallytime*) Wrap formatted log statements with six.u() in cloud/__init__.py
- **PR** #30384: (*isbm*) Bugfix: info_available does not work correctly on SLE 11 series
- **PR** #30376: (*pritambaral*) Fix FLO_DIR path in 2015.8
- **PR** #30389: (*jtand*) Older versions of ipset don't support comments
- **PR** #30373: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #30372: (*jacobhammons*) Updated man pages for 2015.8.4, updated copyright to 2016
- **PR** #30370: (*rallytime*) Remove incomplete function
- **PR** #30366: (*rallytime*) Back-port #28702 to 2015.8
- **PR** #30361: (*cro*) Flip the sense of the test for proxymodule imports, add more fns for esxi proxy
- **PR** #30267: (*isbm*) Fix RPM issues with the date/time and add package attributes filtering
- **PR** #30360: (*jfindlay*) file.remove, file.absent: mention recursive dir removal
- **PR** #30221: (*mbarrien*) No rolcatupdate for user_exist in Postgres>=9.5 `#26845`_
- **PR** #30358: (*terminalmage*) Add libgit2 version to versions-report
- **PR** #30346: (*pass-by-value*) Prevent orphaned volumes
- **PR** #30349: (*rallytime*) Back-port #30347 to 2015.8
- **PR** #30354: (*anlutro*) Make sure all ignore_missing SLSes are caught
- **PR** #30356: (*nmadhok*) Adding code author
- **PR** #30340: (*jtand*) Updated seed_test.py for changes made to seed module
- **PR** #30339: (*jfindlay*) Backport #26511
- **PR** #30343: (*rallytime*) Fix 2015.8 from incomplete back-port
- **PR** #30342: (*eliasp*) Correct whitespace placement in error message

- **PR** #30308: (*rallytime*) Back-port #30257 to 2015.8
- **PR** #30187: (*rallytime*) Back-port #27606 to 2015.8
- **PR** #30223: (*serge-p*) adding support for DragonFly BSD
- **PR** #30238: (*rallytime*) Reinit crypto before calling RSA.generate when generating keys.
- **PR** #30246: (*dmacvicar*) Add missing return data to scheduled jobs (`#24237`_)
- **PR** #30292: (*thegoodduke*) ipset: fix test=true & add comment for every entry
- **PR** #30275: (*abednarik*) Add permanent argument in firewalld.
- **PR** #30328: (*cachedout*) Fix file test
- **PR** #30310: (*pass-by-value*) Empty bucket fix
- **PR** #30211: (*techhat*) Execute chroot on the correct path
- **PR** #30309: (*rallytime*) Back-port #30304 to 2015.8
- **PR** #30278: (*nmadhok*) If datacenter is specified in the config, then look for managed objects under it
- **PR** #30305: (*jacobhammons*) Changed examples to use the ``example.com'' domain instead of ``mycompan...
- **PR** #30249: (*mpreziuso*) Fixes performance and timeout issues on win_pkg.install
- **PR** #30217: (*pass-by-value*) Make sure cloud actions can be called via salt run
- **PR** #30268: (*terminalmage*) Optimize file_tree ext_pillar and update file.managed to allow for binary contents
- **PR** #30245: (*rallytime*) Boto secgroup/iam_role: Add note stating us-east-1 is default region
- **PR** #30299: (*rallytime*) ESXi Proxy minions states are located at salt.states.esxi, not vsphere.
- **PR** #30202: (*opdude*) Fixed the periodic call to beacons
- **PR** #30303: (*jacobhammons*) Changed notes to indicate that functions are matched using regular ex...
- **PR** #30284: (*terminalmage*) salt.utils.gitfs: Fix Dulwich env detection and submodule handling
- **PR** #30280: (*jfindlay*) add state mocking to release notes
- **PR** #30273: (*rallytime*) Back-port #30121 to 2015.8
- **PR** #30301: (*cachedout*) Accept whatever comes into hightstate mock for state tests
- **PR** #30282: (*cachedout*) Fix file.append logic
- **PR** #30289: (*cro*) Fix problems with targeting proxies by grains
- **PR** #30293: (*cro*) Ensure we don't log stuff we shouldn't
- **PR** #30279: (*cachedout*) Allow modules to be packed into boto utils
- **PR** #30186: (*rallytime*) Update CLI Examples in boto_ec2 module to reflect correct arg/kwarg positioning
- **PR** #30156: (*abednarik*) Add option in file.append to ignore_whitespace.
- **PR** #30189: (*rallytime*) Back-port #30185 to 2015.8
- **PR** #30215: (*jacobhammons*) Assorted doc bug fixes
- **PR** #30206: (*cachedout*) Revert ``Fix incorrect file permissions in file.line''
- **PR** #30190: (*jacobhammons*) Updated doc site banners
- **PR** #30180: (*jfindlay*) modules.x509._dec2hex: add fmt index for 2.6 compat
- **PR** #30179: (*terminalmage*) Backport #26962 to 2015.8 branch

- **PR** #29693: (*abednarik*) Handle missing source file in ssh_auth.
- **PR** #30155: (*rallytime*) Update boto_secgroup and boto_iam_role docs to only use region OR profile
- **PR** #30158: (*rallytime*) Move _option(value) calls to __salt__['config.option'] in boto utils
- **PR** #30160: (*dmurphy18*) Fix parsing disk usage for line with no number and AIX values in Kilos
- **PR** #30162: (*rallytime*) Update list_present and append grains state function docs to be more clear.
- **PR** #30163: (*rallytime*) Add warning about using ``='' in file.line function
- **PR** #30164: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #30168: (*abednarik*) Fix incorrect file permissions in file.line
- **PR** #30154: (*Oro*) Fix file serialize on windows
- **PR** #30144: (*rallytime*) Added generic ESXCLI command ability to ESXi Proxy Minion
- **PR** #30142: (*terminalmage*) Fix dockerng.push, and allow for multiple images
- **PR** #30075: (*joejulian*) Convert glusterfs module to use xml
- **PR** #30129: (*optix2000*) Clean up _uptodate() in git state
- **PR** #30139: (*rallytime*) Back-port #29589 to 2015.8
- **PR** #30124: (*abednarik*) Update regex to detect ip alias in OpenBSD.
- **PR** #30133: (*stanislavb*) Fix typo in gpgkey URL
- **PR** #30126: (*stanislavb*) Log S3 API error message
- **PR** #30128: (*oeuftete*) Log retryable transport errors as warnings
- **PR** #30096: (*cachedout*) Add rm_special to crontab module
- **PR** #30106: (*techhat*) Ensure last dir
- **PR** #30101: (*gtmanfred*) fix bug where nova driver exits with no adminPass
- **PR** #30090: (*techhat*) Add argument to isdir()
- **PR** #30094: (*rallytime*) Fix doc formatting for cloud.create example in module.py state
- **PR** #30095: (*rallytime*) Add the list_nodes_select function to linode driver
- **PR** #30082: (*abednarik*) Fixed saltversioninfo grain return
- **PR** #30084: (*rallytime*) Back-port #29987 to 2015.8
- **PR** #30071: (*rallytime*) Merge branch `2015.5' into `2015.8'
- **PR** #30067: (*ryan-lane*) Pass in kwargs to boto_secgroup.convert_to_group_ids explicitly
- **PR** #30069: (*techhat*) Ensure that pki_dir exists
- **PR** #30064: (*rallytime*) Add Syndic documentation to miscellaneous Salt Cloud config options
- **PR** #30049: (*rallytime*) Add some more unit tests for the vsphere execution module
- **PR** #30060: (*rallytime*) Back-port #27104 to 2015.8
- **PR** #30048: (*jacobhammons*) Remove internal APIs from rest_cherrypy docs.
- **PR** #30043: (*rallytime*) Be explicit about importing from salt.utils.jinja to avoid circular imports
- **PR** #30038: (*rallytime*) Back-port #30017 to 2015.8
- **PR** #30036: (*rallytime*) Back-port #29995 to 2015.8

- **PR** #30035: (*rallytime*) Back-port #29895 to 2015.8
- **PR** #30034: (*rallytime*) Back-port #29893 to 2015.8
- **PR** #30033: (*rallytime*) Back-port #29876 to 2015.8
- **PR** #30029: (*terminalmage*) git.latest: Fix handling of nonexistent branches
- **PR** #30016: (*anlutro*) Properly normalize locales in locale.gen_locale
- **PR** #30015: (*anlutro*) locale module: don't escape the slash in \n
- **PR** #30022: (*gqgunhed*) Two minor typos fixed
- **PR** #30026: (*anlutro*) states.at: fix wrong variable being used
- **PR** #29966: (*multani*) Fix bigip state/module documentation + serializers documentation
- **PR** #29904: (*twangboy*) Improvements to osx packaging scripts
- **PR** #29950: (*multani*) boto_iam: fix deletion of IAM users when using delete_keys=true
- **PR** #29937: (*multani*) Fix states.boto_iam group users
- **PR** #29934: (*multani*) Fix state.boto_iam virtual name
- **PR** #29943: (*cachedout*) Check args correctly in boto_rds
- **PR** #29924: (*gqgunhed*) fixed: uptime now working on non-US Windows
- **PR** #29883: (*serge-p*) fix for nfs mounts in _active_mounts_openbsd()
- **PR** #29894: (*techhat*) Support Saltfile in SPM
- **PR** #29856: (*rallytime*) Added some initial unit tests for the salt.modules.vsphere.py file
- **PR** #29855: (*rallytime*) Back-port #29740 to 2015.8
- **PR** #29890: (*multani*) Various documentation fixes
- **PR** #29850: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #29811: (*anlutro*) influxdb: add retention policy module functions
- **PR** #29814: (*basepi*) [2015.8][Windows] Fix multi-master on windows
- **PR** #29819: (*rallytime*) Add esxi module and state to docs build
- **PR** #29832: (*jleimbach*) Fixed typo in order to use the keyboard module for RHEL without systemd
- **PR** #29803: (*rallytime*) Add vSphere module to doc ref module tree
- **PR** #29767: (*abednarik*) Hosts file update in mod_hostname.
- **PR** #29772: (*terminalmage*) pygit2: skip submodules when traversing tree
- **PR** #29765: (*gtmanfred*) allow nova driver to be boot from volume
- **PR** #29773: (*l2ol33rt*) Append missing wget in debian installation guide
- **PR** #29800: (*rallytime*) Back-port #29769 to 2015.8
- **PR** #29775: (*paulnivin*) Change listen requisite resolution from name to ID declaration
- **PR** #29754: (*rallytime*) Back-port #29719 to 2015.8
- **PR** #29713: (*The-Loeki*) Pillar-based cloud providers still forcing use of deprecated `provider'
- **PR** #29729: (*rallytime*) Further clarifications on ``unless'' and ``onlyif'' requisites.
- **PR** #29737: (*akissa*) fix pillar sqlite3 documentation examples

- **PR** #29743: (*akissa*) fix pillar sqlite not honouring config options
- **PR** #29723: (*rallytime*) Clarify db_user and db_password kwargs for postgres_user.present state function
- **PR** #29722: (*rallytime*) Link ``stateful'' kwargs to definition of what ``stateful'' means for cmd state.
- **PR** #29724: (*rallytime*) Add examples of using multiple matching levels to Pillar docs
- **PR** #29726: (*cachedout*) Disable some boto tests per resolution of moto issue
- **PR** #29708: (*lagesag*) Fix test=True for file.directory with recurse ignore_files/ignore_dirs.
- **PR** #29642: (*cachedout*) Correctly restart deamonized minions on failure
- **PR** #29599: (*cachedout*) Clean up minion shutdown
- **PR** #29675: (*clinta*) allow returning all refs
- **PR** #29683: (*rallytime*) Catch more specific error to pass the error message through elegantly.
- **PR** #29687: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #29681: (*clinta*) fix bare/mirror in git.latest
- **PR** #29644: (*rallytime*) Fixed a couple more ESXi proxy minion bugs
- **PR** #29645: (*rallytime*) Back-port #29558 to 2015.8
- **PR** #29632: (*jfindlay*) reduce severity of tls module __virtual__ logging
- **PR** #29606: (*abednarik*) Fixed duplicate mtu entry in RedHat 7 network configuration.
- **PR** #29613: (*rallytime*) Various ESXi Proxy Minion Bug Fixes
- **PR** #29628: (*DmitryKuzmenko*) Don't create io_loop before fork
- **PR** #29609: (*basepi*) [2015.8][salt-ssh] Add ability to set salt-ssh command umask in roster
- **PR** #29603: (*basepi*) Fix orchestration failure-checking
- **PR** #29597: (*terminalmage*) dockerng: Prevent exception when API response contains empty dictionary
- **PR** #29596: (*rallytime*) Back-port #29587 to 2015.8
- **PR** #29588: (*rallytime*) Added ESXi Proxy Minion Tutorial
- **PR** #29572: (*gtmanfred*) [nova] use old discover_extensions if available
- **PR** #29545: (*terminalmage*) git.latest: init submodules if not yet initialized
- **PR** #29548: (*rallytime*) Back-port #29449 to 2015.8
- **PR** #29547: (*rallytime*) Refactored ESXCLI-based functions to accept a list of esxi_hosts
- **PR** #29563: (*anlutro*) Fix a call to deprecated method in python-influxdb
- **PR** #29565: (*bdrung*) Fix typos and missing release note
- **PR** #29540: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #29499: (*rallytime*) Initial commit of ESXi Proxy Minion
- **PR** #29526: (*jfindlay*) 2015.8.2 notes: add note about not being released
- **PR** #29531: (*jfindlay*) grains.core: handle undefined variable
- **PR** #29538: (*basepi*) [2015.8] [salt-ssh] Remove umask around actual execution for salt-ssh
- **PR** #29505: (*rallytime*) Update boto_rds state docs to include funky yaml syntax for ``tags'' option.
- **PR** #29513: (*bdrung*) Drop obsolete syslog.target from systemd services

- **PR** #29500: (*rallytime*) Back-port #29467 to 2015.8
- **PR** #29463: (*abednarik*) Add **kwargs to debconf.set.
- **PR** #29399: (*jfindlay*) modules.status: add human_readable option to uptime
- **PR** #29433: (*cro*) Files for building .pkg files for MacOS X
- **PR** #29455: (*jfindlay*) modules.nova.__init__: do not return `None`
- **PR** #29454: (*jfindlay*) rh_service module __virtual__ return error messages
- **PR** #29476: (*tbaker57*) Doc fix - route_table_present needs subnet_names (not subnets) as a key
- **PR** #29487: (*rallytime*) Back-port #29450 to 2015.8
- **PR** #29441: (*rallytime*) Make sure docs line up with blade_idrac function specs
- **PR** #29440: (*rallytime*) Back-port #28925 to 2015.8
- **PR** #29435: (*galet*) Grains return wrong OS version and other OS related values for Oracle Linux
- **PR** #29430: (*rall0r*) Fix host.present state limitation
- **PR** #29417: (*jacobhammons*) Repo install updates
- **PR** #29402: (*techhat*) Add rate limiting to linode
- **PR** #29400: (*twangboy*) Fix #19332
- **PR** #29398: (*cachedout*) Lint 29288
- **PR** #29331: (*DmitryKuzmenko*) Bugfix - #29116 raet dns error
- **PR** #29390: (*jacobhammons*) updated version numbers in documentation
- **PR** #29381: (*nmadhok*) No need to deepcopy since six.iterkeys() creates a copy
- **PR** #29349: (*cro*) Fix mis-setting chassis names
- **PR** #29334: (*rallytime*) Back-port #29237 to 2015.8
- **PR** #29300: (*ticosax*) [dockerng] Add support for volume management in dockerng
- **PR** #29218: (*clan*) check service enable state in test mode
- **PR** #29315: (*jfindlay*) dev tutorial doc: fix markup errors
- **PR** #29317: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #29240: (*clan*) handle acl_type [[d]efault:][user|group|mask|other]
- **PR** #29305: (*lorengordon*) Add `file' as a source_hash proto
- **PR** #29272: (*jfindlay*) win_status module: handle 12 hour time in uptime
- **PR** #29289: (*terminalmage*) file.managed: Allow local file sources to use source_hash
- **PR** #29264: (*anlutro*) Prevent ssh_auth.absent from running when test=True
- **PR** #29277: (*terminalmage*) Update git_pillar runner to support new git ext_pillar config schema
- **PR** #29283: (*cachedout*) Single-quotes and use format
- **PR** #29139: (*thomaso-mirodin*) [salt-ssh] Add a range roster and range targeting options for the flat roster
- **PR** #29282: (*cachedout*) dev docs: add development tutorial
- **PR** #28994: (*timcharper*) add support to s3 for aws role assumption
- **PR** #29278: (*techhat*) Add verify_log to SPM

- **PR** #29067: (*jacksontj*) Fix infinite recursion in state compiler for prereq of SLSs
- **PR** #29207: (*jfindlay*) do not shadow ret function argument
- **PR** #29215: (*rallytime*) Back-port #29192 to 2015.8
- **PR** #29217: (*clan*) show duration only if state_output_profile is False
- **PR** #29221: (*ticosax*) [dokcerng] Docu network mode
- **PR** #29269: (*jfindlay*) win_status module: fix function names in docs
- **PR** #29213: (*rallytime*) Move _wait_for_task func from vmware cloud to vmware utils
- **PR** #29271: (*techhat*) Pass full path for digest (SPM)
- **PR** #29244: (*isbm*) List products consistently across all SLES systems
- **PR** #29255: (*garethgreenaway*) fixes to consul module
- **PR** #29208: (*whytewolf*) Glance more profile errors
- **PR** #29200: (*jfindlay*) mount state: unmount by device is optional
- **PR** #29205: (*trevor-h*) Fixes #29187 - using winrm on EC2
- **PR** #29170: (*cachedout*) Migrate pydsl tests to integration test suite
- **PR** #29198: (*jfindlay*) rh_ip module: only set the mtu once
- **PR** #29135: (*jfindlay*) ssh_known_hosts.present state: catch not found exc
- **PR** #29196: (*s0undt3ch*) We need novaclient imported to compare versions
- **PR** #29059: (*terminalmage*) Work around upstream pygit2 bug
- **PR** #29112: (*eliasp*) Prevent backtrace (KeyError) in *ssh_known_hosts.present* state
- **PR** #29178: (*whytewolf*) Profile not being passed to keystone.endpoint_get in _auth. so if a p…

### 18.2.20 Salt 2015.8.8 Release Notes

**Important**: 2015.8.8.2 was released shortly after 2015.8.8 to fix several known issues. If you installed 2015.8.8 before 03/30/2016, you likely have installed 2015.8.8 and can optionally upgrade (find out which version you have installed using `salt --version`. The latest version is `2015.8.8.2`).

#### Salt 2015.8.8.2

Salt 2015.8.8.2 includes fixes for the following known issues in 2015.8.8:

- issue 32044: Key master with value [...] has an invalid type of list Error
- issue 32004: Failed to import module win_dacl Error
- issue 32114: Wrong validation type for file_ignore_glob key
- issue 31969: Fix file.managed for windows

**Important**: issue 32183 prevents Salt Cloud from installing the Salt minion on new systems. To workaround this issue, call `salt-cloud -u` to update the bootstrap script to the latest version.

### Salt 2015.8.8

#### Security Fix

CVE-2016-3176: Insecure configuration of PAM external authentication service

This issue affects all Salt versions prior to 2015.8.8/2015.5.10 when PAM *external authentication* is enabled. This issue involves passing an alternative PAM authentication service with a command that is sent to *LocalClient*, enabling the attacker to bypass the configured authentication service. Thank you to Dylan Frese <dmfrese@gmail.com> for bringing this issue to our attention.

This update defines the PAM eAuth `service` that users authenticate against in the Salt Master configuration.

#### Read Before Upgrading Debian 7 (Wheezy) from 2015.8.7 to 2015.8.8

Before you upgrade from 2015.8.7 on Debian 7, you must run the following commands to remove previous packages:

```
sudo apt-get remove python-pycrypto
sudo apt-get remove python-apache-libcloud
```

Note that `python-pycrypto` will likely remove `python-apache-libcloud`, so the second command might not be necessary. These have been replaced by `python-crypto` and `python-libcloud` with ~bpo70+1 moniker.

#### Read Before Upgrading Debian 8 (Jessie) from Salt Versions Earlier than 2015.8.4

Salt `systemd` service files are missing the following statement in these versions:

```
[Service]
KillMode=process
```

This statement must be added to successfully upgrade on these earlier versions of Salt.

#### Changes for v2015.8.7..v2015.8.8

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2016-03-17T21:03:44Z*

Total Merges: **312**

Changes:

- **PR** #31947: (*cro*) Move proxymodule assignment earlier in proxy minion init
- **PR** #31948: (*rallytime*) Revert ``not not'' deletion and add comment as to why that is there
- **PR** #31952: (*rallytime*) Fix lint for 2015.8 branch
- **PR** #31933: (*rallytime*) Fix linking syntax in testing docs
- **PR** #31930: (*cro*) Backport changes from 2016.3
- **PR** #31924: (*jfindlay*) update 2015.8.8 release notes
- **PR** #31922: (*cachedout*) For 2015.8 head
- **PR** #31904: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8

- **PR** #31906: (*sbreidba*) Win_dacl module: fix FULLCONTROL / FILE_ALL_ACCESS definition
- **PR** #31745: (*isbm*) Fix the always-false behavior on checking state
- **PR** #31911: (*rallytime*) Merge #31903 with pylint fix
- **PR** #31883: (*paiou*) Fix scaleway cloud provider and manage x86 servers
- **PR** #31903: (*terminalmage*) Use remote_ref instead of local_ref to see if checkout is necessary
- **PR** #31845: (*sakateka*) Now a check_file_meta deletes temporary files when test=True
- **PR** #31901: (*rallytime*) Back-port #31846 to 2015.8
- **PR** #31905: (*terminalmage*) Update versionadded directive
- **PR** #31902: (*rallytime*) Update versionadded tag for new funcs
- **PR** #31888: (*terminalmage*) Fix salt.utils.decorators.Depends
- **PR** #31857: (*sjorge*) gen_password and del_password missing from solaris_shadow
- **PR** #31879: (*cro*) Clarify some comments
- **PR** #31815: (*dr4Ke*) Fix template on contents 2015.8
- **PR** #31818: (*anlutro*) Prevent event logs from writing huge amounts of data
- **PR** #31836: (*terminalmage*) Fix git_pillar race condition
- **PR** #31824: (*rallytime*) Back-port #31819 to 2015.8
- **PR** #31856: (*szeestraten*) Adds missing docs for Virtual Network and Subnet options in salt-cloud Azure cloud profile
- **PR** #31839: (*jfindlay*) add 2015.8.8 release notes
- **PR** #31828: (*gtmanfred*) Remove ability of authenticating user to specify pam service
- **PR** #31787: (*anlutro*) Fix user_create and db_create for new versions of influxdb
- **PR** #31800: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #31797: (*Ch3LL*) Change pkg name to less for suse pkg.info_installed test
- **PR** #31793: (*xopher-mc*) fixing init system detection on sles 11, refs **`#31617`_**
- **PR** #31786: (*isbm*) Bugfix: zypper doesn't detect base product on SLE11 series
- **PR** #31780: (*gtmanfred*) use already created vsphere connection
- **PR** #31779: (*sbreidba*) win_dacl state & module: return comment field as strings, not lists.
- **PR** #31723: (*sjorge*) file_ignore_regex is a list, not bool
- **PR** #31747: (*techhat*) Use get_local_client with MASTER opts, not MINION
- **PR** #31688: (*whiteinge*) Various SMTP returner fixes
- **PR** #31752: (*rallytime*) Back-port #31686 to 2015.8
- **PR** #31733: (*jacobhammons*) docs to clarify cloud configuration
- **PR** #31775: (*techhat*) Show correct provider/driver name
- **PR** #31754: (*techhat*) Check all providers, not just the current one
- **PR** #31735: (*rallytime*) Add reboot, start, and stop actions to digital ocean driver
- **PR** #31770: (*anlutro*) Fix influxdb user functionality for version 0.9+

- **PR** #31743: (*Talkless*) Fix parentheses mismatch in documentation
- **PR** #31162: (*isbm*) Remove MD5 digest from everywhere and default to SHA256
- **PR** #31670: (*terminalmage*) Write lists of minions targeted by syndic masters to job cache
- **PR** #31711: (*ticosax*) [dockerng] Port and Volume comparison should consider Dockerfile
- **PR** #31719: (*techhat*) Don't worry about KeyErrors if the node is already removed
- **PR** #31713: (*ticosax*) [dockerng] Fix dockerng.network_present when container is given by name
- **PR** #31705: (*peripatetic-sojourner*) Foreman pillar
- **PR** #31702: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #31700: (*s0undt3ch*) It's a function!
- **PR** #31679: (*cro*) Fix bad link to the sample REST endpoint in salt-contrib.
- **PR** #31668: (*rallytime*) Some more testing documentation improvements
- **PR** #31653: (*DmitryKuzmenko*) Don't attempt to verify token if it wasn't sent to master.
- **PR** #31629: (*darix*) Fix services on sles
- **PR** #31641: (*rallytime*) Improve Salt Testing tutorial to be a more comprehensive intro
- **PR** #31651: (*dr4Ke*) test case: test_list_present_nested_already
- **PR** #31643: (*opdude*) Make sure we are really updating the mercurial repository
- **PR** #31598: (*terminalmage*) Remove limitations on validation types for eauth targets
- **PR** #31627: (*jakehilton*) Handling error from using gevent 1.1.
- **PR** #31630: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #31594: (*rallytime*) Back-port #31589 to 2015.8
- **PR** #31604: (*joejulian*) Workaround for non-xml output from gluster cli when not tty
- **PR** #31583: (*vutny*) Remove trailing white spaces
- **PR** #31592: (*rallytime*) Back-port #31546 to 2015.8
- **PR** #31593: (*rallytime*) Back-port #31570 to 2015.8
- **PR** #31567: (*cachedout*) Restore FIPS compliance when using master_finger
- **PR** #31568: (*twangboy*) Grant permissions using SID instead of name
- **PR** #31561: (*jtand*) Skipped test
- **PR** #31550: (*rallytime*) Correct versionadded tag for win_service.config
- **PR** #31549: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #31544: (*DmitryKuzmenko*) Protect getattr from recursion
- **PR** #31525: (*DmitryKuzmenko*) Issues/30643 merge forward fixes
- **PR** #31536: (*virtualguy*) Remove debian repo from raspbian installation
- **PR** #31528: (*vutny*) Correct Salt Cloud documentation about updating Salt Bootstrap script
- **PR** #31539: (*DmitryKuzmenko*) Added temporary workaround for CentOS 7 os-release id bug.
- **PR** #31508: (*mcalmer*) Zypper correct exit code checking
- **PR** #31510: (*vutny*) Add installation guide for Raspbian (Debian on Raspberry Pi)

- **PR** #31498: (*Ch3LL*) rename methods in pkg states test
- **PR** #31471: (*cachedout*) Correct issue where duplicate items in grains list during state run will result in duplicate grains
- **PR** #31455: (*ticosax*) [dockerng] Disable notset check
- **PR** #31488: (*isbm*) Unit Test for Zypper's ``remove'' and ``purge''
- **PR** #31485: (*jacobhammons*) Fixed transport description in minion / master config
- **PR** #31411: (*jtand*) Added some beacons execution module integration tests
- **PR** #31475: (*jacobhammons*) Assorted doc issues
- **PR** #31477: (*vutny*) Correct installation documentation for Ubuntu
- **PR** #31479: (*isbm*) Zypper unit tests & fixes
- **PR** #31445: (*rallytime*) Only use LONGSIZE in rpm.info if available. Otherwise, use SIZE.
- **PR** #31464: (*Ch3LL*) integartion test: ensure decorator only runs on one method and not class
- **PR** #31458: (*vutny*) Correct installation documentation for Debian
- **PR** #31457: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #31439: (*rallytime*) Fix lowpkg.info function for Ubuntu 12 - make sure we have a pkg name
- **PR** #31456: (*RabidCicada*) Clarified the form of requisite targets/requisite-references
- **PR** #31453: (*DmitryKuzmenko*) Backport cp_geturl fix for large files into 2015.8
- **PR** #31444: (*jacobhammons*) Documentation updates - ddns state, file.line state/exe function, installation dependencies
- **PR** #31341: (*twangboy*) Clarification on Windows Package Manager docs
- **PR** #31380: (*kiorky*) Bring up ext_pillar rendering errors as well
- **PR** #31418: (*terminalmage*) Fix core grains when Debian OS detected as `Debian GNU/Linux'
- **PR** #31429: (*mcalmer*) fix argument handling for pkg.download
- **PR** #31432: (*ticosax*) [dockerng] Hotfix docker 1.10.2
- **PR** #31420: (*twangboy*) Handle Unversioned Packages
- **PR** #31417: (*jacobhammons*) ddns state docs updated with notes regarding the name, zone, and keyfile.
- **PR** #31391: (*redmcg*) Added sanity check: is `pillar' in self.opts
- **PR** #31376: (*cro*) Some distros don't have a /lib/systemd
- **PR** #31352: (*ticosax*) [dockerng] Pull missing images when calling dockerng.running
- **PR** #31378: (*mcalmer*) Zypper refresh handling
- **PR** #31373: (*terminalmage*) Use --set-upstream instead of --track to set upstream on older git
- **PR** #31390: (*abednarik*) Fix Logrotate module.
- **PR** #31354: (*ticosax*) [dockerng] Don't require auth for all registries
- **PR** #31368: (*whiteinge*) Update list of netapi clients for autoclass
- **PR** #31367: (*techhat*) Add docs on how to actually use SDB
- **PR** #31357: (*ticosax*) [dockerng] Support docker inconsistencies
- **PR** #31353: (*ticosax*) [dockerng] Fix when ports are integers

- **PR** #31346: (*ticosax*) Backport #31130 to 2015.8
- **PR** #31332: (*terminalmage*) Clarify documentation for gitfs/hgfs/svnfs mountpoint and root options
- **PR** #31305: (*mcalmer*) call zypper with option --non-interactive everywhere
- **PR** #31337: (*jacobhammons*) Release notes and versioning for 2015.8.7
- **PR** #31326: (*ticosax*) [dockerng ] Detect settings removal
- **PR** #31292: (*twangboy*) Fix dunder virtual to check for Remote Administration Tools
- **PR** #31287: (*joejulian*) Rework tests and fix reverse peering with gluster 3.7
- **PR** #31196: (*sakateka*) Here are a few fixes utils.network
- **PR** #31299: (*rallytime*) Allow state-output and state-verbose default settings to be set from CLI
- **PR** #31317: (*terminalmage*) Fix versonadded directive
- **PR** #31301: (*terminalmage*) Corrected fix for **`#30999`**_
- **PR** #31302: (*terminalmage*) Audit CLI opts used in git states
- **PR** #31312: (*terminalmage*) Merge 2015.5 into 2015.8
- **PR** #31225: (*pprince*) Fix in file_tree pillar (Fixes **`#31223`**_.)
- **PR** #31233: (*mcalmer*) implement version_cmp for zypper
- **PR** #31273: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #31253: (*gtmanfred*) allow for nova servers to be built with premade volumes
- **PR** #31271: (*rallytime*) Back-port #30689 to 2015.8
- **PR** #31255: (*jacobhammons*) Fixes **`#30461`**_
- **PR** #31189: (*dmacvicar*) Fix crash with scheduler and runners (**`#31106`**_)
- **PR** #31201: (*The-Loeki*) Utilize prepared grains var in master-side ipcidr matching
- **PR** #31239: (*terminalmage*) Improve logging when master cannot decode a payload
- **PR** #31190: (*twangboy*) Clear minion cache before caching from master
- **PR** #31226: (*pprince*) Minor docs fix: file_tree pillar (Fixes #31124)
- **PR** #31234: (*mcalmer*) improve doc for list_pkgs
- **PR** #31237: (*mcalmer*) add handling for OEM products
- **PR** #31182: (*rallytime*) Back-port #31172 to 2015.8
- **PR** #31191: (*rallytime*) Make sure doc example matches kwarg
- **PR** #31171: (*Ch3LL*) added logic to check for installed package
- **PR** #31177: (*Ch3LL*) add integration test for issue **`#30934`**_
- **PR** #31181: (*cachedout*) Lint 2015.8 branch
- **PR** #31169: (*rallytime*) Back-port #29718 to 2015.8
- **PR** #31170: (*rallytime*) Back-port #31157 to 2015.8
- **PR** #31147: (*cro*) Documentation clarifications.
- **PR** #31153: (*edencrane*) Fixed invalid host causing `reference to variable before assignment'
- **PR** #31152: (*garethgreenaway*) fixes to beacon module, state module and friends

- **PR** #31149: (*jfindlay*) add 2015.8.7 release notes
- **PR** #31134: (*isbm*) Fix types in the output data and return just a list of products
- **PR** #31120: (*gtmanfred*) Clean up some bugs in the nova driver
- **PR** #31132: (*rallytime*) Make sure required profile configurations passed in a map file work
- **PR** #31131: (*Ch3LL*) integration test for issue **`#31014`**_
- **PR** #31133: (*cachedout*) Fixup 31121
- **PR** #31125: (*isbm*) Force-kill websocket's child processes faster than default two minutes.
- **PR** #31119: (*sakateka*) fixes for ipv6-only multi-master faliover
- **PR** #31107: (*techhat*) Don't try to add a non-existent IP address
- **PR** #31108: (*jtand*) Changed npm integration test to install request.
- **PR** #31105: (*cachedout*) Lint 30975
- **PR** #31100: (*jfindlay*) states.x509: docs: peer.sls -> peer.conf
- **PR** #31103: (*twangboy*) Point to reg.delete_key_recursive
- **PR** #31093: (*techhat*) Ensure double directories don't get created
- **PR** #31095: (*jfindlay*) modules.file, states.file: explain symbolic links
- **PR** #31061: (*rallytime*) Revert #30217 - was causing salt-cloud -a breakage
- **PR** #31090: (*rallytime*) Back-port #30542 to 2015.8
- **PR** #31085: (*jacksontj*) Correctly remove path we added after loader is completed
- **PR** #31037: (*vutny*) Update RHEL installation guide to reflect latest repo changes
- **PR** #31050: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #31053: (*cachedout*) Fix boto test failures
- **PR** #31029: (*twangboy*) Windows defaults to multiprocessing true
- **PR** #30998: (*dmacvicar*) add_key/reject_key: do not crash w/Permission denied: `/var/cache/salt/master/.dfn' (**`#27796`**_)
- **PR** #31049: (*twangboy*) Fix versionadded in win_service.config
- **PR** #30987: (*youngnick*) Changed glusterfs.peer() module so state can handle localhost peering attempts.
- **PR** #31042: (*moltob*) Allow using Windows path in archive.extracted name attribute
- **PR** #31012: (*terminalmage*) Fix gitfs/git_pillar/winrepo provider to allow lowercase values
- **PR** #31024: (*jfindlay*) modules.aptpkg.upgrade: clarify dist-upgrade usage
- **PR** #31028: (*twangboy*) Fix config overwrite by windows installer
- **PR** #31031: (*terminalmage*) More complete fix for **`#31014`**_
- **PR** #31026: (*terminalmage*) Fix regression when contents_pillar/contents_grains is a list.
- **PR** #30978: (*garethgreenaway*) fixes to state.py in 2015.8
- **PR** #30893: (*bdrung*) Make build reproducible
- **PR** #30945: (*cachedout*) Note that pillar cli args are sent via pub
- **PR** #31002: (*rmtmckenzie*) Fix lxc cloud provided minion reporting present

- **PR** #31007: (*jtand*) Fixed rabbitmq_vhost test failure.
- **PR** #31004: (*rallytime*) Remove overstate docs and a few references.
- **PR** #30965: (*anlutro*) Fix rabbitmq_vhost.present result when test=True
- **PR** #30955: (*Ch3LL*) docs: add clarification when source is not defined
- **PR** #30941: (*rallytime*) Back-port #30879 to 2015.8
- **PR** #30940: (*twangboy*) Fix Build Process for OSX
- **PR** #30944: (*jacobhammons*) 2015.8.5 release notes linking and clean up
- **PR** #30905: (*joejulian*) Add realpath to lvm.pvdisplay and use it in vg_present
- **PR** #30924: (*youngnick*) Fix small bug with starting volumes after creation.
- **PR** #30910: (*cro*) fix iDRAC state
- **PR** #30919: (*garethgreenaway*) Fixes to ssh_auth state module
- **PR** #30920: (*jacobhammons*) Versioned to 2015.8.5, added known issue **`#30300`**_ to release notes
- **PR** #30894: (*terminalmage*) git module/state: Handle identity files more gracefully
- **PR** #30750: (*jfindlay*) extract whole war version
- **PR** #30884: (*rallytime*) Move checks for private_key file existence and permissions to create function
- **PR** #30888: (*ticosax*) Backport #30797 to 2015.8
- **PR** #30895: (*bdrung*) Fix various typos
- **PR** #30889: (*anlutro*) Make msgpack an optional dependency in salt.utils.cache
- **PR** #30896: (*vutny*) Update nodegroups parameter examples in master config example and docs
- **PR** #30898: (*abednarik*) Fix pkg install with version.
- **PR** #30867: (*rallytime*) Pass in `pack' variable to utils.boto.assign_funcs function from ALL boto modules
- **PR** #30849: (*jfindlay*) utils.aws: use time lib to conver to epoch seconds
- **PR** #30874: (*terminalmage*) Fix regression in git_pillar when multiple remotes are configured
- **PR** #30850: (*jfindlay*) modules.dpkg._get_pkg_info: allow for ubuntu 12.04
- **PR** #30852: (*replicant0wnz*) Added more descriptive error message
- **PR** #30847: (*terminalmage*) Backport #30844 to 2015.8 branch
- **PR** #30860: (*vutny*) Correct installation documentation for RHEL-based distributions
- **PR** #30841: (*jacobhammons*) Release notes for 2015.8.5
- **PR** #30835: (*terminalmage*) Integration test for **`#30820`**_
- **PR** #30837: (*jacobhammons*) Added known issue **`#30820`**_ to release notes
- **PR** #30832: (*rallytime*) Add grains modules to salt modindex
- **PR** #30822: (*rallytime*) Make sure setting list_user_permissions to [``, `', `'] doesn't stacktrace
- **PR** #30833: (*terminalmage*) Fix regression in scanning for state with `name' param
- **PR** #30823: (*yannis666*) Fix for mine to merge configuration on update.
- **PR** #30827: (*jacobhammons*) Version to 2015.8.4, added CVE 2016-1866 to release notes
- **PR** #30813: (*anlutro*) Properly set the default value for pillar_merge_lists

- **PR** #30826: (*cachedout*) Fix 30682
- **PR** #30818: (*rallytime*) Back-port #30790 to 2015.8
- **PR** #30815: (*vutny*) Pick right user argument for updating reactor function's low data
- **PR** #30747: (*jfindlay*) modules.lxc.running_systemd: use *command -v* not *which*
- **PR** #30800: (*twangboy*) Ability to handle special case installations
- **PR** #30794: (*rallytime*) A spelling fix and some spacing fixes for the boto_ec2 module docs
- **PR** #30756: (*basepi*) [2015.8] Fix two error conditions in the highstate outputter
- **PR** #30788: (*rallytime*) Fix incorrect doc example for dellchassis blade_idrac state
- **PR** #30791: (*Ch3LL*) do not shadow ret function argument for salt.function
- **PR** #30726: (*sjmh*) Fix improper use of yield in generator
- **PR** #30752: (*terminalmage*) Backport systemd and yum/dnf optimizations from develop into 2015.8
- **PR** #30759: (*thusoy*) Allow managing empty files
- **PR** #30758: (*thusoy*) Support mounting labelled volumes with multiple drives
- **PR** #30686: (*cachedout*) Master-side pillar caching
- **PR** #30675: (*jfindlay*) handle non-ascii minion IDs
- **PR** #30691: (*rallytime*) Make sure we use the ``instance'' kwarg in cloud.action.
- **PR** #30713: (*rallytime*) Fix-up autodoc proxy modules for consistency
- **PR** #30741: (*jfindlay*) states.locale.__virtual__: return exec mod load err
- **PR** #30751: (*basepi*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #30720: (*clinta*) x509.pem_managed does not return changes dict
- **PR** #30687: (*clarkperkins*) Setting `del_root_vol_on_destroy' changes the root volume type to `standard'
- **PR** #30673: (*terminalmage*) Properly derive the git_pillar cachedir from the id instead of the URL
- **PR** #30666: (*cachedout*) Fix grains cache
- **PR** #30623: (*twangboy*) Added service.config function
- **PR** #30678: (*rallytime*) Back-port #30668 to 2015.8
- **PR** #30677: (*clarkperkins*) Fix EC2 volume creation logic
- **PR** #30680: (*cro*) Merge forward from 2015.5, primarily for #30671
- **PR** #30663: (*isbm*) Zypper: latest version bugfix and epoch support feature
- **PR** #30652: (*mew1033*) Fix sh beacon
- **PR** #30657: (*jfindlay*) [2015.8] Backport #30378 and #29650
- **PR** #30656: (*rallytime*) [2015.8] Merge 2015.5 into 2015.8
- **PR** #30644: (*tbaker57*) Another go at fixing 30573
- **PR** #30611: (*isbm*) Bugfix: Zypper *pkg.latest* crash fix
- **PR** #30631: (*rallytime*) Refactor rabbitmq_cluster states to use test=true functionality correctly
- **PR** #30628: (*rallytime*) Refactor rabbitmq_policy states to use test=true functionality correctly
- **PR** #30624: (*cro*) Remove bad symlinks from osx pkg dir

- **PR** #30622: (*rallytime*) Add glance state to list of state modules
- **PR** #30618: (*rallytime*) Back-port #30591 to 2015.8
- **PR** #30625: (*jfindlay*) doc.topics.eauth: clarify client_acl vs eauth

### 18.2.21 Salt 2015.8.9 Release Notes

Version 2015.8.9 is a bugfix release for *2015.8.0*.

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**Mint Linux: Important Post-Upgrade Instructions**

As a result of some upstream changes, the `os` grain on Mint Linux is now being detected as `LinuxMint` (issue 33295). Run the following command **after you upgrade to 2015.8.9** to reset the `os` grain to `Mint` and the `os_family` grain to `Debian`:

```
salt -G 'os:LinuxMint' grains.setvals "{'os': 'Mint', 'os_family': 'Debian'}"
```

---

#### Changes for v2015.8.8..v2015.8.9

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2016-05-17T17:09:39Z*

Total Merges: **145**

Changes:

- **PR** #33293: (*twangboy*) Fix minion start retry on Windows (2015.8)
- 22c4331 linux_acl: Allow `-` as a separation character in ACL permissions. Fixes `#31270`_ (#33172) (#33305)
- 7a181f2 Handle more ipv6 error as an exception `#33299`_ (#33300)
- eb47a15 Ignore retcode when checking service's status (#33294)
- **PR** #33274: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- 4f3596a Add comment for test=true w/o changes ret and add changes dict example (#33254)
- 2a30c48 Update Git Policy docs to match Contribution guide (#33252)
- 056c273 Fix `#33238`_ (#33239)
- 1cd34ab Properly report on invalid gitfs/git_pillar/winrepo repos (#33245)
- **PR** #33253: (*rallytime*) Update the release process docs
- 8c2c5b1 update 2015.8.9 release notes (#33251)
- 8ee8ee3 Handle ipv6 error as an exception (#33246)
- 855bed3 Check rendered YAML for invalid keys (#33213)
- 6fb25a8 Make note of files that begin with `_' in master.d or minion.d dirs (#33224)
- a6dc0d2 Gate jnpr imports in salt.proxy.junos.py (#33150)
- 64a89c4 Add docs for the http state (#33222)
- 0a32163 Don't stacktrace when using --out=highstate at CLI during staterun. (#33215)
- 04d714d propagate opts to salt.util.http call (#33219)

- c8236c0 update 2015.8.9 release notes (#33237)
- **PR** #33217: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- 730bec1 [2015.8] Merge forward from 2015.5 to 2015.8 (#33207)
- 379b151 Add a fetch when compiling git_pillar for masterless minions (#33204)
- b3805d8 cloud.clouds.ec2: cache each named node (#33164)
- 86db5df Properly handle failed git commands when redirect_stderr=True (#33203)
- 8a0950d Don't force use of global ssh_config when git identity file is specified (#33152)
- ce07133 update 2015.8.9 release notes (#33198)
- **PR** #33188: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- e9108e0 add 2015.8.9 release notes (#33161)
- 2d9919e [2015.8] Update to latest bootstrap script v2016.05.10 (#33156)
- 033bef2 Hash fileclients by opts (#33142)
- f520fa3 Back-port #31769 to 2015.8 (#33139)
- **PR** #33144: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #33140: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- ad607ef If cache_jobs: True is set, populate the local job cache when running salt-call (#33100)
- 64689a6 Fix broken parsing of usermgmt.conf on OpenBSD (#33135)
- 06a382e Add a check that the cmdline of the found proc matches (#33129)
- 10018e9 salt.utils.gitfs: fix formatting for warning messages (#33064)
- d45b599 Fix 33058 (#33099)
- **PR** #33106: (*abednarik*) Moved _finger_fail method to parent class.
- 20c7e10 clarify docs that map is designed to be run once. is not stateful (#33102)
- 558561d cloud.query needs to define mapper.opts (#33098)
- **PR** #33096: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- 22a327b salt-cloud: fix ipv6-only virtual machines (#32865)
- e788f7e modules.npm: do not log npm --version at info level (#33084)
- **PR** #33081: (*jfindlay*) ssh docs: install py-2.6 for RHEL 5
- **PR** #33088: (*isbm*) Bugfix: Restore boolean values from the repo configuration
- 2c6326f fix tests for file.blockplace to remove newline (#33082)
- **PR** #32892: (*isbm*) Resolve Zypper locks on asynchronous calls
- 3e0bf23 Add fun_args to scheduled return data (part of `#24237`_) (#33039)
- 264c0d4 Don't append a newline when creating new content with blockreplace (#33049)
- 54b783a Pass all data to batch.run() call when using --failhard (#33048)
- 2dbfa55 Display command output when command fails with batch + failhard options (#33050)
- add9199 Allow security_groups kwarg for boto_elb.present to be string or list (#33053)
- 111701c [2015.8] Merge forward from 2015.5 to 2015.8 (#33054)

- 1066063 File and User test fixes for 2015.8 on Fedora23 (#33056)
- f97b5d5 Back-port #33030 to 2015.8 (#33040)
- e90a501 Update the docs for saltutil.find_job to be more clear/accurate (#33017)
- d3d77ce Add saltenv to the cmd.script state function (#33031)
- 3434f44 Fix syndic regression (#33021)
- 4bb3ca5 Compare uid and gid instead of name and group (#32674)
- 9ca5b02 Allow batch mode to use verbose option, as well as show_jid. (#32996)
- 81c0fa4 Fixed glusterfs.peered output (#32955)
- 8c70d7a Clarify some arg docs (#32994)
- 00fbeab Fix boto_secgroup_test (#32986)
- 3362367 fix user cron on solarish operating systems (#32970)
- 07e38bc salt.log.setup: process user args before format (#32796)
- b2d7c81 doc.ref.states.ordering: clarify requisite change (#32934)
- df41d5d mode should default to `text' (#32928)
- f581a82 Remove FileClient class references from docs - it doesn't exist. (#32925)
- 31b96de Update contents_grains option with relevant docs (#32922)
- **PR** #32926: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- 1cd6a45 specify volume tags in profile configuration (#32908)
- 85ca86d Update docs to warn users that -1 isn't valid for iptables insert state (#32906)
- cb68706 Allow profile options to be specified in provider file when using maps (#32900)
- 1a55fcb Clarify service state opening docs - uses `service' virtualname (#32880)
- **PR** #32884: (*terminalmage*) Fix incorrect deprecation notice
- **PR** #32878: (*jacobhammons*) added note about updating the bootstrap script in salt-cloud using th…
- **PR** #32869: (*rallytime*) Use correct config setting in cloud syndic docs
- **PR** #32844: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- eb8fb6b Back-port #31139 to 2015.8 (#32868)
- 4bb5545 backport PR #32732 for issue **`#23714`**_ (#32847)
- 5ea003b Add pyvmomi version warning to Getting Started with VMware docs (#32845)
- 44f08d0 Pass None as memory limit. (#32841)
- feebe69 Back-port #32813 to 2015.8 (#32839)
- 3b81031 various improvements on cloud deploy script docs (#32659)
- bf85987 update bootstrap to 2016.04.18 release (#32668)
- 83dee63 Back-port #29322 to 2015.8 (#32785)
- **PR** #32787: (*rallytime*) Back-port #32722 to 2015.8
- **PR** #32786: (*rallytime*) Back-port #32703 to 2015.8
- a6a42740 Merge branch `pr-32775' into 2015.8

- cda00f4 Improve documentation on pygit2 versions (#32779)
- 1d6d234 Properly handle minion failback failure. (#32749)
- 3751a27 Document pillar cache options (#32643)
- 35c8af3 modules.win_dacl: consistent case of dacl constants (#32720)
- 2cd0817 Update external auth documentation to list supported matcher. (#32733)
- bba089d Check dependencies type before appling str operations (#32693)
- 3aa0605 Handle when beacon not configured and we try to enable/disable them (#32692)
- **PR** #32718: (*garethgreenaway*) Fixes to schedule.list in 2015.8
- **PR** #32684: (*captaininspiration*) Fix routes for redhat < 6
- 7cdd512 Handle a couple of arguments better (Azure) (#32683)
- aaa03bc Fix for issue 32523 (#32672)
- 21081b1 Don't access deprecated Exception.message attribute. (#32556)
- 5d1e9a4 Lower log level for pillar cache (#32655)
- **PR** #32588: (*anlutro*) Fix salt-ssh module function call argument type juggling by JSON encoding them
- 5e7edfc yumpkg: Ignore epoch in version comparison for explicit versions without an epoch (#32563)
- fea6056 Fixing critical bug to remove only the specified Host instead of the entire Host cluster (#32640)
- 0477f66 align OS grains from older SLES with current one (#32649)
- 8d46244 Prevent crash if pygit2 package is requesting re-compilation of the eâ¦ (#32652)
- **PR** #32614: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #32616: (*rallytime*) Back-port #32547 to 2015.8
- 3047471 Fix comments value in salt.states.pkgrepo example (#32604)
- ab9da90 Revert PR #32480 and apply #32314 with fixes / documentation (#32558)
- c84c921 Better log message on minion restart if master couldn't be reached. (#32576)
- 3c81798 Don't return None from eval_master (#32555)
- **PR** #32536: (*rallytime*) Back-port #31898 to 2015.8
- d12a1c2 Fix binary search and replace (#32542)
- **PR** #32539: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #32531: (*ticosax*) [dockerng] Fix support of dockerng.volume_present when no volume is on present.
- 5d73d54 Enhance dockerng.wait() to control success on exit_code and on already stopped containers (#32475)
- 214f01e Bugfix: salt-key crashes if tries to generate keys to the directory w/o write access (#32436)
- 288839f Turn on exc_info when logging failed minion startup (#32515)
- 08a8020 Add ignore_epoch option to pkg.installed/removed/purged states (#32520)
- 492ebfc Isbm zypper list products sles11 crash (#32505)
- ae89882 Clear VCS fsbackend and git_pillar locks on master start (#32480)
- a6482a3 Use win32api to get Total System Memory (#32491)

- **PR** #32487: (*terminalmage*) Add explanation of nonzero epoch requirement to pkg.installed state documentation
- **PR** #32482: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- f5bd6bd Backport 31164 and 31364 (#32474)
- **PR** #32450: (*cachedout*) Pass parser options into batch mode
- b299835 Issue **`#28706`_**: Fix state user.present behavior. (#32448)
- cef33d5 Argument name in docs should match actual arg name (#32445)
- **PR** #32432: (*ticosax*) [dockerng] Fix Domainname introspection
- **PR** #32427: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #32423: (*jtand*) Update glusterfs_test to be inline with #32312
- **PR** #32425: (*cachedout*) Fix salt-cloud parallel provisioning
- 51fb2ac FreeBSD supports packages in format java/openjdk7 so the prior commit broke that functionality. Check freebsd/pkg`#1409`_ for more info.
- 709410a Improve git_pillar documentation/logging
- c53efc3 Update master config docs
- **PR** #32323: (*mcalmer*) fix sorting by latest version when called with an attribute
- **PR** #32376: (*amontalban*) Fixes saltstack/salt`#28262`_
- 0d9a06b Cleaner deprecation process with decorators
- 6979fda Correcty index glusterfs bricks
- **PR** #32393: (*jfindlay*) modules.win_timezone: don't list all zones in debug log
- **PR** #32372: (*rallytime*) Back-port #32358 to 2015.8
- **PR** #32392: (*multani*) Fix documentation on boto_asg and boto_elb modules and states
- **PR** #32373: (*cachedout*) Resolve memory leak in authentication
- **PR** #32126: (*cro*) Add a couple CLI examples for the highstate outputter.
- **PR** #32353: (*mcalmer*) Prevent metadata download when listing installed products
- **PR** #32321: (*abednarik*) Better message when minion fail to start
- **PR** #32345: (*nmadhok*) [2015.8] Check if profile key exists in **vm_** dict
- **PR** #32343: (*Ferbla*) Fixed win_wua example documentation
- **PR** #32360: (*rallytime*) Make sure hash_type is lowercase in master/minion config files
- **PR** #32361: (*cro*) SDB is no longer experimental
- **PR** #32336: (*rallytime*) Back-port #28639 to 2015.8
- **PR** #32332: (*rallytime*) Don't unsubscribe from open events on the CLI too early on long-running commands
- **PR** #32333: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #32289: (*rallytime*) New salt-cloud instances should not use old hash_type default.
- **PR** #32291: (*twangboy*) Fix bad output for chocolatey.version (fixes **`#14277`_**)
- **PR** #32295: (*rallytime*) Test the contents of `deploy_scripts_search_path' in salt.config.cloud_config
- **PR** #32315: (*ahus1*) fixing file.managed with requests lib

- **PR** #32316: (*vutny*) Update Salt Bootstrap tutorial
- **PR** #32325: (*bdrung*) Re-add shebang to ssh-id-wrapper shell script
- **PR** #32326: (*bdrung*) Fix typos
- **PR** #32300: (*twangboy*) Add documentation to disable winrepo/winrepo_ng
- **PR** #32288: (*terminalmage*) use dictupdate.merge instead of dict.update to merge CLI pillar overrides
- **PR** #32243: (*isbm*) Ensure latest pkg.info_installed ensure latest
- **PR** #32268: (*ticosax*) [dockerng] Improve detection for older versions of docker-py
- **PR** #32258: (*jacobhammons*) Replaces incorrect reference to *master_alive_check*
- **PR** #32254: (*twangboy*) Fix Display Name with spaces in win_servermanager
- **PR** #32248: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #32230: (*terminalmage*) systemd.py: Support both update-rc.d and chkconfig as managers of sysv services
- **PR** #32249: (*jacobhammons*) Fixes windows download paths to account for patch
- **PR** #32221: (*dmurphy18*) Fix version check, fix extracting Major and Minor versions from __ver...
- **PR** #32227: (*twangboy*) Remove list2cmdline usage from win_service.py
- **PR** #32239: (*anlutro*) Add state file name to warning log line
- **PR** #32215: (*DmitryKuzmenko*) rhel oscodename
- **PR** #32217: (*jacobhammons*) 2015.8.8.2 release notes
- **PR** #32212: (*rallytime*) Back-port #32197 to 2015.8
- **PR** #32211: (*rallytime*) Back-port #32210 to 2015.8
- **PR** #32209: (*rallytime*) Back-port #32208 to 2015.8
- **PR** #32204: (*ticosax*) [dockerng] Consider labels carried by the image when comparing user defined labels.
- **PR** #32186: (*rallytime*) Add some ``best practices'' information to test documentation
- **PR** #32176: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #32163: (*rallytime*) Update nacl.config docs to use key value instead of `None'
- **PR** #32166: (*vutny*) *salt.states.file*: correct examples with multiline YAML string
- **PR** #32168: (*rallytime*) Lint 2015.8
- **PR** #32165: (*terminalmage*) Make __virtual__ for rhservice.py more robust
- **PR** #32160: (*cachedout*) Fix beacon tutorial docs
- **PR** #32145: (*paclat*) fixes 29817
- **PR** #32133: (*basepi*) Pass eauth user/groups through salt-api to destination functions
- **PR** #32127: (*rallytime*) Add runners to __salt__ docs
- **PR** #32143: (*DmitryKuzmenko*) Set auth retry count to 0 if multimaster mode is failover.
- **PR** #32134: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #32091: (*clarkperkins*) Fixed the regression in 410da78
- **PR** #32135: (*rallytime*) [2015.8] Support multiple valid option types when performing type checks
- **PR** #31760: (*sakateka*) SMinion need wait future from eval_master

- **PR** #32106: (*jfindlay*) update suse master service patch
- **PR** #32130: (*jacobhammons*) Added known issues 32004 and 32044 to 2015.8.8 release notes
- **PR** #32105: (*clarkperkins*) Fixed invalid deploy_scripts_search_path
- **PR** #32117: (*tomlaredo*) Fixed validation type for file_ignore_glob
- **PR** #32113: (*sakateka*) Fix log message for AsyncAuth initialization
- **PR** #32116: (*ticosax*) Obtain default value of *memory_swap* from the container.
- **PR** #32098: (*rallytime*) Back-port #32083 to 2015.8
- **PR** #32099: (*jacobhammons*) 2015.8.8 release docs
- **PR** #32088: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- **PR** #32074: (*Xiami2012*) Fix code for proto args in modules.iptables
- **PR** #32053: (*basepi*) [2015.8] Fix rabbitmq_user.present tag handling
- **PR** #32023: (*sbreidba*) Move constant declaration into member variable to avoid issues when m...
- **PR** #32026: (*techhat*) Don't require the decode_out file to already exist
- **PR** #32019: (*rallytime*) Back-port #32012 to 2015.8
- **PR** #32015: (*ticosax*) [dockerng] Fix ports exposition when protocol is passed.
- **PR** #31999: (*jacobhammons*) Fixes a doc build exception caused by missing mocks for modules.win_dacl
- **PR** #31992: (*notpeter*) salt-cloud: add D2 and G2 EC2 instance types
- **PR** #31981: (*lloydoliver*) include rotational disks in grains under linux
- **PR** #31970: (*twangboy*) Add apply_template_on_contents for windows
- **PR** #31960: (*aletourneau*) fixed ec2 get_console_output
- **PR** #31958: (*rallytime*) [2015.8] Merge forward from 2015.5 to 2015.8
- 3934c66 Merge branch `2015.5' into `2015.8'
- **PR** #31935: (*twangboy*) Back port nullsoft build script from 2015.8
- **PR** #31912: (*jfindlay*) log.mixins: remove extermporaneous .record

### 18.2.22 Salt 2015.5.0 Release Notes - Codename Lithium

The 2015.5.0 feature release of Salt is focused on hardening Salt and mostly on improving existing systems. A few major additions are present, primarily the new Beacon system. Most enhancements have been focused around improving existing features and interfaces.

As usual the release notes are not exhaustive and primarily include the most notable additions and improvements. Hundreds of bugs have been fixed and many modules have been substantially updated and added.

**Warning:** In order to fix potential shell injection vulnerabilities in salt modules, a change has been made to the various `cmd` module functions. These functions now default to `python_shell=False`, which means that the commands will not be sent to an actual shell.

The largest side effect of this change is that ``shellisms'', such as pipes, will not work by default. The modules shipped with salt have been audited to fix any issues that might have arisen from this change. Additionally, the

`cmd` state module has been unaffected, and use of `cmd.run` in jinja is also unaffected. `cmd.run` calls on the CLI will also allow shellisms.

However, custom execution modules which use shellisms in `cmd` calls will break, unless you pass `python_shell=True` to these calls.

As a temporary workaround, you can set `cmd_safe: False` in your minion and master configs. This will revert the default, but is also less secure, as it will allow shell injection vulnerabilities to be written in custom code. We recommend you only set this setting for as long as it takes to resolve these issues in your custom code, then remove the override.

---

**Note:** Starting in this version of salt, `pillar_opts` defaults to False instead of True. This means that master opts will not be present in minion pillar, and as a result, `config.get` calls will not include master opts.

We recommend pillar is used for configuration options which need to make it to the minion.

---

### Beacons

The beacon system allows the minion to hook into system processes and continually translate external events into the salt event bus. The primary example of this is the *inotify* beacon. This beacon uses inotify to watch configured files or directories on the minion for changes, creation, deletion etc.

This allows for the changes to be sent up to the master where the reactor can respond to changes.

### Sudo Minion Settings

It is now possible to run the minion as a non-root user and for the minion to execute commands via sudo. Simply add *sudo_user: root* to the minion config, run the minion as a non-root user and grant that user sudo rights to execute salt-call.

### Lazy Loader

The Lazy Loader is a significant overhaul of Salt's module loader system. The Lazy Loader will lazily load modules on access instead of all on start. In addition to a major performance improvement, this ``sandboxes'' modules so a bad/broken import of a single module will only affect jobs that require accessing the broken module. (:issue: *20274*)

### Enhanced Active Directory Support

The eauth system for LDAP has been extended to support Microsoft Active Directory out of the box. This includes Active Directory and LDAP group support for eauth.

### Salt LXC Enhancements

The LXC systems have been overhauled to be more consistent and to fix many bugs.

This overhaul makes using LXC with Salt much easier and substantially improves the underlying capabilities of Salt's LXC integration.

### Salt SSH

- Additional configuration options and command line flags have been added to configure the scan roster on the fly
- Added support for `state.single` in `salt-ssh`
- Added support for `publish.publish`, `publish.full_data`, and `publish.runner` in `salt-ssh`
- Added support for `mine.get` in `salt-ssh`

### New Windows Installer

The new Windows installer changes how Salt is installed on Windows. The old installer used bbfreeze to create an isolated python environment to execute in. This made adding modules and python libraries difficult. The new installer sets up a more flexible python environment making it easy to manage the python install and add python modules.

Instead of frozen packages, a full python implementation resides in the bin directory (`C:\salt\bin`). By executing pip or easy_install from within the Scripts directory (`C:\salt\bin\Scripts`) you can install any additional python modules you may need for your custom environment.

The .exe's that once resided at the root of the salt directory (`C:\salt`) have been replaced by .bat files and should function the same way as the .exe's in previous versions.

The new Windows Installer will not replace the minion config file and key if they already exist on the target system. Only the salt program files will be replaced. `C:\salt\conf` and `C:\salt\var` will remain unchanged.

### Removed Requests Dependency

The hard dependency on the requests library has been removed. Requests is still required by a number of cloud modules but is no longer required for normal Salt operations.

This removal fixes issues that were introduced with requests and salt-ssh, as well as issues users experienced from the many different packaging methods used by requests package maintainers.

### Python 3 Updates

While Salt does not YET run on Python 3 it has been updated to INSTALL on Python 3, taking us one step closer. What remains is getting the test suite to the point where it can run on Python 3 so that we can verify compatibility.

### RAET Additions

The RAET support continues to improve. RAET now supports multi-master and many bugs and performance issues have been fixed. RAET is much closer to being a first class citizen.

### Modified File Detection

A number of functions have been added to the RPM-based package managers to detect and diff files that are modified from the original package installs. This can be found in the new pkg.modified functions.

### Reactor Update

Fix an infinite recursion problem for runner/wheel reactor jobs by passing a ``user'' (Reactor) to all jobs that the reactor starts. The reactor skips all events created by that username -- thereby only reacting to events not caused by itself. Because of this, runner and wheel executions from the runner will have user ``Reactor'' in the job cache.

### Misc Fixes/Additions

- SDB driver for etcd. (:issue: *22043*)
- Add `only_upgrade` argument to apt-based `pkg.install` to only install a package version if the package is already installed. (Great for security updates!)
- Joyent now requires a `keyname` to be specified in the provider configuration. This change was necessitated upstream by the 7.0+ API.
- Add `args` argument to `cmd.script_retcode` to match `cmd.script` in the `cmd module`. (:issue: *21122*)
- Fixed bug where TCP keepalive was not being sent on the defined interval on the return port (4506) from minion to master. (:issue: *21465*)
- LocalClient may now optionally raise SaltClientError exceptions. If using this class directly, checking for and handling this exception is recommended. (:issue: *21501*)
- The SAuth object is now a singleton, meaning authentication state is global (per master) on each minion. This reduces sign-ins of minions from 3->1 per startup.
- Nested outputter has been optimized, it is now much faster.
- Extensive fileserver backend updates.

### Deprecations

- Removed `parameter` keyword argument from `eselect.exec_action` execution module.
- Removed `runas` parameter from the following `pip` execution module functions: `install`, `uninstall`, `freeze`, `list_`, `list_upgrades`, `upgrade_available`, `upgrade`. Please migrate to `user`.
- Removed `runas` parameter from the following `pip` state module functions: `installed`, `removed`, `uptodate` . Please migrate to `user`.
- Removed `quiet` option from all functions in `cmdmod` execution module. Please use `output_loglevel=quiet` instead.
- Removed `parameter` argument from `eselect.set_` state. Please migrate to `module_parameter` or `action_parameter`.
- The `salt_events` table schema has changed to include an additional field called `master_id` to distinguish between events flowing into a database from multiple masters. If `event_return` is enabled in the master config, the database schema must first be updated to add the `master_id` field. This alteration can be accomplished as follows:

```
ALTER TABLE salt_events ADD master_id VARCHAR(255) NOT NULL;
```

### Known Issues

- In multi-master mode, a minion may become temporarily unresponsive if modules or pillars are refreshed at the same time that one or more masters are down. This can be worked around by setting `auth_timeout' and `auth_tries' down to shorter periods.

## 18.2.23 Salt 2015.5.1 Release Notes

**release** 2015-05-20

Version 2015.5.1 is a bugfix release for *2015.5.0*.

Changes:

- salt.runners.cloud.action() has changed the *fun* keyword argument to *func*. Please update any calls to this function in the cloud runner.

Extended Changelog Courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

**PR #23989: (*rallytime*) Backport #23980 to 2015.5** @ *2015-05-20T19:33:41Z*

- **PR** #23980: (*iggy*) template: jinja2 -> jinja | refs: #23989
- 117ecb1 Merge pull request #23989 from rallytime/bp-23980
- 8f8557c template: jinja2 -> jinja

**PR #23988: (*rallytime*) Backport #23977 to 2015.5** @ *2015-05-20T19:13:36Z*

- **PR** #23977: (*ionutbalutoiu*) Fixed glance image_create | refs: #23988
- d4f1ba0 Merge pull request #23988 from rallytime/bp-23977
- 46fc7c6 Fixed glance image_create

**PR #23986: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5** @ *2015-05-20T18:41:33Z*

- **PR** #23965: (*hvnsweeting*) handle all exceptions gitpython can raise
- 9566e7d Merge pull request #23986 from basepi/merge-forward-2015.5
- 0b78156 Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
- 314e4db Merge pull request #23965 from hvnsweeting/20147-fix-gitfs-gitpython-exception
- 2576301 handle all exception gitpython can raise

**PR #23985: (*UtahDave*) Add 2014.7.5-2 and 2015.5.0-2 Windows installer download links** @ *2015-05-20T18:32:44Z*

- 9d1130e Merge pull request #23985 from UtahDave/2015.5local
- 10338d0 Add links to Windows 2015.5.0-2 install downloads
- b84f975 updated Windows 2014.7.5-2 installer download link

**PR #23983: (*rallytime*) Versionadded tags for https_user and https_pass args new in 2015.5.0** @ *2015-05-20T18:05:27Z*

- ca7729d Merge pull request #23983 from rallytime/versionadded_git_options
- 14eae22 Versionadded tags for https_user and https_pass args new in 2015.5.0

**PR #23970: (*jayeshka*) adding system unit test case** @ *2015-05-20T17:12:57Z*

- b06df57 Merge pull request #23970 from jayeshka/system-unit-test

- 89eb008 adding system unit test case

**PR** #23967: **(*jayeshka*) adding states/memcached unit test case** *@ 2015-05-20T17:12:26Z*

- 38d5f75 Merge pull request #23967 from jayeshka/memcached-states-unit-test
- 8ef9240 adding states/memcached unit test case

**PR** #23966: **(*jayeshka*) adding states/modjk unit test case** *@ 2015-05-20T17:11:48Z*

- 868e807 Merge pull request #23966 from jayeshka/modjk-states-unit-test
- 422a964 adding states/modjk unit test case

**PR** #23942: **(*jacobhammons*) Updates to sphinx saltstack2 doc theme** *@ 2015-05-20T15:43:54Z*

- 6316490 Merge pull request #23942 from jacobhammons/2015.5
- 31023c8 Updates to sphinx saltstack2 doc theme

**PR** #23874: **(*joejulian*) Validate keyword arguments to be valid** *@ 2015-05-20T04:53:40Z*

- **ISSUE** #23872: (*joejulian*) create_ca_signed_cert can error if dereferenced dict is used for args | refs: #23874
- 587957b Merge pull request #23874 from joejulian/2015.5_tls_validate_kwargs
- 30102ac Fix py3 and ordering inconsistency problems.
- 493f7ad Validate keyword arguments to be valid

**PR** #23960: **(*rallytime*) Backport #22114 to 2015.5** *@ 2015-05-20T04:37:09Z*

- **PR** #22114: (*dmyerscough*) Fixing KeyError when there are no additional pages | refs: #23960
- 00c5c22 Merge pull request #23960 from rallytime/bp-22114
- f3e1d63 Catch KeyError
- 306b1ea Fixing KeyError
- 6b2cda2 Fix PEP8 complaint
- 239e50f Fixing KeyError when there are no additional pages

**PR** #23961: **(*rallytime*) Backport #23944 to 2015.5** *@ 2015-05-20T04:35:41Z*

- **PR** #23944: (*ryan-lane*) Add missing loginclass argument to _changes call | refs: #23961
- 4648b46 Merge pull request #23961 from rallytime/bp-23944
- 970d19a Add missing loginclass argument to _changes call

**PR** #23948: **(*jfindlay*) augeas.change state now returns changes as a dict** *@ 2015-05-20T04:00:10Z*

- 0cb5cd3 Merge pull request #23948 from jfindlay/augeas_changes
- f09b80a augeas.change state now returns changes as a dict

**PR** #23957: **(*rallytime*) Backport #23951 to 2015.5** *@ 2015-05-20T03:04:24Z*

- **PR** #23951: (*ryan-lane*) Do not check perms in file.copy if preserve | refs: #23957
- 2d185f7 Merge pull request #23957 from rallytime/bp-23951
- 996b431 Update file.py
- 85d461f Do not check perms in file.copy if preserve

- **PR** #23956: (*rallytime*) Backport #23906 to 2015.5 *@ 2015-05-20T03:04:14Z*

  - **ISSUE** #23839: (*gladiatr72*) wonky loader syndrome | refs: #23906
  - **ISSUE** #23373: (*tnypex*) reactor/orchestrate race condition on salt['pillar.get'] | refs: #23906
  - **PR** #23906: (*gladiatr72*) Added exception handler to trap the RuntimeError raised when | refs: #23956
  - ebff1ff Merge pull request #23956 from rallytime/bp-23906
  - 9d87fd3 add proper marker for format argument
  - 197688e Added exception handler to trap the RuntimeError raised when Depends.enforce_dependency() class method fires unsuccessfully. There appears to be no synchronization within the Depends decorator class wrt the class global dependency_dict which results in incomplete population of any loader instantiation occurring at the time of one of these exceptions.

- **PR** #23955: (*rallytime*) Backport #19305 to 2015.5 @ *2015-05-20T03:03:55Z*
  - **ISSUE** #19852: (*TaiSHiNet*) DigitalOcean APIv2 can't delete machines when there is only 1 page | refs: #23955
  - **ISSUE** #19304: (*TaiSHiNet*) DigitalOcean API v2 cannot delete VMs on 2nd page | refs: #19305
  - **PR** #19305: (*TaiSHiNet*) Fixes droplet listing past page 1 | refs: #23955
  - da3f919 Merge pull request #23955 from rallytime/bp-19305
  - bbf2429 Fixes droplet listing past page 1
- **PR** #23940: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-05-19T22:37:58Z*
  - **ISSUE** #23820: (*UtahDave*) 2014.7.5 schedule error | refs: #23881
  - **ISSUE** #22131: (*quixoten*) ``unexpected keyword argument `merge'" on 2014.7.2 (salt-ssh) | refs: #23887
  - **PR** #23939: (*basepi*) Add extended changelog to 2014.7.6 release notes
  - **PR** #23887: (*basepi*) [2014.7] Bring salt-ssh pillar.get in line with mainline pillar.get
  - **PR** #23881: (*garethgreenaway*) Fixes to schedule module in 2014.7
  - 02a78fc Merge pull request #23940 from basepi/merge-forward-2015.5
  - 36f0065 Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
    * 9133912 Merge pull request #23939 from basepi/v2014.7.6release
      · 32b65dc Add extended changelog to 2014.7.6 release notes
    * 0031ca2 Merge pull request #23881 from garethgreenaway/23820_2014_7_schedule_list_issue
      · b207f2a Missing continue in the list function when deleting unused attributes.
    * 63bd21e Merge pull request #23887 from basepi/salt-ssh.pillar.get.22131
      · bc84502 Bring salt-ssh pillar.get in line with mainline pillar.get
- **PR** #23932: (*rallytime*) Backport #23908 to 2015.5 @ *2015-05-19T21:41:28Z*
  - **PR** #23908: (*nleib*) fix connection function to mongo | refs: #23932
  - ee4c01b Merge pull request #23932 from rallytime/bp-23908
  - 5d520c9 fix connection function to mongo
- **PR** #23931: (*rallytime*) Backport #23880 to 2015.5 @ *2015-05-19T21:41:18Z*
  - **PR** #23880: (*bastiaanb*) if setting client_config_dir to `~', expand path | refs: #23931
  - 70bd407 Merge pull request #23931 from rallytime/bp-23880

  - 8ce59a2 if setting client_config_dir to `~', expand path

- **PR** #23898: (*kiorky*) Lxc profiles | refs: #23897 @ *2015-05-19T21:08:28Z*
  - **ISSUE** #23847: (*kiorky*) lxc: systemd containers cant be seeded | refs: #23806 #23898 #23897 #23808
  - **ISSUE** #23833: (*kiorky*) lxc.set_dns fails intermittently | refs: #23898 #23807 #23897 #23808
  - **ISSUE** #23772: (*cheuschober*) lxc.init fails to bootstrap container | refs: #23806 #23898 #23807 #23897 #23808
  - **ISSUE** #23658: (*arthurlogilab*) [salt-cloud lxc] too verbose, shows host: True multiple times when starting | refs: #23898 #23897
  - **ISSUE** #23657: (*arthurlogilab*) [salt-cloud lxc] NameError: global name `__salt__' is not defined | refs: #23727 #23898 #23897
  - **PR** #23897: (*kiorky*) Lxc seed and prof ports | refs: #23898
  - **PR** #23808: (*kiorky*) Lxc seed and prof ports | refs: #23807 #23897
  - **PR** #23807: (*kiorky*) Lxc profiles | refs: #23898
  - **PR** #23806: (*kiorky*) Lxc seeding | refs: #23807
  - 5bdbf0a Merge pull request #23898 from makinacorpus/lxc_profiles
  - d9051a0 lxc: systemd support
  - e8d674f lxc: chroot fallback toggle
  - e2887a0 lxc: sync func name with develop
  - e96e345 lxc more fixes (lxc.set_dns)
  - fdb6424 lxc: Fix salt config (no more a kwarg)
  - 63e63fa repair salt cloud lxc api on develop
  - 80eabe2 lxc salt cloud doc
  - 73f229d lxc: unificate saltconfig/master/master_port
  - 0bc1f08 lxc: refactor a bit saltcloud/lxc interface
  - 7a80370 lxc: get networkprofile from saltcloud
  - 47acb2e lxc: default net profile has now correct options
  - 7eadf48 lxc: select the appropriate default bridge

- **PR** #23922: (*garethgreenaway*) Fixes to debian_ip.py @ *2015-05-19T18:50:53Z*
  - **ISSUE** #23900: (*hashi825*) salt ubuntu network building issue 2015.5.0 | refs: #23922
  - b818f72 Merge pull request #23922 from garethgreenaway/23900_2015_5_bonding_interface_fixes
  - 0bba536 Fixing issue reported when using bonded interfaces on Ubuntu. Attributes should be bond-, but the code was attempting to split just on **bond_**. Fix accounts for both, but the debian_ip.py module will write out bond attributes with bond-

- **PR** #23925: (*jpic*) Fixed wrong path in LXC cloud documentation @ *2015-05-19T18:23:56Z*
  - **PR** #23924: (*jpic*) Fixed wrong path in LXC cloud documentation | refs: #23925
  - b1c98a3 Merge pull request #23925 from jpic/fix/wrong_lxc_path
  - a4bcd75 Fixed wrong path in LXC cloud documentation

- **PR** #23894: (*whiteinge*) Add __all__ attribute to Mock class for docs @ *2015-05-19T17:17:35Z*

  - 7f6a716 Merge pull request #23894 from whiteinge/doc-mock__all__
  - 6eeca46 Add __all__ attribute to Mock class for docs
- **PR** #23884: (*jfindlay*) Fix locale.set_locale on debian @ *2015-05-19T15:51:22Z*
  - **ISSUE** #23767: (*chrimi*) Salt system.locale fails on non existent default locale | refs: #23884
  - 8108a9b Merge pull request #23884 from jfindlay/fix_locale
  - 91c2d51 use append_if_not_found in locale.set_locale
  - e632603 (re)generate /etc/default/locale
- **PR** #23866: (*jfindlay*) backport #23834, change portage.dep.strip_empty to list comprehension @ *2015-05-19T15:50:43Z*
  - **PR** #23834: (*Arabus*) Avoid deprecation warning from portage.dep.strip_empty() | refs: #23866
  - 6bae12f Merge pull request #23866 from jfindlay/flag_strip
  - aa032cc replace portage.dep.strip_empty() with list comprehension
  - 7576872 Proper replacement for portage.dep.strip_empty() with list comprehension, pep8fix
  - 2851a5c Switch portage.dep.strip_empty(...) to filter(None,...) to avoid deprecation warning and do essentially the same
- **PR** #23917: (*corywright*) Split debian bonding options on dash instead of underscore @ *2015-05-19T15:44:35Z*
  - **ISSUE** #23904: (*mbrgm*) Network config bonding section cannot be parsed when attribute names use dashes | refs: #23917
  - a67a008 Merge pull request #23917 from corywright/issue23904
  - c06f8cf Split debian bonding options on dash instead of underscore
- **PR** #23909: (*jayeshka*) `str' object has no attribute `capitalized' @ *2015-05-19T15:41:53Z*
  - e8fcd09 Merge pull request #23909 from jayeshka/file-exe-module
  - e422d9d `str' object has no attribute `capitalized'
- **PR** #23903: (*garethgreenaway*) Adding docs for missing schedule state module parameters. @ *2015-05-19T06:29:34Z*
  - c73bf38 Merge pull request #23903 from garethgreenaway/missing_docs_schedule_state
  - acd8ab9 Adding docs for missing schedule state module parameters.
- f7eb70c changed previous release to 2014.7.6
- 608059f Merge branch `2015.5' of https://github.com/jacobhammons/salt into 2015.5
  - a56697b Merge branch `2015.5' of https://github.com/saltstack/salt into 2015.5
  - 1c2af5c Merge branch `2015.5' of https://github.com/saltstack/salt into 2015.5
  - ef58128 Merge branch `2015.5' of https://github.com/saltstack/salt into 2015.5
  - 8664e8b Merge branch `2015.5' of https://github.com/saltstack/salt into 2015.5-2
  - 46eb265 saltstack2 sphinx theme updates
  - e7442d3 Merge branch `2015.5' of https://github.com/saltstack/salt into 2015.5
  - ee3c1bd missed one
  - 3872921 More updates to sphinx2 theme

  - fcd4865 Merge branch `2015.5' of https://github.com/saltstack/salt into 2015.5
  - 8c32152 removed TOC numbering, additional tweaks to layout.html
  - 73dfaef Merge branch `2015.5' of https://github.com/saltstack/salt into 2015.5
  - 16d8a75 saltstack2 sphinx theme and build settings
- **PR** #23806: (*kiorky*) Lxc seeding | refs: #23807 @ *2015-05-18T23:18:33Z*
  - **ISSUE** #23847: (*kiorky*) lxc: systemd containers cant be seeded | refs: #23806 #23898 #23897 #23808
  - **ISSUE** #23772: (*cheuschober*) lxc.init fails to bootstrap container | refs: #23806 #23898 #23807 #23897 #23808
  - ff3cc7d Merge pull request #23806 from makinacorpus/lxc_seeding
  - 61b7aad runners/lxc: optim
- **PR** #23892: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-05-18T23:07:57Z*
  - **PR** #23891: (*basepi*) Update the release notes index page
  - **PR** #23888: (*basepi*) Update the 2014.7.6 release notes with CVE details
  - **PR** #23871: (*rallytime*) Backport #23848 to 2014.7
  - **PR** #23848: (*dumol*) Updated installation docs for SLES 12. | refs: #23871
  - 5f1a93d Merge pull request #23892 from basepi/merge-forward-2015.5
  - c2eed77 Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
  - 17c5810 Merge pull request #23891 from basepi/releasenotes
    - dec153b Update the release notes index page
  - a93e58f Merge pull request #23888 from basepi/v2014.7.6release
    - 49921b6 Update the 2014.7.6 release notes with CVE details
  - 5073028 Merge pull request #23871 from rallytime/bp-23848
    - 379c09c Updated for SLES 12.
- **PR** #23875: (*rallytime*) Backport #23838 to 2015.5 @ *2015-05-18T22:28:55Z*
  - **PR** #23838: (*gtmanfred*) add refresh_beacons and sync_beacons | refs: #23875
  - 66d1335 Merge pull request #23875 from rallytime/bp-23838
  - 3174227 Add versionadded directives to new beacon saltutil functions
  - 4a94b2c add refresh_beacons and sync_beacons
- **PR** #23876: (*rallytime*) Switch digital ocean tests to v2 driver @ *2015-05-18T22:17:13Z*
  - d294cf2 Merge pull request #23876 from rallytime/switch_digital_ocean_tests_v2
  - dce9b54 Remove extra line
  - 4acf58e Switch digital ocean tests to v2 driver
- **PR** #23882: (*garethgreenaway*) Fixes to scheduler in 2015.5 @ *2015-05-18T22:09:24Z*
  - **ISSUE** #23792: (*neogenix*) Salt Scheduler Incorrect Response (True, should be False) | refs: #23882
  - b97a48c Merge pull request #23882 from garethgreenaway/23792_2015_5_wrong_return_code
  - 37dbde6 Job already exists in schedule, should return False.

- **PR** #23868: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-05-18T18:35:54Z*
  - **ISSUE** #20198: (*jcftang*) virt.get_graphics, virt.get_nics are broken, in turn breaking other things | refs: #23809
  - **PR** #23823: (*gtmanfred*) add link local for ipv6
  - **PR** #23810: (*rallytime*) Backport #23757 to 2014.7
  - **PR** #23809: (*rallytime*) Fix virtualport section of virt.get_nics loop
  - **PR** #23802: (*gtmanfred*) if it is ipv6 ip_to_int will fail
  - **PR** #23757: (*clan*) use abspath, do not eliminating symlinks | refs: #23810
  - **PR** #23573: (*techhat*) Scan all available networks for public and private IPs | refs: #23802
  - **PR** #21487: (*rallytime*) Backport #21469 to 2014.7 | refs: #23809
  - **PR** #21469: (*vdesjardins*) fixes #20198: virt.get_graphics and virt.get_nics calls in module virt | refs: #21487
  - 61c922e Merge pull request #23868 from basepi/merge-forward-2015.5
  - c9ed233 Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
  - aee00c8 Merge pull request #23810 from rallytime/bp-23757
    - fb32c32 use abspath, do not eliminating symlinks
  - 6b3352b Merge pull request #23809 from rallytime/virt_get_nics_fix
    - 0616fb7 Fix virtualport section of virt.get_nics loop
  - 188f03f Merge pull request #23823 from gtmanfred/2014.7
    - 5ef006d add link local for ipv6
  - f3ca682 Merge pull request #23802 from gtmanfred/2014.7
    - 2da98b5 if it is ipv6 ip_to_int will fail
- **PR** #23863: (*rahulhan*) Adding states/timezone.py unit test @ *2015-05-18T17:02:19Z*
  - 433f873 Merge pull request #23863 from rahulhan/states_timezone_unit_test
  - 72fcabc Adding states/timezone.py unit test
- **PR** #23862: (*rahulhan*) Adding states/tomcat.py unit tests @ *2015-05-18T17:02:10Z*
  - 37b3ee5 Merge pull request #23862 from rahulhan/states_tomcat_unit_test
  - 65d7752 Adding states/tomcat.py unit tests
- **PR** #23860: (*rahulhan*) Adding states/test.py unit tests @ *2015-05-18T17:01:49Z*
  - dde7207 Merge pull request #23860 from rahulhan/states_test_unit_test
  - 1f4cf86 Adding states/test.py unit tests
- **PR** #23859: (*rahulhan*) Adding states/sysrc.py unit tests @ *2015-05-18T17:01:46Z*
  - 3c9b813 Merge pull request #23859 from rahulhan/states_sysrc_unit_test
  - 6a903b0 Adding states/sysrc.py unit tests
- **PR** #23812: (*rallytime*) Backport #23790 to 2015.5 @ *2015-05-18T15:30:34Z*
  - **PR** #23790: (*aboe76*) updated suse spec file to version 2015.5.0 | refs: #23812
  - 4cf30a7 Merge pull request #23812 from rallytime/bp-23790

  - 3f65631 updated suse spec file to version 2015.5.0

- **PR** #23811: (*rallytime*) Backport #23786 to 2015.5 @ *2015-05-18T15:30:27Z*
  - **PR** #23786: (*kaithar*) Log the error generated that causes returns.mysql.returner to except. | refs: #23811
  - c6f939a Merge pull request #23811 from rallytime/bp-23786
  - 346f30b Log the error generated that causes returns.mysql.returner to except.
- **PR** #23850: (*jayeshka*) adding sysbench unit test case @ *2015-05-18T15:28:04Z*
  - ce60582 Merge pull request #23850 from jayeshka/sysbench-unit-test
  - 280abde adding sysbench unit test case
- **PR** #23843: (*The-Loeki*) Fix erroneous virtual:physical core grain detection @ *2015-05-18T15:24:22Z*
  - 060902f Merge pull request #23843 from The-Loeki/patch-1
  - 9e2cf60 Fix erroneous virtual:physical core grain detection
- **PR** #23816: (*Snergster*) Doc for #23685 Added prereq, caution, and additional mask information @ *2015-05-18T15:18:03Z*
  - **ISSUE** #23815: (*Snergster*) [beacons] inotify errors on subdir creation | refs: #23816
  - 3257a9b Merge pull request #23816 from Snergster/23685-doc-fix
  - 0fca49d Added prereq, caution, and additional mask information
- **PR** #23832: (*ahus1*) make saltify provider use standard boostrap procedure @ *2015-05-18T02:18:29Z*
  - **PR** #23829: (*ahus1*) make saltify provider use standard boostrap procedure | refs: #23832
  - 3df3b85 Merge pull request #23832 from ahus1/ahus1_saltify_bootstrap_2015.5
  - f5b1734 fixing problem in unit test
  - cba47f6 make saltify to use standard boostrap procedure, therefore providing all options like master_sign_pub_file
- **PR** #23791: (*optix2000*) Psutil compat @ *2015-05-16T04:05:54Z*
  - 8ec4fb2 Merge pull request #23791 from optix2000/psutil_compat
  - 5470cf5 Fix pylint errors and sloppy inline comments
  - 64634b6 Update psutil.pid_list to use psutil.pids
  - 5dd6d69 Fix imports that aren't in __all__
  - 8a1da33 Fix test cases by mocking psutil_compat
  - 558798d Fix net_io_counters deprecation issue
  - 8140f92 Override unnecessary pylint errors
  - 7d02ad4 Fix some of the mock names for the new API
  - 9b3023e Fix overloaded getters/setters. Fix line lengths
  - 180eb87 Fix whitespace
  - f8edf72 Use new psutil API in ps module
  - e48982f Fix version checking in psutil_compat
  - 93ee411 Create compatibility psutil. psutil 3.0 drops 1.0 API, but we still support old psutil versions.

- **PR** #23782: (*terminalmage*) Replace ``command -v'' with ``which'' and get rid of spurious log messages @ *2015-05-16T04:03:10Z*
  - 405517b Merge pull request #23782 from terminalmage/issue23772
  - 0f6f239 More ignore_retcode to suppress spurious log msgs
  - b4c48e6 Ignore return code in lxc.attachable
  - 08658c0 Replace ``command -v'' with ``which''
- **PR** #23783: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-05-15T21:38:51Z*
  - **ISSUE** #22959: (*highlyunavailable*) Windows Salt hangs if file.directory is trying to write to a drive that doesn't exist
  - **ISSUE** #22332: (*rallytime*) [salt-ssh] Add a check for host in /etc/salt/roster | refs: #23748
  - **ISSUE** #16424: (*stanvit*) salt-run cloud.create fails with saltify
  - **PR** #23748: (*basepi*) [2014.7] Log salt-ssh roster render errors more assertively and verbosely
  - **PR** #23731: (*twangboy*) Fixes #22959: Trying to add a directory to an unmapped drive in windows
  - **PR** #23730: (*rallytime*) Backport #23729 to 2014.7
  - **PR** #23729: (*rallytime*) Partially merge #23437 (grains fix) | refs: #23730
  - **PR** #23688: (*twangboy*) Added inet_pton to utils/validate/net.py for ip.set_static_ip in windows
  - **PR** #23488: (*cellscape*) LXC cloud fixes
  - **PR** #23437: (*cedwards*) Grains item patch | refs: #23729
  - cb2eb40 Merge pull request #23783 from basepi/merge-forward-2015.5
  - 9df51ca __opts__.get
  - 51d23ed Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
    - d9af0c3 Merge pull request #23488 from cellscape/lxc-cloud-fixes
      - 64250a6 Remove profile from opts after creating LXC container
      - c4047d2 Set destroy=True in opts when destroying cloud instance
      - 9e1311a Store instance names in opts when performing cloud action
      - 934bc57 Correctly pass custom env to lxc-attach
      - 7fb85f7 Preserve test=True option in cloud states
      - 9771b5a Fix detection of absent LXC container in cloud state
      - fb24f0c Report failure when failed to create/clone LXC container
      - 2d9aa2b Avoid shadowing variables in lxc module
      - 792e102 Allow overriding profile options in lxc.cloud_init_interface
      - 42bd64b Return changes on successful lxc.create from salt-cloud
      - 4409eab Return correct result when creating cloud LXC container
      - 377015c Issue #16424: List all providers when creating salt-cloud instance without profile
    - 808bbe1 Merge pull request #23748 from basepi/salt-ssh.roster.host.check
      - bc53e04 Log entire exception for render errors in roster
      - 753de6a Log render errors in roster to error level

        - e01a7a9 Always let the real YAML error through
    * 72cf360 Merge pull request #23731 from twangboy/fix_22959
        - 88e5495 Fixes #22959: Trying to add a directory to an unmapped drive in windows
    * 2610195 Merge pull request #23730 from rallytime/bp-23729
        - 1877cae adding support for nested grains to grains.item
    * 3e9df88 Merge pull request #23688 from twangboy/fix_23415
        - 6a91169 Fixed unused-import pylint error
        - 5e25b3f fixed pylint errors
        - 1a96766 Added inet_pton to utils/validate/net.py for ip.set_static_ip in windows

- **PR** #23781: (*jfindlay*) fix unit test mock errors on arch @ *2015-05-15T19:40:07Z*
  - 982f873 Merge pull request #23781 from jfindlay/fix_locale_tests
  - 14c711e fix unit test mock errors on arch
- **PR** #23740: (*jfindlay*) Binary write @ *2015-05-15T18:10:44Z*
  - **ISSUE** #23566: (*rks2286*) Salt-cp corrupting the file after transfer to minion | refs: #23740
  - 916b1c4 Merge pull request #23740 from jfindlay/binary_write
  - 626930a update incorrect comment wording
  - a978f5c always use binary file write mode on windows
- **PR** #23736: (*jfindlay*) always load pip execution module @ *2015-05-15T18:10:16Z*
  - **ISSUE** #23682: (*chrish42*) Pip module requires system pip, even when not used (with env_bin) | refs: #23736
  - 348645e Merge pull request #23736 from jfindlay/fix_pip
  - b8867a8 update pip tests
  - 040bbc4 only check pip version in one place
  - 6c453a5 check for executable status of bin_env
  - 3337257 always load the pip module as pip could be anywhere
- **PR** #23770: (*cellscape*) Fix cloud LXC container destruction @ *2015-05-15T17:38:59Z*
  - 10cedfb Merge pull request #23770 from cellscape/fix-cloud-lxc-destruction
  - 4f6021c Fix cloud LXC container destruction
- **PR** #23759: (*lisa2lisa*) fixed the problem for not beable to revoke ., for more detail https... @ *2015-05-15T17:38:38Z*
  - ddea822 Merge pull request #23759 from lisa2lisa/iss23664
  - a29f161 fixed the problem for not beable to revoke ., for more detail https://github.com/saltstack/salt/issues/23201, fixed mysql cannot create user with pure digit password, for more info https://github.com/saltstack/salt/issues/23664
- **PR** #23769: (*cellscape*) Fix file_roots CA lookup in salt.utils.http.get_ca_bundle @ *2015-05-15T16:21:49Z*
  - 10615ff Merge pull request #23769 from cellscape/utils-http-ca-file-roots
  - 8e90f32 Fix file_roots CA lookup in salt.utils.http.get_ca_bundle

- **PR** #23765: (*jayeshka*) adding states/makeconf unit test case @ *2015-05-15T14:29:43Z*
  - fd8a1b7 Merge pull request #23765 from jayeshka/makeconf_states-unit-test
  - 26e31af adding states/makeconf unit test case
- **PR** #23760: (*ticosax*) [doc] document refresh argument @ *2015-05-15T14:23:47Z*
  - ee13b08 Merge pull request #23760 from ticosax/2015.5
  - e3ca859 document refresh argument
- **PR** #23766: (*jayeshka*) adding svn unit test case @ *2015-05-15T14:23:18Z*
  - a017f72 Merge pull request #23766 from jayeshka/svn-unit-test
  - 19939cf adding svn unit test case
- **PR** #23751: (*rallytime*) Backport #23737 to 2015.5 @ *2015-05-15T03:58:37Z*
  - **ISSUE** #23734: (*bradthurber*) 2015.5.0 modules/archive.py ZipFile instance has no attribute `__exit__' - only python 2.6? | refs: #23737
  - **PR** #23737: (*bradthurber*) fix for 2015.5.0 modules/archive.py ZipFile instance has no attribute... | refs: #23751
  - 0ed9d45 Merge pull request #23751 from rallytime/bp-23737
  - 8d1eb32 fix for 2015.5.0 modules/archive.py ZipFile instance has no attribute `__exit__' - only python 2.6? #23734
- **PR** #23710: (*kiorky*) Get more useful output from stateful commands @ *2015-05-14T21:58:10Z*
  - **ISSUE** #23709: (*kiorky*) cmdmod: enhancement is really needed for stateful commands | refs: #23710
  - d73984e Merge pull request #23710 from makinacorpus/i23709
  - c706909 Get more useful output from stateful commands
- **PR** #23724: (*rallytime*) Backport #23609 to 2015.5 @ *2015-05-14T19:34:22Z*
  - **PR** #23609: (*kaidokert*) file_map: chown created directories if not root #23608 | refs: #23724
  - cdf421b Merge pull request #23724 from rallytime/bp-23609
  - fe3a762 file_map: chmod created directories if not root
- **PR** #23723: (*rallytime*) Backport #23568 to 2015.5 @ *2015-05-14T19:34:11Z*
  - **PR** #23568: (*techhat*) Allow Salt Cloud to use either SCP or SFTP, as configured | refs: #23723
  - 94f9099 Merge pull request #23723 from rallytime/bp-23568
  - bbec34a Allow Salt Cloud to use either SCP or SFTP, as configured
- **PR** #23725: (*rallytime*) Backport #23691 to 2015.5 @ *2015-05-14T19:32:30Z*
  - **PR** #23691: (*dennisjac*) add initial configuration documentation for varstack pillar | refs: #23725
  - 137e5ee Merge pull request #23725 from rallytime/bp-23691
  - 28a846e add initial configuration documentation for varstack pillar
- **PR** #23722: (*rallytime*) Backport #23472 to 2015.5 @ *2015-05-14T19:31:52Z*
  - **PR** #23472: (*techhat*) Allow neutron network list to be used as pillar data | refs: #23722
  - 0c00995 Merge pull request #23722 from rallytime/bp-23472
  - c3d0f39 Change versionadded tag for backport

  - 023e88f Allow neutron network list to be used as pillar data

- **PR** #23727: (*jfindlay*) fix npm execution module stacktrace @ *2015-05-14T18:14:12Z*
  - **ISSUE** #23657: (*arthurlogilab*) [salt-cloud lxc] NameError: global name `__salt__' is not defined | refs: #23727 #23898 #23897
  - cbf4ca8 Merge pull request #23727 from jfindlay/npm_salt
  - 05392f2 fix npm execution module stacktrace
- **PR** #23718: (*rahulhan*) Adding states/user.py unit tests @ *2015-05-14T17:15:38Z*
  - ef536d5 Merge pull request #23718 from rahulhan/states_user_unit_tests
  - aad27db Adding states/user.py unit tests
- **PR** #23720: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-05-14T17:13:02Z*
  - **ISSUE** #23604: (*Azidburn*) service.dead on systemd Minion create an Error Message | refs: #23607
  - **ISSUE** #23548: (*kkaig*) grains.list_present produces incorrect (?) output | refs: #23674
  - **ISSUE** #23403: (*iamfil*) salt.runners.cloud.action fun parameter is replaced | refs: #23680
  - **PR** #23680: (*cachedout*) Rename kwarg in cloud runner
  - **PR** #23674: (*cachedout*) Handle lists correctly in grains.list_prsesent
  - **PR** #23672: (*twangboy*) Fix user present
  - **PR** #23670: (*rallytime*) Backport #23607 to 2014.7
  - **PR** #23607: (*Azidburn*) Fix for #23604. No error reporting. Exitcode !=0 are ok | refs: #23670
  - a529d74 Merge pull request #23720 from basepi/merge-forward-2015.5
  - 06a3ebd Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
  - 1b86460 Merge pull request #23680 from cachedout/issue_23403
    * d5986c2 Rename kwarg in cloud runner
  - cd64af0 Merge pull request #23674 from cachedout/issue_23548
    * da8a2f5 Handle lists correctly in grains.list_prsesent
  - d322a19 Merge pull request #23672 from twangboy/fix_user_present
    * 731e7af Merge branch `2014.7' of https://github.com/saltstack/salt into fix_user_present
    * d6f70a4 Fixed user.present to create password in windows
  - 43f7025 Merge pull request #23670 from rallytime/bp-23607
    * ed30dc4 Fix for #23604. No error reporting. Exitcode !=0 are ok
- **PR** #23704: (*jayeshka*) adding states/lvs_server unit test case @ *2015-05-14T14:22:10Z*
  - 13facbf Merge pull request #23704 from jayeshka/lvs_server_states-unit-test
  - da323da adding states/lvs_server unit test case
- **PR** #23703: (*jayeshka*) adding states/lvs_service unit test case @ *2015-05-14T14:21:23Z*
  - f95ca31 Merge pull request #23703 from jayeshka/lvs_service_states-unit-test
  - 66717c8 adding states/lvs_service unit test case
- **PR** #23702: (*jayeshka*) Remove superfluous return statement. @ *2015-05-14T14:20:42Z*

  - 07e987e Merge pull request #23702 from jayeshka/fix_lvs_service
  - ecff218 fix lvs_service
- **PR** #23686: (*jfindlay*) remove superfluous return statement @ *2015-05-14T14:20:18Z*
  - 39973d4 Merge pull request #23686 from jfindlay/fix_lvs_server
  - 5aaeb73 remove superfluous return statement
- **PR** #23690: (*rallytime*) Backport #23424 to 2015.5 @ *2015-05-13T23:04:36Z*
  - **PR** #23424: (*jtand*) Added python_shell=True for refresh_db in pacman.py | refs: #23690
  - be7c7ef Merge pull request #23690 from rallytime/bp-23424
  - 94574b7 Added python_shell=True for refresh_db in pacman.py
- **PR** #23681: (*cachedout*) Start on 2015.5.1 release notes @ *2015-05-13T19:44:22Z*
  - 1a0db43 Merge pull request #23681 from cachedout/2015_5_1_release_notes
  - bdbbfa6 Start on 2015.5.1 release notes
- **PR** #23679: (*jfindlay*) Merge #23616 @ *2015-05-13T19:03:53Z*
  - **PR** #23616: (*Snergster*) virtual returning none warning fixed in dev but missed in 2015.5 | refs: #23679
  - b54075a Merge pull request #23679 from jfindlay/merge_23616
  - 6e15e19 appease pylint's blank line strictures
  - 8750680 virtual returning none warning fixed in dev but missed in 2015.5
- **PR** #23675: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-05-13T18:35:54Z*
  - **ISSUE** #23611: (*hubez*) master_type set to `failover' but `master' is not of type list but of type <type `str'> | refs: #23637
  - **ISSUE** #23479: (*danielmorlock*) Typo in pkg.removed for Gentoo? | refs: #23558
  - **ISSUE** #23452: (*michaelforge*) minion crashed with empty grain | refs: #23639
  - **ISSUE** #23411: (*dr4Ke*) grains.append should work at any level of a grain | refs: #23440
  - **ISSUE** #23355: (*dr4Ke*) salt-ssh: `sources: salt://' files from `pkg' state are not included in salt_state.tgz | refs: #23530
  - **ISSUE** #23110: (*martinhoefling*) Copying files from gitfs in file.recurse state fails
  - **ISSUE** #23004: (*b18*) 2014.7.5 - Windows - pkg.list_pkgs - ``nxlog'' never shows up in output. | refs: #23433
  - **ISSUE** #22908: (*karanjad*) Add failhard option to salt orchestration | refs: #23389
  - **ISSUE** #22141: (*Deshke*) grains.get_or_set_hash render error if hash begins with ``%'' | refs: #23640
  - **PR** #23661: (*rallytime*) Merge #23640 with whitespace fix
  - **PR** #23640: (*cachedout*) Add warning to get_or_set_hash about reserved chars | refs: #23661
  - **PR** #23639: (*cachedout*) Handle exceptions raised by __virtual__
  - **PR** #23637: (*cachedout*) Convert str master to list
  - **PR** #23606: (*twangboy*) Fixed checkbox for starting service and actually starting it
  - **PR** #23595: (*rallytime*) Backport #23549 to 2014.7
  - **PR** #23594: (*rallytime*) Backport #23496 to 2014.7

- **PR** #23593: (*rallytime*) Backport #23442 to 2014.7
- **PR** #23592: (*rallytime*) Backport #23389 to 2014.7
- **PR** #23573: (*techhat*) Scan all available networks for public and private IPs | refs: #23802
- **PR** #23558: (*jfindlay*) reorder emerge command line
- **PR** #23554: (*jleroy*) Debian: Hostname always updated
- **PR** #23551: (*dr4Ke*) grains.append unit tests, related to #23474
- **PR** #23549: (*vr-jack*) Update __init__.py | refs: #23595
- **PR** #23537: (*t0rrant*) Update changelog
- **PR** #23530: (*dr4Ke*) salt-ssh state: fix including all salt:// references
- **PR** #23496: (*martinhoefling*) Fix for issue #23110 | refs: #23594
- **PR** #23474: (*dr4Ke*) Fix grains.append in nested dictionary grains #23411
- **PR** #23442: (*clan*) add directory itself to keep list | refs: #23593
- **PR** #23440: (*dr4Ke*) fix grains.append in nested dictionary grains #23411 | refs: #23474
- **PR** #23433: (*twangboy*) Obtain all software from the registry
- **PR** #23389: (*cachedout*) Correct fail_hard typo | refs: #23592
- e480f13 Merge pull request #23675 from basepi/merge-forward-2015.5
- bd63548 Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
    * 0f006ac Merge pull request #23661 from rallytime/merge-23640
        · 4427f42 Whitespace fix
        · dd91154 Add warning to get_or_set_hash about reserved chars
    * 84e2ef8 Merge pull request #23639 from cachedout/issue_23452
        · d418b49 Syntax error!
        · 45b4015 Handle exceptions raised by __virtual__
    * bd9b94b Merge pull request #23637 from cachedout/issue_23611
        · 56cb1f5 Fix typo
        · f6fcf19 Convert str master to list
    * f20c0e4 Merge pull request #23595 from rallytime/bp-23549
        · 6efcac0 Update __init__.py
    * 1acaf86 Merge pull request #23594 from rallytime/bp-23496
        · d5ae1d2 Fix for issue #23110 This resolves issues when the freshly created directory is removed by fileserver.update.
    * 2c221c7 Merge pull request #23593 from rallytime/bp-23442
        · 39869a1 check w/ low['name'] only
        · 304cc49 another fix for file defined w/ id, but require name
        · 8814d41 add directory itself to keep list
    * fadd1ef Merge pull request #23606 from twangboy/fix_installer

            - 038331e Fixed checkbox for starting service and actually starting it
    - acdd3fc Fix lint
    - 680e88f Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
        * 10b3f0f Merge pull request #23592 from rallytime/bp-23389
            - 734cc43 Correct fail_hard typo
        * cd34b9b Merge pull request #23573 from techhat/novaquery
            - f92db5e Linting
            - 26e00d3 Scan all available networks for public and private IPs
        * 2a72cd7 Merge pull request #23558 from jfindlay/fix_ebuild
            - 45404fb reorder emerge command line
        * a664a3c Merge pull request #23530 from dr4Ke/fix_salt-ssh_to_include_pkg_sources
            - 5df6a80 fix pylint warning
            - d0549e5 salt-ssh state: fix including all salt:// references
        * 55c3869 Merge pull request #23433 from twangboy/list_pkgs_fix
            - 8ab5b1b Fix pylint error
            - 2d11d65 Obtain all software from the registry
        * 755bed0 Merge pull request #23554 from jleroy/debian-hostname-fix
            - 5ff749e Debian: Hostname always updated
        * 6ec87ce Merge pull request #23551 from dr4Ke/grains.append_unit_tests
            - ebff9df fix pylint errors
            - c495404 unit tests for grains.append module function
            - 0c9a323 use MagickMock
            - c838a22 unit tests for grains.append module function
        * e96c5c5 Merge pull request #23474 from dr4Ke/fix_grains.append_nested
            - a01a5bb grains.get, parameter delimititer, versionadded: 2014.7.6
            - b39f504 remove debugging output
            - b6e15e2 fix grains.append in nested dictionary grains #23411
        * ab7e1ae Merge pull request #23537 from t0rrant/patch-1
            - 8e03cc9 Update changelog

- **PR** #23669: (*rallytime*) Backport #23586 to 2015.5 @ *2015-05-13T18:27:11Z*
    - **PR** #23586: (*Lothiraldan*) Fix salt.state.file._unify_sources_and_hashes when sources is used without sources_hashes | refs: #23669
    - 0dad6be Merge pull request #23669 from rallytime/bp-23586
    - ef4c6ad Remove another unused import
    - 73cfda7 Remove unused import
    - 52b68d6 Use the zip_longest from six module for python 3 compatibility

  - 18d5ff9 Fix salt.state.file._unify_sources_and_hashes when sources is used without sources_hashes
- **PR** #23662: (*rallytime*) Merge #23642 with pylint fix @ *2015-05-13T15:46:51Z*
  - **PR** #23642: (*cachedout*) Let saltmod handle lower-level exceptions gracefully | refs: #23662
  - fabef75 Merge pull request #23662 from rallytime/merge-23642
  - aa7bbd8 Remove unused import
  - 9e66d4c Let saltmod handle lower-level exceptions gracefully
- **PR** #23622: (*jfindlay*) merge #23508 @ *2015-05-13T15:36:49Z*
  - **PR** #23508: (*cro*) Port mysql returner to postgres using jsonb datatype | refs: #23622
  - 072b927 Merge pull request #23622 from jfindlay/pgjsonb
  - 454322c appease pylint's proscription on blank line excess
  - 57c6171 Get time with timezone correct also in job return.
  - e109d0f Get time with timezone correct.
  - 21e06b9 Fix SQL, remove unneeded imports.
  - 653f360 Stop making changes in 2 places.
  - d6daaa0 Typo.
  - 7d748bf SSL is handled differently by Pg, so don't set it here.
  - cc7c377 Fill alter_time field in salt_events with current time with timezone.
  - 43defe9 Port mysql module to Postgres using jsonb datatypes
- **PR** #23651: (*jayeshka*) adding solr unit test case @ *2015-05-13T15:26:15Z*
  - c1bdd4d Merge pull request #23651 from jayeshka/solr-unit-test
  - 6e05148 adding solr unit test case
- **PR** #23649: (*jayeshka*) adding states/libvirt unit test case @ *2015-05-13T15:24:48Z*
  - ee43411 Merge pull request #23649 from jayeshka/libvirt_states-unit-test
  - 0fb923a adding states/libvirt unit test case
- **PR** #23648: (*jayeshka*) adding states/linux_acl unit test case @ *2015-05-13T15:24:11Z*
  - c7fc466 Merge pull request #23648 from jayeshka/linux_acl_states-unit-test
  - 3f0ab29 removed error.
  - 11081c1 adding states/linux_acl unit test case
- **PR** #23650: (*jayeshka*) adding states/kmod unit test case @ *2015-05-13T15:09:18Z*
  - 4cba7ba Merge pull request #23650 from jayeshka/kmod_states-unit-test
  - 1987015 adding states/kmod unit test case
- **PR** #23633: (*jayeshka*) made changes to test_interfaces function. @ *2015-05-13T06:51:07Z*
  - bc8faf1 Merge pull request #23633 from jayeshka/win_network-2015.5-unit-test
  - 0936e1d made changes to test_interfaces function.
- **PR** #23619: (*jfindlay*) fix kmod.present processing of module loading @ *2015-05-13T01:16:56Z*
  - 7df3579 Merge pull request #23619 from jfindlay/fix_kmod_state

  - 73facbf fix kmod.present processing of module loading
- **PR** #23598: (*rahulhan*) Adding states/win_dns_client.py unit tests @ *2015-05-12T21:47:36Z*
  - d4f3095 Merge pull request #23598 from rahulhan/states_win_dns_client_unit_test
  - d08d885 Adding states/win_dns_client.py unit tests
- **PR** #23597: (*rahulhan*) Adding states/vbox_guest.py unit tests @ *2015-05-12T21:46:30Z*
  - 811c6a1 Merge pull request #23597 from rahulhan/states_vbox_guest_unit_test
  - 6a2909e Removed errors
  - 4cde78a Adding states/vbox_guest.py unit tests
- **PR** #23615: (*rallytime*) Backport #23577 to 2015.5 @ *2015-05-12T21:19:11Z*
  - **PR** #23577: (*msciciel*) Fix find and remove functions to pass database param | refs: #23615
  - 029ff11 Merge pull request #23615 from rallytime/bp-23577
  - 6f74477 Fix find and remove functions to pass database param
- **PR** #23603: (*rahulhan*) Adding states/winrepo.py unit tests @ *2015-05-12T18:40:12Z*
  - b858953 Merge pull request #23603 from rahulhan/states_winrepo_unit_test
  - a66e7e7 Adding states/winrepo.py unit tests
- **PR** #23602: (*rahulhan*) Adding states/win_path.py unit tests @ *2015-05-12T18:39:37Z*
  - 3cbbd6d Merge pull request #23602 from rahulhan/states_win_path_unit_test
  - 122c29f Adding states/win_path.py unit tests
- **PR** #23600: (*rahulhan*) Adding states/win_network.py unit tests @ *2015-05-12T18:39:01Z*
  - 3c904e8 Merge pull request #23600 from rahulhan/states_win_network_unit_test
  - b418404 removed lint error
  - 1be8023 Adding states/win_network.py unit tests
- **PR** #23599: (*rahulhan*) Adding win_firewall.py unit tests @ *2015-05-12T18:37:49Z*
  - 10243a7 Merge pull request #23599 from rahulhan/states_win_firewall_unit_test
  - 6cda890 Adding win_firewall.py unit tests
- **PR** #23601: (*basepi*) Add versionadded for jboss module/state @ *2015-05-12T17:22:59Z*
  - e73071d Merge pull request #23601 from basepi/jboss.version.added
  - 0174c8f Add versionadded for jboss module/state
- **PR** #23469: (*s0undt3ch*) Call the windows specific function not the general one @ *2015-05-12T16:47:22Z*
  - 9beb7bc Merge pull request #23469 from s0undt3ch/hotfix/call-the-win-func
  - 83e88a3 Call the windows specific function not the general one
- **PR** #23583: (*jayeshka*) adding states/ipset unit test case @ *2015-05-12T16:31:55Z*
  - d2f0975 Merge pull request #23583 from jayeshka/ipset_states-unit-test
  - 4330cf4 adding states/ipset unit test case
- **PR** #23582: (*jayeshka*) adding states/keyboard unit test case @ *2015-05-12T16:31:17Z*
  - 82a47e8 Merge pull request #23582 from jayeshka/keyboard_states-unit-test

  - fa94d7a adding states/keyboard unit test case

- **PR** #23581: (*jayeshka*) adding states/layman unit test case @ *2015-05-12T16:30:36Z*
  - 77e5b28 Merge pull request #23581 from jayeshka/layman_states-unit-test
  - 297b055 adding states/layman unit test case
- **PR** #23580: (*jayeshka*) adding smf unit test case @ *2015-05-12T16:29:58Z*
  - cbe3282 Merge pull request #23580 from jayeshka/smf-unit-test
  - 4f97191 adding smf unit test case
- **PR** #23572: (*The-Loeki*) Fix regression of #21355 introduced by #21603 @ *2015-05-12T16:28:05Z*
  - **ISSUE** #21603: (*ipmb*) ssh_auth.present fails on key without comment | refs: #23572 #23572
  - **PR** #21355: (*The-Loeki*) Fix for comments containing whitespaces
  - 16a3338 Merge pull request #23572 from The-Loeki/ssh_auth_fix
  - d8248dd Fix regression of #21355 introduced by #21603
- **PR** #23565: (*garethgreenaway*) fix to aptpkg module @ *2015-05-12T16:25:46Z*
  - **ISSUE** #23490: (*lichtamberg*) salt.modules.aptpkg.upgrade should have default ``dist_upgrade=False'' | refs: #23565
  - f843f89 Merge pull request #23565 from garethgreenaway/2015_2_aptpkg_upgrade_default_to_upgrade
  - 97ae514 aptpkg.upgrade should default to upgrade instead of dist_upgrade.
- **PR** #23550: (*jfindlay*) additional mock for rh_ip_test test_build_bond @ *2015-05-12T15:17:16Z*
  - **ISSUE** #23473: (*terminalmage*) unit.modules.rh_ip_test.RhipTestCase.test_build_bond is not properly mocked | refs: #23550
  - c1157cd Merge pull request #23550 from jfindlay/fix_rh_ip_test
  - e9b94d3 additional mock for rh_ip_test test_build_bond
- **PR** #23552: (*garethgreenaway*) Fix for an issue caused by a previous pull request @ *2015-05-11T21:54:59Z*
  - b593328 Merge pull request #23552 from garethgreenaway/2015_5_returner_fix_broken_previous_pr
  - 7d70e2b Passed argumentes in the call _fetch_profile_opts to were in the wrong order
- **PR** #23547: (*slinu3d*) Added AWS v4 signature support for 2015.5 @ *2015-05-11T21:52:24Z*
  - d0f9682 Merge pull request #23547 from slinu3d/2015.5
  - f3bfdb5 Fixed urlparse and urlencode calls
  - 802dbdb Added AWS v4 signature support for 2015.5
- **PR** #23544: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-05-11T18:02:06Z*
  - **ISSUE** #23159: (*aneeshusa*) Unused validator
  - **ISSUE** #20518: (*ekle*) module s3.get does not support eu-central-1 | refs: #23467
  - **ISSUE** #563: (*chutz*) pidfile support for minion and master daemons | refs: #23460 #23461
  - **PR** #23538: (*cro*) Update date in LICENSE file
  - **PR** #23505: (*aneeshusa*) Remove unused ssh config validator. Fixes #23159.
  - **PR** #23467: (*slinu3d*) Added AWS v4 signature support
  - **PR** #23460: (*s0undt3ch*) [2014.7] Update to latest stable bootstrap script v2015.05.07

  - **PR** #23444: (*techhat*) Add create_attach_volume to nova driver
  - **PR** #23439: (*techhat*) Add wait_for_passwd_maxtries variable
  - 06c6a1f Merge pull request #23544 from basepi/merge-forward-2015.5
  - f8a36bc Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
    * b79fed3 Merge pull request #23538 from cro/licupdate
      · 345efe2 Update date in LICENSE file
    * a123a36 Merge pull request #23505 from aneeshusa/remove-unused-ssh-config-validator
      · 90af167 Remove unused ssh config validator. Fixes #23159.
    * ca2c21a Merge pull request #23467 from slinu3d/2014.7
      · 0b4081d Fixed pylint error at line 363
      · 5be5eb5 Fixed pylink errors
      · e64f374 Fixed lint errors
      · b9d1ac4 Added AWS v4 signature support
    * e6f9eec Merge pull request #23444 from techhat/novacreateattach
      · ebdb7ea Add create_attach_volume to nova driver
    * e331463 Merge pull request #23460 from s0undt3ch/hotfix/bootstrap-script-2014.7
      · edcd0c4 Update to latest stable bootstrap script v2015.05.07
    * 7a8ce1a Merge pull request #23439 from techhat/maxtries
      · 0ad3ff2 Add wait_for_passwd_maxtries variable
- **PR** #23470: (*twangboy*) Fixed service.restart for salt-minion @ *2015-05-11T17:54:47Z*
  - **ISSUE** #23426: (*twangboy*) Can't restart salt-minion on 64 bit windows (2015.5.0) | refs: #23470
  - aa5b896 Merge pull request #23470 from twangboy/fix_svc_restart
  - b3f284c Fixed tests
  - ad44d79 Fixed service.restart for salt-minion
- **PR** #23539: (*rahulhan*) Adding states/virtualenv_mod.py unit tests @ *2015-05-11T17:02:31Z*
  - 67988b2 Merge pull request #23539 from rahulhan/states_virtualenv_mod_unit_test
  - 750bb07 Adding states/virtualenv_mod.py unit tests
- 6f0cf2e Merge remote-tracking branch `upstream/2015.2' into 2015.5
  - **ISSUE** #23244: (*freimer*) Caller not available in reactors | refs: #23245
  - **PR** #23509: (*keesbos*) Catch the unset (empty/None) environment case
  - **PR** #23423: (*cachedout*) Remove jid_event from state.orch
  - **PR** #23245: (*freimer*) Add Caller functionality to reactors.
  - c966196 Merge pull request #23423 from cachedout/remove_jid_event_from_orch
    * f81aab7 Remove jid_event from state.orch
  - 2bb09b7 Merge pull request #23509 from keesbos/Catch_empty_environment
    * 6dedeac Catch the unset (empty/None) environment case

  - 6d42f30 Merge pull request #23245 from freimer/issue_23244
    * 24cf6eb Add Caller functionality to reactors.
- **PR** #23513: (*gladiatr72*) short-circuit auto-failure of iptables.delete state @ *2015-05-11T15:18:33Z*
  - c3f03d8 Merge pull request #23513 from gladiatr72/RFC_stop_iptables.check_from_short-circuiting_position-only_delete_rule
  - c71714c short-circuit auto-failure of iptables.delete state if position argument is set without the other accoutrements that check_rule requires.
- **PR** #23534: (*jayeshka*) adding states/ini_manage unit test case @ *2015-05-11T14:32:06Z*
  - 4e77f6f Merge pull request #23534 from jayeshka/ini_manage_states-unit-test
  - 831223c adding states/ini_manage unit test case
- **PR** #23533: (*jayeshka*) adding states/hipchat unit test case @ *2015-05-11T14:30:22Z*
  - 11ba9ed Merge pull request #23533 from jayeshka/hipchat-states-unit-test
  - 41d14b3 adding states/hipchat unit test case
- **PR** #23532: (*jayeshka*) adding states/ipmi unit test case @ *2015-05-11T14:28:15Z*
  - e542113 Merge pull request #23532 from jayeshka/ipmi-states-unit-test
  - fc3e64a adding states/ipmi unit test case
- **PR** #23531: (*jayeshka*) adding service unit test case @ *2015-05-11T14:27:12Z*
  - 9ba85fd Merge pull request #23531 from jayeshka/service-unit-test
  - 3ad5314 adding service unit test case
- **PR** #23517: (*garethgreenaway*) fix to returners @ *2015-05-11T14:20:51Z*
  - **ISSUE** #23512: (*Code-Vortex*) hipchat_returner / slack_returner not work correctly | refs: #23517
  - 32838cd Merge pull request #23517 from garethgreenaway/23512_2015_5_returners_with_profiles
  - 81e31e2 fix for returners that utilize profile attributes. code in the if else statement was backwards. #23512
- **PR** #23502: (*rahulhan*) Adding states/win_servermanager.py unit tests @ *2015-05-08T19:47:18Z*
  - 6be7d8d Merge pull request #23502 from rahulhan/states_win_servermanager_unit_test
  - 2490074 Adding states/win_servermanager.py unit tests
- **PR** #23495: (*jayeshka*) adding seed unit test case @ *2015-05-08T17:30:38Z*
  - 6048578 Merge pull request #23495 from jayeshka/seed-unit-test
  - 3f134bc adding seed unit test case
- **PR** #23494: (*jayeshka*) adding sensors unit test case @ *2015-05-08T17:30:18Z*
  - 70bc3c1 Merge pull request #23494 from jayeshka/sensors-unit-test
  - 1fb48a3 adding sensors unit test case
- **PR** #23493: (*jayeshka*) adding states/incron unit test case @ *2015-05-08T17:29:59Z*
  - b981b20 Merge pull request #23493 from jayeshka/incron-states-unit-test
  - cc7bc17 adding states/incron unit test case
- **PR** #23492: (*jayeshka*) adding states/influxdb_database unit test case @ *2015-05-08T17:29:51Z*

  - 4019c49 Merge pull request #23492 from jayeshka/influxdb_database-states-unit-test
  - e1fcac8 adding states/influxdb_database unit test case
- **PR** #23491: (*jayeshka*) adding states/influxdb_user unit test case @ *2015-05-08T16:24:07Z*
  - d317a77 Merge pull request #23491 from jayeshka/influxdb_user-states-unit-test
  - 9d4043f adding states/influxdb_user unit test case
- **PR** #23477: (*galet*) LDAP auth: Escape filter value for group membership search @ *2015-05-07T22:04:48Z*
  - e0b2a73 Merge pull request #23477 from galet/ldap-filter-escaping
  - 33038b9 LDAP auth: Escape filter value for group membership search
- **PR** #23476: (*cachedout*) Lint becaon @ *2015-05-07T19:55:36Z*
  - **PR** #23431: (*UtahDave*) Beacon fixes | refs: #23476
  - e1719fe Merge pull request #23476 from cachedout/lint_23431
  - 8d1ff20 Lint becaon
- **PR** #23431: (*UtahDave*) Beacon fixes | refs: #23476 @ *2015-05-07T19:53:47Z*
  - 1e299ed Merge pull request #23431 from UtahDave/beacon_fixes
  - 152f223 remove unused import
  - 81198f9 fix interval logic and example
  - 5504778 update to proper examples
  - 6890439 fix list for mask
  - ee7b579 remove custom interval code.
- **PR** #23468: (*rahulhan*) Adding states/win_system.py unit tests @ *2015-05-07T19:20:50Z*
  - ea55c44 Merge pull request #23468 from rahulhan/states_win_system_unit_test
  - 33f8c12 Adding states/win_system.py unit tests
- **PR** #23466: (*UtahDave*) minor spelling fix @ *2015-05-07T19:19:06Z*
  - e6e1114 Merge pull request #23466 from UtahDave/2015.5local
  - b2c399a minor spelling fix
- **PR** #23461: (*s0undt3ch*) [2015.5] Update to latest stable bootstrap script v2015.05.07 @ *2015-05-07T19:16:18Z*
  - **ISSUE** #563: (*chutz*) pidfile support for minion and master daemons | refs: #23460 #23461
  - 4eeb1e6 Merge pull request #23461 from s0undt3ch/hotfix/bootstrap-script
  - 638c63d Update to latest stable bootstrap script v2015.05.07
- **PR** #23450: (*jayeshka*) adding scsi unit test case @ *2015-05-07T19:00:28Z*
  - 8651278 Merge pull request #23450 from jayeshka/scsi-unit-test
  - e7269ff adding scsi unit test case
- **PR** #23449: (*jayeshka*) adding s3 unit test case @ *2015-05-07T18:59:45Z*
  - 8b374ae Merge pull request #23449 from jayeshka/s3-unit-test
  - 85786bf adding s3 unit test case
- **PR** #23448: (*jayeshka*) adding states/keystone unit test case @ *2015-05-07T18:58:59Z*

  - 49b431c Merge pull request #23448 from jayeshka/keystone-states-unit-test
  - a3050eb adding states/keystone unit test case
- **PR** #23447: (*jayeshka*) adding states/grafana unit test case @ *2015-05-07T18:58:20Z*
  - 23d7e7e Merge pull request #23447 from jayeshka/grafana-states-unit-test
  - 7e90a4a adding states/grafana unit test case
- **PR** #23438: (*techhat*) Gate requests import @ *2015-05-07T07:22:58Z*
  - 1fd0bc2 Merge pull request #23438 from techhat/gaterequests
  - d5b15fc Gate requests import
- **PR** #23429: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-05-07T05:35:13Z*
  - **ISSUE** #17245: (*tomashavlas*) localemod does not generate locale for Arch | refs: #23307 #23397
  - **PR** #23425: (*basepi*) [2014.7] Fix typo in FunctionWrapper
  - **PR** #23422: (*cro*) $HOME should not be used, some shells don't set it.
  - **PR** #23414: (*jfindlay*) 2015.2 -> 2015.5
  - **PR** #23409: (*terminalmage*) Update Lithium docstrings in 2014.7 branch | refs: #23410
  - **PR** #23404: (*hvnsweeting*) saltapi cherrypy: initialize var when POST body is empty
  - **PR** #23397: (*jfindlay*) add more flexible whitespace to locale_gen search
  - **PR** #23385: (*rallytime*) Backport #23346 to 2014.7
  - **PR** #23346: (*ericfode*) Allow file_map in salt-cloud to handle folders. | refs: #23385
  - 3c4f734 Merge pull request #23429 from basepi/merge-forward-2015.5
  - 7729834 Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
  - 644eb75 Merge pull request #23422 from cro/gce_sh_home
    * 4ef9e6b Don't use $HOME to find user's directory, some shells don't set it
  - ef17ab4 Merge pull request #23425 from basepi/functionwrapper_typo
    * c390737 Fix typo in FunctionWrapper
  - 1b13ec0 Merge pull request #23385 from rallytime/bp-23346
    * 9efc13c more linting fixes
    * cf131c9 cleaned up some pylint errors
    * f981699 added logic to sftp_file and file_map to allow folder uploads using file_map
  - f8c7a62 Merge pull request #23414 from jfindlay/update_branch
    * 8074d16 2015.2 -> 2015.5
  - 54b3bd4 Merge pull request #23404 from hvnsweeting/cherrypy-post-emptybody-fix
    * f85f8f9 initialize var when POST body is empty
  - 160f703 Merge pull request #23409 from terminalmage/update-lithium-docstrings-2014.7
    * bc97d01 Fix sphinx typo
    * 20006b0 Update Lithium docstrings in 2014.7 branch
  - aa5fb0a Merge pull request #23397 from jfindlay/fix_locale_gen

        * 0941fef add more flexible whitespace to locale_gen search

- **PR** #23396: (*basepi*) [2015.2] Merge forward from 2014.7 to 2015.2 @ *2015-05-06T21:42:35Z*
  - **ISSUE** #23294: (*variia*) file.replace fails to append if repl string partially available | refs: #23350
  - **ISSUE** #23026: (*adelcast*) Incorrect salt-syndic logfile and pidfile locations | refs: #23341
  - **ISSUE** #22742: (*hvnsweeting*) salt-master says: ``This master address: `salt' was previously resolvable but now fails to resolve!'' | refs: #23344
  - **ISSUE** #19114: (*pykler*) salt-ssh and gpg pillar renderer | refs: #23272 #23347 #23188
  - **ISSUE** #17245: (*tomashavlas*) localemod does not generate locale for Arch | refs: #23307 #23397
  - **ISSUE** #580: (*thatch45*) recursive watch not being caught | refs: #23324
  - **ISSUE** #552: (*jhutchins*) Support require and watch under the same state dec | refs: #23324
  - **PR** #23368: (*kaithar*) Backport #23367 to 2014.7
  - **PR** #23367: (*kaithar*) Put the sed insert statement back in to the output. | refs: #23368
  - **PR** #23350: (*lorengordon*) Append/prepend: search for full line
  - **PR** #23347: (*basepi*) [2014.7] Salt-SSH Backport FunctionWrapper.__contains__
  - **PR** #23344: (*cachedout*) Explicitly set file_client on master
  - **PR** #23341: (*cachedout*) Fix syndic pid and logfile path
  - **PR** #23324: (*s0undt3ch*) [2014.7] Update to the latest stable release of the bootstrap script v2015.05.04
  - **PR** #23318: (*cellscape*) Honor seed argument in LXC container initializaton
  - **PR** #23311: (*cellscape*) Fix new container initialization in LXC runner | refs: #23318
  - **PR** #23307: (*jfindlay*) check for /etc/locale.gen
  - **PR** #23272: (*basepi*) [2014.7] Allow salt-ssh minion config overrides via master config and roster | refs: #23347
  - **PR** #23188: (*basepi*) [2014.7] Work around bug in salt-ssh in config.get for gpg renderer | refs: #23272
  - **PR** #18368: (*basepi*) Merge forward from 2014.7 to develop | refs: #23367 #23368
  - **PR** #589: (*epoelke*) add --quiet and --outfile options to saltkey | refs: #23324
  - **PR** #567: (*bastichelaar*) Added upstart module | refs: #23324
  - **PR** #560: (*UtahDave*) The runas feature that was added in 93423aa2e5e4b7de6452090b0039560d2b13… | refs: #23324
  - **PR** #504: (*SEJeff*) File state goodies | refs: #23324
  - 1fb8445 Merge pull request #23396 from basepi/merge-forward-2015.2
  - 2766c8c Fix typo in FunctionWrapper
  - fd09cda Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.2
    * 0c76dd4 Merge pull request #23368 from kaithar/bp-23367
      · 577f419 Pylint fix
      · 8d9acd1 Put the sed insert statement back in to the output.
    * 3493cc1 Merge pull request #23350 from lorengordon/file.replace_assume_line
      · b60e224 Append/prepend: search for full line

    * 7be5c48 Merge pull request #23341 from cachedout/issue_23026
        · e98e65e Fix tests
        · 6011b43 Fix syndic pid and logfile path
    * ea61abf Merge pull request #23272 from basepi/salt-ssh.minion.config.19114
        · c223309 Add versionadded
        · be7407f Lint
        · c2c3375 Missing comma
        · 8e3e8e0 Pass the minion_opts through the FunctionWrapper
        · cb69cd0 Match the master config template in the master config reference
        · 87fc316 Add Salt-SSH section to master config template
        · 91dd9dc Add ssh_minion_opts to master config ref
        · c273ea1 Add minion config to salt-ssh doc
        · a0b6b76 Add minion_opts to roster docs
        · 5212c35 Accept minion_opts from the target information
        · e2099b6 Process *ssh_minion_opts* from master config
        · 3b64214 Revert ``Work around bug in salt-ssh in config.get for gpg renderer''
        · 494953a Remove the strip (embracing multi-line YAML dump)
        · fe87f0f Dump multi-line yaml into the SHIM
        · b751a72 Inject local minion config into shim if available
    * 4f760dd Merge pull request #23347 from basepi/salt-ssh.functionwrapper.contains.19114
        · 30595e3 Backport FunctionWrapper.__contains__
    * 02658b1 Merge pull request #23344 from cachedout/issue_22742
        · 5adc96c Explicitly set file_client on master
    * ba7605d Merge pull request #23318 from cellscape/honor-seed-argument
        · 228b1be Honor seed argument in LXC container initializaton
    * 4ac4509 Merge pull request #23307 from jfindlay/fix_locale_gen
        · 101199a check for /etc/locale.gen
    * f790f42 Merge pull request #23324 from s0undt3ch/hotfix/bootstrap-script-2014.7
    * 6643e47 Update to the latest stable release of the bootstrap script v2015.05.04

- 23d4feb Merge remote-tracking branch `upstream/2015.2' into 2015.5
- **PR** #23412: (*rahulhan*) Adding states/win_update.py unit tests @ *2015-05-06T18:31:09Z*
  - b3c1672 Merge pull request #23412 from rahulhan/states_win_update_unit_test
  - 9bc1519 Removed unwanted imports
  - f12bfcf Adding states/win_update.py unit tests
- **PR** #23413: (*terminalmage*) Update manpages for 2015.2 -> 2015.5 @ *2015-05-06T17:12:57Z*
  - f2d7646 Merge pull request #23413 from terminalmage/update-manpages

  - 23fa440 Update manpages to reflect 2015.2 rename to 2015.5
  - 0fdaa73 Fix missed docstring updates from 2015.2 -> 2015.5
  - 4fea5ba Add missing RST file
- **PR** #23410: (*terminalmage*) Update Lithium docstrings in 2015.2 branch @ *2015-05-06T15:53:52Z*
  - **PR** #23409: (*terminalmage*) Update Lithium docstrings in 2014.7 branch | refs: #23410
  - bafbea7 Merge pull request #23410 from terminalmage/update-lithium-docstrings-2015.2
  - d395565 Update Lithium docstrings in 2015.2 branch
- **PR** #23407: (*jayeshka*) adding rsync unit test case @ *2015-05-06T15:52:23Z*
  - 02ef41a Merge pull request #23407 from jayeshka/rsync-unit-test
  - a4dd836 adding rsync unit test case
- **PR** #23406: (*jayeshka*) adding states/lxc unit test case @ *2015-05-06T15:51:50Z*
  - 58ec2a2 Merge pull request #23406 from jayeshka/lxc-states-unit-test
  - 32a0d03 adding states/lxc unit test case
- **PR** #23395: (*basepi*) [2015.2] Add note to 2015.2.0 release notes about master opts in pillar @ *2015-05-05T22:15:20Z*
  - 8837d00 Merge pull request #23395 from basepi/2015.2.0masteropts
  - b261c95 Add note to 2015.2.0 release notes about master opts in pillar
- **PR** #23393: (*basepi*) [2015.2] Add warning about python_shell changes to 2015.2.0 release notes @ *2015-05-05T22:12:46Z*
  - f79aed5 Merge pull request #23393 from basepi/2015.2.0python_shell
  - b2f033f Add CLI note
  - 48e7b3e Add warning about python_shell changes to 2015.2.0 release notes
- **PR** #23380: (*gladiatr72*) Fix for double output with static salt cli/v2015.2 @ *2015-05-05T21:44:28Z*
  - a977776 Merge pull request #23380 from gladiatr72/fix_for_double_output_with_static__salt_CLI/v2015.2
  - c47fdd7 Actually removed the `static` bits from below the else: fold this time.
  - 4ee3679 Fix for incorrect output with salt CLI --static option
- **PR** #23379: (*rahulhan*) Adding states/rabbitmq_cluster.py @ *2015-05-05T21:44:06Z*
  - 5c9543c Merge pull request #23379 from rahulhan/states_rabbitmq_cluster_test
  - 04c22d1 Adding states/rabbitmq_cluster.py
- **PR** #23377: (*rahulhan*) Adding states/xmpp.py unit tests @ *2015-05-05T21:43:35Z*
  - 430f080 Merge pull request #23377 from rahulhan/states_xmpp_test
  - 32923b5 Adding states/xmpp.py unit tests
- **PR** #23335: (*steverweber*) 2015.2: include doc in master config for module_dirs @ *2015-05-05T21:28:58Z*
  - 8c057e6 Merge pull request #23335 from steverweber/2015.2
  - 5e3bae9 help installing python pysphere lib
  - 97513b0 include module_dirs
  - 36b1c87 include module_dirs

- **PR** #23362: (*jayeshka*) adding states/zk_concurrency unit test case @ *2015-05-05T15:50:06Z*
  - 1648253 Merge pull request #23362 from jayeshka/zk_concurrency-states-unit-test
  - f60dda4 adding states/zk_concurrency unit test case
- **PR** #23363: (*jayeshka*) adding riak unit test case @ *2015-05-05T14:23:05Z*
  - 1cdaeed Merge pull request #23363 from jayeshka/riak-unit-test
  - f9da6db adding riak unit test case

### 18.2.24 Salt 2015.5.10 Release Notes

#### Security Fix

CVE-2016-3176: Insecure configuration of PAM external authentication service

This issue affects all Salt versions prior to 2015.8.8/2015.5.10 when PAM *external authentication* is enabled. This issue involves passing an alternative PAM authentication service with a command that is sent to *LocalClient*, enabling the attacker to bypass the configured authentication service. Thank you to Dylan Frese <dmfrese@gmail.com> for bringing this issue to our attention.

This update defines the PAM eAuth `service` that users authenticate against in the Salt Master configuration.

(No additional fixes are contained in this release).

#### Read Before Upgrading Debian 8 (Jessie) from Salt Versions Earlier than 2015.5.9

Salt `systemd` service files are missing the following statement in these versions:

```
[Service]
KillMode=process
```

This statement must be added to successfully upgrade on these earlier versions of Salt.

### 18.2.25 Salt 2015.5.11 Release Notes

Version 2015.5.11 is a bugfix release for *2015.5.0*.

#### Changes for v2015.5.10..v2015.5.11

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2016-05-20T21:02:38Z*

Total Merges: **101**

Changes:

- dc8ce2d Fix traceback in logging for config validation (#33386) (#33405)
- **PR** #33383: (*thatch45*) maintain the fallabck because I am totally sick of this crap
- 755acfb Improve doc clarity for disable_modules documentation (#33379)
- 2b5ad12 Better YAML syntax error handling (#33375)
- **PR** #33372: (*jacobhammons*) revved 2015.8 branch to .9 in version selector

- 55be0ab Expanded documentation for boto_elb state and module (#33341)
- 9b42a05 Added some more docs for master and minion config settings (#33292)
- 8acee5e Fix iptables --match-set (`#23643`_) (#33301)
- 757ef20 fix ``loose'' typo (#33290)
- b7d98da Add auth_tries config option to minion.rst docs (#33287)
- 061851b Document minion_id_caching config value (#33282)
- 8fa72f6 Clarify file.replace MULTILINE flag interaction with regex anchors (#33137)
- 4b1f460 update 2015.5.11 release notes (#33236)
- **PR** #33211: (*cachedout*) Don't try to kill a parent proc if we can't
- f868329 Resolve issue with pkg module on Mint Linux (#33205)
- a09e1b6 Add pip installed and removed test (#33178)
- 96e3586 update 2015.5.11 release notes (#33197)
- 09b072a Fix file.managed for Windows (#33181)
- 30868ab [2015.5] Update to latest bootstrap script v2016.05.11 (#33185)
- 264ad34 Pip fix (#33180)
- 43288b2 add 2015.5.11 release notes (#33160)
- e0da8fd [2015.5] Update to latest bootstrap script v2016.05.10 (#33155)
- **PR** #33141: (*jtand*) Skipping salt-call --local test
- 878d34a Doc mock decorators (#33132)
- 30edead Lower display of msgpack failure msg to debug (#33078)
- d4928c5 Use saltstack repo in buildpackage.py on CentOS 5 (#33080)
- 61d126c add test for installing package while using salt-call --local (#33025)
- 6d3e4e8 File and User test fixes for 2015.5 on Fedora23 (#33055)
- d48b2b8 test pillar.items output (#33060)
- 398793b Fix minor document error of test.assertion (#33067)
- f875763 Saltfile with pillar tests (#33045)
- 1d78924 Backport #33021 manually to 2015.5 (#33044)
- f00b5f9 Add run_on_start docs to schedule.rst (#32958)
- edce22a backport PR #32732 to 2015.5 fixes `#23714`_ (#32848)
- 9b5c14c *salt-cloud -u* downloads stable version from bootstrap.saltstack.com by default (#32837)
- 9725804 update bootstrap to 2016.04.18 release (#32667)
- **PR** #32776: (*rallytime*) [2015.5] Merge forward from 2014.7 to 2015.5
- 67d0c81 Support remote sources in a source list (#32691)
- **PR** #32686: (*cachedout*) Fix stacktrace in batch with dup minion ids
- 3ec9502 Update ``Low Hanging Fruit'' to ``Help Wanted'' (#32675)
- 77bea56 Additional documentation on calling exec modules from templates (#32657)

- c910b8d Fixing critical bug to remove only the specified Host instead of the entire Host cluster (#32639)
- 4568565 Add _syspaths.py to .gitignore (#32638)
- **PR** #32561: (*gtmanfred*) redact passwords and hashes from user.present updates
- **PR** #32538: (*rallytime*) Back-port #32528 to 2015.5
- 29333e5 Add documentation for some master/minion configs (#32454)
- **PR** #32458: (*terminalmage*) Improve and clarify docs on provider overrides.
- 0809126 Merge #32293 with test fixes (#32418)
- bbd8260 Ignore Raspbian in service.py __virtual__ (#32421)
- 690addf FreeBSD supports packages in format java/openjdk7 so the prior commit broke that functionality. Check freebsd/pkg`#1409`_ for more info.
- **PR** #32399: (*amontalban*) Backport to fix **`#28262`_** for 2015.5 as requested in PR #32376
- **PR** #32374: (*cachedout*) Update proxmox documentation
- **PR** #32339: (*Ch3LL*) remove reference to master_alive_check in 2015.5
- **PR** #32284: (*rallytime*) Audit config.py default types and values
- **PR** #32302: (*terminalmage*) Properly support packages with blank ``Release'' param in pkg.latest_version
- **PR** #32162: (*terminalmage*) Properly handle yum/zypper repositories in pkgrepo.managed
- **PR** #32223: (*twangboy*) Create minion.d directory on install for Windows
- **PR** #32218: (*cachedout*) Only display error when tty is True in salt-ssh
- **PR** #32196: (*jtand*) Fixed pylint error in app_pam_test.py
- **PR** #32154: (*Ch3LL*) Add integration tests for salt-api using pam eauth
- **PR** #32170: (*gtmanfred*) add name for lxc for use with cloud cache
- **PR** #32164: (*terminalmage*) Make __virtual__ for rhservice.py more robust (2015.5 branch)
- **PR** #32141: (*paclat*) fixes 32108
- **PR** #32129: (*terminalmage*) Support multiple valid option types when performing type checks
- **PR** #32056: (*bstevenson*) Fix list absent
- **PR** #32096: (*rallytime*) Back-port #32065 to 2015.5
- **PR** #32104: (*jacobhammons*) One additional known issue for 2015.5.10 release notes
- **PR** #32100: (*jacobhammons*) 2015.5.10 release docs
- **PR** #32038: (*terminalmage*) Improve state module docs, replace references to state.highstate/state.sls with state.apply
- **PR** #32051: (*terminalmage*) Fix outputter for state.apply
- **PR** #32002: (*abednarik*) Added Manajro Linux to virtual.
- **PR** #31957: (*rallytime*) [2015.5] Merge forward from 2014.7 to 2015.5
- **PR** #31972: (*terminalmage*) Make lack of python-ldap module more explicit when LDAP eauth is enabled
- **PR** #31935: (*twangboy*) Back port nullsoft build script from 2015.8
- **PR** #31912: (*jfindlay*) log.mixins: remove extermporaneous .record
- **PR** #31825: (*jtand*) Updated .testing.pylintrc to match newer versions of pylint

- **PR** #31900: (*rallytime*) Add ``python module'' clarification to ps __virtual__ warning.
- **PR** #31878: (*rallytime*) Make sure __virtual__ error message is helpful when psutil is missing
- **PR** #31852: (*rallytime*) [2015.5] Merge forward from 2014.7 to 2015.5
- **PR** #31827: (*gtmanfred*) Remove ability of authenticating user to specify pam service
- **PR** #31810: (*whiteinge*) Fix outdated Jinja `env' variable reference
- **PR** #31744: (*brejoc*) Fix for AttributeError with libcloud <0.15
- **PR** #31740: (*terminalmage*) Assume pillar_opts is False when not specified in masterless mode
- **PR** #31750: (*rallytime*) Back-port #26170 to 2015.5
- **PR** #31689: (*rallytime*) Back-port #29467 to 2015.5
- **PR** #31687: (*cachedout*) Removed useless GPG tests
- **PR** #31660: (*terminalmage*) Remove epoch from version string if present when installing with yum
- **PR** #31683: (*rallytime*) Back-port #31578 to 2015.5
- **PR** #31682: (*cachedout*) Add definition of job cache to glossary
- **PR** #31658: (*rallytime*) Add mentioned of Salt's Coding Style docs to the Contributing docs
- **PR** #31655: (*rallytime*) Make note of pylint dependencies in docs
- **PR** #31440: (*cachedout*) Set correct type for master_tops config value
- **PR** #31622: (*jfindlay*) doc/topics/tutorials/http: update query decoding docs
- **PR** #31558: (*cachedout*) Don't stacktrace if ssh binary is not installed with salt-ssh
- **PR** #31521: (*terminalmage*) salt-ssh: Fix race condition when caching files to build the thin tarball
- **PR** #31497: (*rallytime*) Remove duplicate ``timeout'' definition in Roster docs
- **PR** #31472: (*rallytime*) Update contributing docs
- **PR** #31461: (*DmitryKuzmenko*) Set auth retry count to 0 if multimaster mode is failover.
- **PR** #31442: (*sastorsl*) Add os.path.exists(src) to file.py, def copy
- **PR** #31441: (*cachedout*) Include localhost minions in presence detection for runner
- **PR** #31416: (*carlwgeorge*) selinux module documentation fix
- **PR** #31336: (*terminalmage*) Improve config validation logging
- **PR** #31374: (*sjorge*) fix for **`#31369`**_
- **PR** #31339: (*jacobhammons*) changed latest release to 2015.8.7
- **PR** #31288: (*notpeter*) Improve salt.states.ssh_known_hosts documentation.
- **PR** #31183: (*heyfife*) Fixed named external_ip reservation/re-use code in gce driver.
- **PR** #31032: (*terminalmage*) (2015.5 branch) yumpkg: ensure that dnf-plugins-core >= 0.1.15 is installed
- **PR** #31264: (*sjorge*) fix if_missing gets appended to dirs list, take III
- **PR** #31110: (*cachedout*) Fixup 30730
- **PR** #30974: (*rallytime*) Back-port #30949 to 2015.5
- **PR** #30942: (*rallytime*) Back-port #30897 to 2015.5
- **PR** #30922: (*jacobhammons*) Rev latest version to 2015.8.5

- **PR** #30865: (*abednarik*) Better boto elb error message.
- **PR** #30831: (*jacobhammons*) Updated readme
- **PR** #30829: (*jacobhammons*) Updated latest version to 2015.8.4
- **PR** #30784: (*rallytime*) Back-port #24952 to 2015.5
- **PR** #30764: (*terminalmage*) Work around yum versionlock's inability to remove holds by package name alone
- **PR** #30760: (*toanju*) Changed output format of arp_ip_target from list to comma delimited…
- **PR** #30757: (*yannis666*) Fix to mine update to merge configuration
- **PR** #30749: (*abednarik*) Fix Netwotk hostname Module in Debian systems.
- **PR** #30699: (*abednarik*) Add Retry to save_load.
- **PR** #30659: (*sjmh*) Fix lsscsi issues for certain platforms
- **PR** #30671: (*techhat*) Add file locking to cloud index
- **PR** #30586: (*abednarik*) Fix comment_line permissions.
- **PR** #30582: (*terminalmage*) yumpkg.check_db: run separate repoquery commands when multiple names passed
- **PR** #30548: (*jacobhammons*) Added placeholder release notes for 2015.5.10
- **PR** #30530: (*terminalmage*) 2015.5 tweaks from #30529
- **PR** #30484: (*terminalmage*) Backport DNF support to 2015.5 branch
- **PR** #30512: (*jfindlay*) disable pkgrepo test for ubuntu 15.10+
- **PR** #30478: (*jtand*) Updated pip_state to work with pip 8.0
- **PR** #30482: (*borgstrom*) Pyobjects recursive import support (for 2015.5)
- **PR** #30459: (*jfindlay*) modules.pkg: disable repo int test for ubuntu 15.10
- **PR** #30443: (*jtand*) Boto uses False for is_default instead of None
- **PR** #30420: (*attiasr*) Backport #26853
- **PR** #30364: (*rallytime*) Add TLS version imports and add linode driver documentation notices
- **PR** #30184: (*rallytime*) Back-port #30166 to 2015.5
- **PR** #30291: (*thegoodduke*) ipset: fix test=true & add comment for every entry

### 18.2.26 Salt 2015.5.2 Release Notes

**release** 2015-06-10

Version 2015.5.2 is a bugfix release for *2015.5.0*.

Extended Changelog Courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

**PR #24346: (*rallytime*) Backport #24271 to 2015.5** *@ 2015-06-03T18:44:31Z*

**PR #24271: (*randybias*) Fixed the setup instructions**

refs: #24346

- 76927c9 Merge pull request #24346 from rallytime/bp-24271
- 04067b6 Fixed the setup instructions

**PR #24345: (*rallytime*) Backport #24013 to 2015.5** *@ 2015-06-03T18:39:41Z*

**ISSUE #24012: (*jbq*) Enabling a service does not create the appropriate rc.d symlinks on Ubuntu**

refs: #24013

**PR #24013: (*jbq*) Fix enabling a service on Ubuntu #24012**

refs: #24345

- 4afa03d Merge pull request #24345 from rallytime/bp-24013
- 16e0732 Fix enabling a service on Ubuntu #24012

**PR #24365: (*jacobhammons*) Fixes for PDF build errors** *@ 2015-06-03T17:50:02Z*

- c3392c2 Merge pull request #24365 from jacobhammons/DocFixes
- 0fc1902 Fixes for PDF build errors

**PR #24313: (*nicholascapo*) Fix #22991 Correctly set result when test=True** *@ 2015-06-03T14:49:18Z*

**ISSUE #22991**: (*nicholascapo*) npm.installed ignores test=True * ae681a4 Merge pull request #24313 from nicholascapo/fix-22991-npm.installed-test-true * ac9644c Fix #22991 npm.installed correctly set result on test=True

**PR #24312: (*nicholascapo*) Fix #18966: file.serialize supports test=True** *@ 2015-06-03T14:49:06Z*

**ISSUE #18966**: (*bechtoldt*) file.serialize ignores test=True * d57a9a2 Merge pull request #24312 from nicholascapo/fix-18966-file.serialize-test-true * e7328e7 Fix #18966 file.serialize correctly set result on test=True

**PR #24302: (*jfindlay*) fix pkg hold/unhold integration test** *@ 2015-06-03T03:27:43Z*

- 6b694e3 Merge pull request #24302 from jfindlay/pkg_tests
- c2db0b1 fix pkg hold/unhold integration test

**PR #24349: (*rallytime*) Remove references to mount_points in ec2 docs** *@ 2015-06-03T01:54:09Z*

**ISSUE #14021: (*mathrawka*) EC2 doc mentions mount_point, but unable to use properly**

refs: #24349

- aca8447 Merge pull request #24349 from rallytime/fix-14021
- a235b11 Remove references to mount_points in ec2 docs

**PR #24328: (*dr4Ke*) Fix state grains silently fails 2015.5** *@ 2015-06-02T15:18:46Z*

**ISSUE #24319**: (*dr4Ke*) grains state shouldn't fail silently * 88a997e Merge pull request #24328 from dr4Ke/fix_state_grains_silently_fails_2015.5 * 8a63d1e fix state grains silently fails #24319

- ca1af20 grains state: add some tests

**PR #24310: (*techhat*) Add warning about destroying maps** *@ 2015-06-02T03:01:28Z*

**ISSUE #24036: (*arthurlogilab*) [salt-cloud] Protect against passing command line arguments as names for the --destroy co**

refs: #24310

**ISSUE #9772: (*s0undt3ch*) Delete VM's in a map does not delete them all**

refs: #24310

- 7dcd9bb Merge pull request #24310 from techhat/mapwarning
- ca535a6 Add warning about destroying maps

**PR #24281: (*steverweber*) Ipmi docfix** *@ 2015-06-01T17:45:36Z*

- 02bfb25 Merge pull request #24281 from steverweber/ipmi_docfix
- dd36f2c yaml formatting
- f6deef3 include api_kg kwarg in ipmi state
- a7d4e97 doc cleanup
- 0ded2fd save more cleanup to doc
- 08872f2 fix name api_key to api_kg
- 165a387 doc fix add api_kg kwargs
- 1ec7888 cleanup docs

**PR #24287: (*jfindlay*) fix pkg test on ubuntu 12.04 for realz** *@ 2015-06-01T14:16:37Z*

- 73cd2cb Merge pull request #24287 from jfindlay/pkg_test
- 98944d8 fix pkg test on ubuntu 12.04 for realz

**PR #24279: (*rallytime*) Backport #24263 to 2015.5** *@ 2015-06-01T04:29:34Z*

**PR #24263: (*cdarwin*) Correct usage of import_yaml in formula documentation**

refs: #24279

- 02017a0 Merge pull request #24279 from rallytime/bp-24263
- beff7c7 Correct usage of import_yaml in formula documentation

**PR #24277: (*rallytime*) Put a space between after_jump commands** *@ 2015-06-01T04:28:26Z*

**ISSUE #24226: (*c4urself*) iptables state needs to keep ordering of flags**

refs: #24277

- 2ba696d Merge pull request #24277 from rallytime/fix_iptables_jump
- e2d1606 Move after_jump split out of loop
- d14f130 Remove extra loop
- 42ed532 Put a space between after_jump commands

**PR #24262: (*basepi*) More dictupdate after #24142** *@ 2015-05-31T04:09:37Z*

**PR #24142: (*basepi*) Optimize dictupdate.update and add #24097 functionality**

refs: #24262

**PR #24097: (*kiorky*) Optimize dictupdate**

refs: #24142 #24142

- 113eba3 Merge pull request #24262 from basepi/dictupdatefix
- 0c4832c Raise a typeerror if non-dict types
- be21aaa Pylint
- bb8a6c6 More optimization
- c933249 py3 compat
- ff6b2a7 Further optimize dictupdate.update()
- c73f5ba Remove unused valtype

**PR #24269: (*kiorky*) zfs: Fix spurious retcode hijacking in virtual** *@ 2015-05-30T17:47:49Z*

- 785d5a1 Merge pull request #24269 from makinacorpus/zfs
- 0bf23ce zfs: Fix spurious retcode hijacking in virtual

**PR #24257: (*jfindlay*) fix pkg mod integration test on ubuntu 12.04** *@ 2015-05-29T23:09:00Z*

- 3d885c0 Merge pull request #24257 from jfindlay/pkg_tests
- 9508924 fix pkg mod integration test on ubuntu 12.04

**PR #24260: (*basepi*) Fix some typos from #24080** *@ 2015-05-29T22:54:58Z*

**ISSUE #23657: (*arthurlogilab*) [salt-cloud lxc] NameError: global name `__salt__' is not defined**

refs: #24080 #23982

**PR #24080: (*kiorky*) Lxc consistency2**

refs: #24260 #23982 #24066

**PR #24066: (*kiorky*) Merge forward 2015.5 -> develop**

refs: #23982

**PR #24065: (*kiorky*) continue to fix #23883**

refs: #24080 #24066

**PR #23982: (*kiorky*) lxc: path support**

refs: #24080

- 08a1075 Merge pull request #24260 from basepi/lxctypos24080
- 0fa1ad3 Fix another lxc typo
- 669938f s/you ll/you'll/

**PR #24080: (*kiorky*) Lxc consistency2**

refs: #24260 #23982 #24066

*@ 2015-05-29T22:51:54Z*

**ISSUE #23657: (*arthurlogilab*) [salt-cloud lxc] NameError: global name `__salt__' is not defined**

refs: #24080 #23982

**PR #24066: (*kiorky*) Merge forward 2015.5 -> develop**

refs: #23982

**PR #24065: (*kiorky*) continue to fix #23883**

refs: #24080 #24066

**PR #23982: (*kiorky*) lxc: path support**

refs: #24080

- 75590cf Merge pull request #24080 from makinacorpus/lxc_consistency2
- 81f8067 lxc: fix old lxc test
- 458f506 seed: lint
- 96b8d55 Fix seed.mkconfig yamldump
- 76ddb68 lxc/applynet: conservative
- ce7096f variable collision

- 8a8b28d lxc: lint
- 458b18b more lxc docs
- ef1f952 lxc docs: typos
- d67a43d more lxc docs
- 608da5e modules/lxc: merge resolution
- 27c4689 modules/lxc: more consistent comparison
- 07c365a lxc: merge conflict spotted
- 9993915 modules/lxc: rework settings for consistency
- ce11d83 lxc: Global doc refresh
- 61ed2f5 clouds/lxc: profile key is conflicting

**PR #24247: (*rallytime*) Backport #24220 to 2015.5** *@ 2015-05-29T21:40:01Z*

**ISSUE #24210: (*damonnk*) salt-cloud vsphere.py should allow key_filename param**

refs: #24220

**PR #24220: (*djcrabhat*) adding key_filename param to vsphere provider**

refs: #24247

- da14f3b Merge pull request #24247 from rallytime/bp-24220
- 0b1041d adding key_filename param to vsphere provider

**PR #24254: (*rallytime*) Add deprecation warning to Digital Ocean v1 Driver** *@ 2015-05-29T21:39:25Z*

**PR #22731: (*dmyerscough*) Decommission DigitalOcean APIv1 and have users use the new DigitalOcean APIv2**

refs: #24254

- 21d6126 Merge pull request #24254 from rallytime/add_deprecation_warning_digitalocean
- cafe37b Add note to docs about deprecation
- ea0f1e0 Add deprecation warning to digital ocean driver to move to digital_ocean_v2

**PR #24252: (*aboe76*) Updated suse spec to 2015.5.1** *@ 2015-05-29T21:38:45Z*

- dac055d Merge pull request #24252 from aboe76/opensuse_package
- 0ad617d Updated suse spec to 2015.5.1

**PR #24251: (*garethgreenaway*) Returners broken in 2015.5** *@ 2015-05-29T21:37:52Z*

- 49e7fe8 Merge pull request #24251 from garethgreenaway/2015_5_returner_brokenness
- 5df6b52 The code calling cfg as a function vs treating it as a dictionary and using get is currently backwards causing returners to fail when used from the CLI and in scheduled jobs.

**PR #24255: (*rallytime*) Clarify digital ocean documentation and mention v1 driver deprecation** *@ 2015-05-29T21:37:07Z*

**ISSUE #21498: (*rallytime*) Clarify Digital Ocean Documentation**

refs: #24255

- bfb9461 Merge pull request #24255 from rallytime/clarify_digital_ocean_driver_docs
- 8d51f75 Clarify digital ocean documentation and mention v1 driver deprecation

**PR #24232: (*rallytime*) Backport #23308 to 2015.5** *@ 2015-05-29T21:36:46Z*

**PR #23308: (*thusoy*) Don't merge: Add missing jump arguments to iptables module**

refs: #24232

- 41f5756 Merge pull request #24232 from rallytime/bp-23308
- 2733f66 Import string
- 9097cca Add missing jump arguments to iptables module

**PR #24245: (*Sacro*) Unset PYTHONHOME when starting the service** *@ 2015-05-29T20:00:31Z*

- a95982c Merge pull request #24245 from Sacro/patch-2
- 6632d06 Unset PYTHONHOME when starting the service

**PR #24121: (*hvnsweeting*) deprecate setting user permission in rabbitmq_vhost.present** *@ 2015-05-29T15:55:40Z*

- 1504c76 Merge pull request #24121 from hvnsweeting/rabbitmq-host-deprecate-set-permission
- 2223158 deprecate setting user permission in rabbitmq_host.present

**PR #24179: (*merll*) Changing user and group only possible for existing ids.** *@ 2015-05-29T15:52:43Z*

**PR #24169: (*merll*) Changing user and group only possible for existing ids.**

refs: #24179

- ba02f65 Merge pull request #24179 from Precis/fix-file-uid-gid-2015.0
- ee4c9d5 Use ids if user or group is not present.

**PR #24229: (*msteed*) Fix auth failure on syndic with external_auth** *@ 2015-05-29T15:04:06Z*

**ISSUE #24147: (*paclat*) Syndication issues when using authentication on master of masters.**

refs: #24229

- 9bfb066 Merge pull request #24229 from msteed/issue-24147
- 482d1cf Fix auth failure on syndic with external_auth

**PR #24234: (*jayeshka*) adding states/quota unit test case.** *@ 2015-05-29T14:14:27Z*

- 19fa43c Merge pull request #24234 from jayeshka/quota-states-unit-test
- c233565 adding states/quota unit test case.

**PR #24217: (*jfindlay*) disable intermittently failing tests** *@ 2015-05-29T03:08:39Z*

**ISSUE #40: (*thatch45*) Clean up timeouts**

refs: #22857

**PR #23623: (*jfindlay*) Fix /jobs endpoint's return**

refs: #24217

**PR #22857: (*jacksontj*) Fix /jobs endpoint's return**

refs: #23623

- e15142c Merge pull request #24217 from jfindlay/disable_bad_tests
- 6b62804 disable intermittently failing tests

**PR #24199: (*ryan-lane*) Various fixes for boto_route53 and boto_elb** *@ 2015-05-29T03:02:41Z*

- ce8e43b Merge pull request #24199 from lyft/route53-fix-elb
- d8dc9a7 Better unit tests for boto_elb state
- 62f214b Remove cnames_present test
- 7b9ae82 Lint fix
- b74b0d1 Various fixes for boto_route53 and boto_elb

**PR #24142: (*basepi*) Optimize dictupdate.update and add #24097 functionality**

refs: #24262

*@ 2015-05-29T03:00:56Z*

**PR #24097: (*kiorky*) Optimize dictupdate**

refs: #24142 #24142

**PR** #21968: (*ryanwohara*) Verifying the key has a value before using it. * a43465d Merge pull request #24142 from basepi/dictupdate24097 * 5c6e210 Deepcopy on merge_recurse

- a13c84a Fix None check from #21968
- 9ef2c64 Add docstring
- 8579429 Add in recursive_update from #24097
- 8599143 if key not in dest, don't recurse
- d8a84b3 Rename klass to valtype

**PR #24208: (*jayeshka*) adding states/ports unit test case.** *@ 2015-05-28T23:06:33Z*

- 526698b Merge pull request #24208 from jayeshka/ports-states-unit-test
- 657b709 adding states/ports unit test case.

**PR #24219: (*jfindlay*) find zfs without modinfo** *@ 2015-05-28T21:07:26Z*

**ISSUE #20635: (*dennisjac*) 2015.2.0rc1: zfs errors in log after update**

refs: #24219

- d00945f Merge pull request #24219 from jfindlay/zfs_check
- 15d4019 use the salt loader in the zfs mod
- 5599b67 try to search for zfs if modinfo is unavailable

**PR #24190: (*msteed*) Fix issue 23815** *@ 2015-05-28T20:10:34Z*

**ISSUE** #23815: (*Snergster*) [beacons] inotify errors on subdir creation * 3dc4b85 Merge pull request #24190 from msteed/issue-23815 * 086a1a9 lint

- 65de62f fix #23815
- d04e916 spelling
- db9f682 add inotify beacon unit tests

**PR #24211: (*rallytime*) Backport #24205 to 2015.5** *@ 2015-05-28T18:28:15Z*

**PR #24205: (*hazelesque*) Docstring fix in salt.modules.yumpkg.hold**

refs: #24211

- 436634b Merge pull request #24211 from rallytime/bp-24205
- 23284b5 Docstring fix in salt.modules.yumpkg.hold

**PR #24212: (*terminalmage*) Clarify error in rendering template for top file** *@ 2015-05-28T18:26:20Z*

- cc58624 Merge pull request #24212 from terminalmage/clarify-error-msg
- ca807fb Clarify error in rendering template for top file

**PR #24213: (*The-Loeki*) ShouldFix _- troubles in debian_ip** *@ 2015-05-28T18:24:39Z*

**ISSUE #23904: (*mbrgm*) Network config bonding section cannot be parsed when attribute names use dashes**

refs: #23917

**ISSUE #23900: (*hashi825*) salt ubuntu network building issue 2015.5.0**

refs: #23922

**PR #23922: (*garethgreenaway*) Fixes to debian_ip.py**

refs: #24213

**PR #23917: (*corywright*) Split debian bonding options on dash instead of underscore**

refs: #24213

- 9825160 Merge pull request #24213 from The-Loeki/patch-3
- a68d515 ShouldFix _- troubles in debian_ip

**PR #24214: (*basepi*) 2015.5.1release** *@ 2015-05-28T16:23:57Z*

- 071751d Merge pull request #24214 from basepi/2015.5.1release
- e5ba31b 2015.5.1 release date
- 768494c Update latest release in docs

**PR #24202: (*rallytime*) Backport #24186 to 2015.5** *@ 2015-05-28T05:16:48Z*

**PR #24186: (*thcipriani*) Update salt vagrant provisioner info**

refs: #24202

- c2f1fdb Merge pull request #24202 from rallytime/bp-24186
- db793dd Update salt vagrant provisioner info

**PR #24192: (*rallytime*) Backport #20474 to 2015.5** *@ 2015-05-28T05:16:18Z*

**PR #20474: (*djcrabhat*) add sudo, sudo_password params to vsphere deploy to allow for non-root deploys**

refs: #24192

- 8a085a2 Merge pull request #24192 from rallytime/bp-20474
- fd3c783 add sudo, sudo_password params to deploy to allow for non-root deploys

**PR #24184: (*rallytime*) Backport #24129 to 2015.5** *@ 2015-05-28T05:15:08Z*

**PR #24129: (*pengyao*) Wheel client doc**

refs: #24184

- 7cc535b Merge pull request #24184 from rallytime/bp-24129
- 722a662 fixed a typo
- 565eb46 Add cmd doc for WheelClient

**PR #24183: (*rallytime*) Backport #19320 to 2015.5** *@ 2015-05-28T05:14:36Z*

**PR #19320: (*clan*) add `state_output_profile' option for profile output**

refs: #24183

- eb0af70 Merge pull request #24183 from rallytime/bp-19320
- 55db1bf sate_output_profile default to True
- 9919227 fix type: statei -> state
- 0549ca6 add `state_output_profile' option for profile output

**PR #24201: (*whiteinge*) Add list of client libraries for the rest_cherrypy module to the top-level documentation** *@ 2015-05-28T02:12:09Z*

- 1b5bf23 Merge pull request #24201 from whiteinge/rest_cherrypy-client-libs
- 5f71802 Add list of client libraries for the rest_cherrypy module
- 28fc77f Fix rest_cherrypy config example indentation

**PR #24195: (*rallytime*) Merge #24185 with a couple of fixes** *@ 2015-05-27T22:18:37Z*

**PR #24185: (*jacobhammons*) Fixes for doc build errors**

refs: #24195

- 3307ec2 Merge pull request #24195 from rallytime/merge-24185
- d8daa9d Merge #24185 with a couple of fixes
- 634d56b Fixed pylon error
- 0689815 Fixes for doc build errors

**PR #24166: (*jayeshka*) adding states/pkgng unit test case.** *@ 2015-05-27T20:27:49Z*

- 7e400bc Merge pull request #24166 from jayeshka/pkgng-states-unit-test
- 2234bb0 adding states/pkgng unit test case.

**PR #24189: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5** *@ 2015-05-27T20:26:31Z*

**PR** #24178: (*rallytime*) Backport #24118 to 2014.7, too. **PR** #24159: (*rallytime*) Fill out modules/keystone.py CLI Examples **PR** #24158: (*rallytime*) Fix test_valid_docs test for tls module **PR** #24118: (*trevor-h*) removed deprecated pymongo usage

refs: #24139 #24178

- 9fcda79 Merge pull request #24189 from basepi/merge-forward-2015.5
- 8839e9c Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
- 9d7331c Merge pull request #24178 from rallytime/bp-24118
  - e2217a0 removed deprecated pymongo usage as no longer functional with pymongo > 3.x
- 4e8c503 Merge pull request #24159 from rallytime/keystone_doc_examples
  - dadac8d Fill out modules/keystone.py CLI Examples
- fc10ee8 Merge pull request #24158 from rallytime/fix_doc_error
  - 49a517e Fix test_valid_docs test for tls module

**PR #24181: (*jtand*) Fixed error where file was evaluated as a symlink in test_absent** *@ 2015-05-27T18:26:28Z*

- 2303dec Merge pull request #24181 from jtand/file_test
- 5f0e601 Fixed error where file was evaluated as a symlink in test_absent

**PR #24180: (*terminalmage*) Skip libvirt tests if not running as root** *@ 2015-05-27T18:18:47Z*

- a162768 Merge pull request #24180 from terminalmage/fix-libvirt-test
- 72e7416 Skip libvirt tests if not running as root

**PR #24165: (*jayeshka*) adding states/portage_config unit test case.** *@ 2015-05-27T17:15:08Z*

- 1fbc5b2 Merge pull request #24165 from jayeshka/portage_config-states-unit-test
- 8cf1505 adding states/portage_config unit test case.

**PR #24164: (*jayeshka*) adding states/pecl unit test case.** *@ 2015-05-27T17:14:26Z*

- 4747856 Merge pull request #24164 from jayeshka/pecl-states-unit-test
- 563a5b3 adding states/pecl unit test case.

**PR #24160: (*The-Loeki*) small enhancement to data module; pop()** *@ 2015-05-27T17:03:10Z*

- cdaaa19 Merge pull request #24160 from The-Loeki/patch-1
- 2175ff3 doc & merge fix
- eba382c small enhancement to data module; pop()

**PR #24153: (*techhat*) Batch mode sometimes improperly builds lists of minions to process** *@ 2015-05-27T16:21:53Z*

- 4a8dbc7 Merge pull request #24153 from techhat/batchlist
- 467ba64 Make sure that minion IDs are strings

**PR #24167: (*jayeshka*) adding states/pagerduty unit test case.** *@ 2015-05-27T16:14:01Z*

- ed8ccf5 Merge pull request #24167 from jayeshka/pagerduty-states-unit-test
- 1af8c83 adding states/pagerduty unit test case.

**PR #24156: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5** *@ 2015-05-27T15:05:01Z*

**ISSUE #23464: (*tibold*) cmd_iter_no_block() blocks**

refs: #24093

**PR** #24125: (*hvnsweeting*) Fix rabbitmq test mode **PR** #24093: (*msteed*) Make LocalClient.cmd_iter_no_block() not block **PR** #24008: (*davidjb*) Correct reST formatting for states.cmd documentation **PR** #23933: (*jacobhammons*) sphinx saltstack2 doc theme * b9507d1 Merge pull request #24156 from basepi/merge-forward-2015.5 * e52b5ab Remove stray >>>>>

- 7dfbd92 Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
  - c0d32e0 Merge pull request #24125 from hvnsweeting/fix-rabbitmq-test-mode
    - 71862c6 enhance log
    - 28e2594 change according to new output of rabbitmq module functions
    - cd0212e processes and returns better output for rabbitmq module
  - 39a8f30 Merge pull request #24093 from msteed/issue-23464
    - fd35903 Fix failing test
    - 41b344c Make LocalClient.cmd_iter_no_block() not block
  - 5bffd30 Merge pull request #24008 from davidjb/2014.7
    - 8b8d029 Correct reST formatting for documentation

- 1aa0420 Merge pull request #23933 from jacobhammons/2014.7
- a3613e6 removed numbering from doc TOC
- 78b737c removed 2015.* release from release notes, updated index page to remove PDF/epub links
- e867f7d Changed build settings to use saltstack2 theme and update release versions.
- 81ed9c9 sphinx saltstack2 doc theme

**PR #24145: (*jfindlay*) attempt to decode win update package** *@ 2015-05-26T23:20:20Z*

**ISSUE #24102: (*bormotov*) win_update encondig problems**

refs: #24145

- 05745fa Merge pull request #24145 from jfindlay/win_update_encoding
- cc5e17e attempt to decode win update package

**PR #24123: (*kiorky*) fix service enable/disable change** *@ 2015-05-26T21:24:19Z*

**ISSUE #24122: (*kiorky*) service.dead is no more stateful: services does not handle correctly enable/disable change state**

refs: #24123

- 7024789 Merge pull request #24123 from makinacorpus/ss
- 2e2e1d2 fix service enable/disable change

**PR #24146: (*rallytime*) Fixes the boto_vpc_test failure on CentOS 5 tests** *@ 2015-05-26T20:15:19Z*

- 51c3cec Merge pull request #24146 from rallytime/fix_centos_boto_failure
- ac0f97d Fixes the boto_vpc_test failure on CentOS 5 tests

**PR #24144: (*twangboy*) Compare Keys ignores all newlines and carriage returns** *@ 2015-05-26T19:25:48Z*

**ISSUE #24052: (*twangboy*) v2015.5.1 Changes the way it interprets the minion_master.pub file**

refs: #24089 #24144

**ISSUE #23566: (*rks2286*) Salt-cp corrupting the file after transfer to minion**

refs: #24144 #23740

**PR #23740: (*jfindlay*) Binary write**

refs: #24144

- 1c91a21 Merge pull request #24144 from twangboy/fix_24052
- c197b41 Compare Keys removing all newlines and carriage returns

**PR #24139: (*rallytime*) Backport #24118 to 2015.5** *@ 2015-05-26T18:24:27Z*

**PR #24118: (*trevor-h*) removed deprecated pymongo usage**

refs: #24139 #24178

- 0841667 Merge pull request #24139 from rallytime/bp-24118
- 4bb519b removed deprecated pymongo usage as no longer functional with pymongo > 3.x

**PR #24138: (*rallytime*) Backport #24116 to 2015.5** *@ 2015-05-26T18:23:51Z*

**PR #24116: (*awdrius*) Fixed typo in chown username (ending dot) that fails the command.**

refs: #24138

- 742eca2 Merge pull request #24138 from rallytime/bp-24116
- 7f08641 Fixed typo in chown username (ending dot) that fails the command.

**PR #24137: (*rallytime*) Backport #24105 to 2015.5** *@ 2015-05-26T18:23:40Z*

**PR #24105: (*cedwards*) Updated some beacon-specific documentation formatting**

refs: #24137

- e01536d Merge pull request #24137 from rallytime/bp-24105
- f0778a0 Updated some beacon-specific documentation formatting

**PR #24136: (*rallytime*) Backport #24104 to 2015.5** *@ 2015-05-26T15:58:47Z*

**ISSUE #23364**: (*pruiz*) Unable to destroy host using proxmox cloud: There was an error destroying machines: 501 Server Error: Method `DELETE /nodes/pmx1/openvz/openvz/100' not implemented **PR #24104**: (*pruiz*) Only try to stop a VM if it's not already stopped. (fixes #23364)

refs: #24136

- 89cdf97 Merge pull request #24136 from rallytime/bp-24104
- c538884 Only try to stop a VM if it's not already stopped. (fixes #23364)

**PR #24135: (*rallytime*) Backport #24083 to 2015.5** *@ 2015-05-26T15:58:27Z*

**PR #24083: (*swdream*) fix code block syntax**

refs: #24135

- 67c4373 Merge pull request #24135 from rallytime/bp-24083
- e1d06f9 fix code block syntax

**PR #24131: (*jayeshka*) adding states/mysql_user unit test case** *@ 2015-05-26T15:58:10Z*

- a83371e Merge pull request #24131 from jayeshka/mysql_user-states-unit-test
- ed1ef69 adding states/mysql_user unit test case

**PR #24130: (*jayeshka*) adding states/ntp unit test case** *@ 2015-05-26T15:57:29Z*

- 1dc1d2a Merge pull request #24130 from jayeshka/ntp-states-unit-test
- ede4a9f adding states/ntp unit test case

**PR #24128: (*jayeshka*) adding states/openstack_config unit test case** *@ 2015-05-26T15:56:08Z*

- 3943417 Merge pull request #24128 from jayeshka/openstack_config-states-unit-test
- ca09e0f adding states/openstack_config unit test case

**PR #24127: (*jayeshka*) adding states/npm unit test case** *@ 2015-05-26T15:55:18Z*

- 23f25c4 Merge pull request #24127 from jayeshka/npm-states-unit-test
- c3ecabb adding states/npm unit test case

**PR #24077: (*anlutro*) Change how state_verbose output is filtered** *@ 2015-05-26T15:41:11Z*

**ISSUE #24009: (*hvnsweeting*) state_verbose False summary is wrong**

refs: #24077

- 07488a4 Merge pull request #24077 from alprs/fix-outputter_highstate_nonverbose_count
- 7790408 Change how state_verbose output is filtered

**PR #24119: (*jfindlay*) Update contrib docs** *@ 2015-05-26T15:37:01Z*

- 224820f Merge pull request #24119 from jfindlay/update_contrib_docs
- fa2d411 update example release branch in contrib docs
- a0b76b5 clarify git rebase instructions
- 3517e00 fix contribution docs link typos
- 651629c backport dev contrib doc updates to 2015.5

**PR #23928: (*joejulian*) Add the ability to replace existing certificates** *@ 2015-05-25T19:47:26Z*

- 5488c4a Merge pull request #23928 from joejulian/2015.5_tls_module_replace_existing
- 4a4cbdd Add the ability to replace existing certificates

**PR #24078: (*jfindlay*) if a charmap is not supplied, set it to the codeset** *@ 2015-05-25T19:39:19Z*

**ISSUE #23221: (*Reiner030*) Debian Jessie: locale.present not working again**

refs: #24078

- dd90ef0 Merge pull request #24078 from jfindlay/locale_charmap
- 5eb97f0 if a charmap is not supplied, set it to the codeset

**PR #24088: (*jfindlay*) pkg module integration tests** *@ 2015-05-25T19:39:02Z*

- 9cec5d3 Merge pull request #24088 from jfindlay/pkg_tests
- f1bd5ec adding pkg module integration tests
- 739b2ef rework yumpkg refresh_db so args are not mandatory

**PR #24089: (*jfindlay*) allow override of binary file mode on windows** *@ 2015-05-25T19:38:44Z*

**ISSUE #24052: (*twangboy*) v2015.5.1 Changes the way it interprets the minion_master.pub file**

refs: #24089 #24144

- 517552c Merge pull request #24089 from jfindlay/binary_write
- b2259a6 allow override of binary file mode on windows

**PR #24092: (*jfindlay*) collect scattered contents edits, ensure it's a str** *@ 2015-05-25T19:38:10Z*

**ISSUE #23973: (*mschiff*) state file.managed: setting contents_pillar to a pillar which is a list throws exception instead givin**

refs: #24092

- 121ab9f Merge pull request #24092 from jfindlay/file_state
- cfa0f13 collect scattered contents edits, ensure it's a str

**PR #24112: (*The-Loeki*) thin_gen breaks when thinver doesn't exist** *@ 2015-05-25T19:37:47Z*

- 84e65de Merge pull request #24112 from The-Loeki/patch-1
- 34646ea thin_gen breaks when thinver doesn't exist

**PR #24108: (*jayeshka*) adding states/mysql_query unit test case** *@ 2015-05-25T12:30:48Z*

- ec509ed Merge pull request #24108 from jayeshka/mysql_query-states-unit-test
- ec50450 adding states/mysql_query unit test case

**PR #24110: (*jayeshka*) adding varnish unit test case** *@ 2015-05-25T12:30:21Z*

- f2e5d6c Merge pull request #24110 from jayeshka/varnish-unit-test

- e119889 adding varnish unit test case

**PR #24109: (*jayeshka*) adding states/mysql_grants unit test case** *@ 2015-05-25T12:29:53Z*

- 4fca2b4 Merge pull request #24109 from jayeshka/mysql_grants-states-unit-test
- 11a93cb adding states/mysql_grants unit test case

**PR #24028: (*nleib*) send a disable message to disable puppet** *@ 2015-05-25T04:02:11Z*

- 6b43c9a Merge pull request #24028 from nleib/2015.5
- 15f24b4 update format of string in disabled msg
- 7690e5b remove trailing whitespaces
- 56a9720 Update puppet.py
- 9686391 Update puppet.py
- 33f3d68 send a disable message to disable puppet

**PR #24100: (*jfindlay*) adding states/file unit test case** *@ 2015-05-24T05:17:54Z*

**PR #23963: (*jayeshka*) adding states/file unit test case**

refs: #24100

- 52c9aca Merge pull request #24100 from jfindlay/merge_23963
- 7d59deb adding states/file unit test case

**PR #24098: (*galet*) Systemd not recognized properly on Oracle Linux 7** *@ 2015-05-24T04:07:31Z*

**ISSUE #21446: (*dpheasant*) check for systemd on Oracle Linux**

refs: #24098

- 0eb9f15 Merge pull request #24098 from galet/2015.5
- 4d6ab21 Systemd not recognized properly on Oracle Linux 7

**PR #24090: (*jfindlay*) adding states/mount unit test case** *@ 2015-05-22T23:02:57Z*

**PR #24062: (*jayeshka*) adding states/mount unit test case**

refs: #24090

- 8e04db7 Merge pull request #24090 from jfindlay/merge_24062
- a81a922 adding states/mount unit test case

**PR #24086: (*rallytime*) Backport #22806 to 2015.5** *@ 2015-05-22T21:18:20Z*

**ISSUE #22574: (*unicolet*) error when which is not available**

refs: #22806

**PR #22806: (*jfindlay*) use cmd.run_all instead of cmd.run_stdout**

refs: #24086

- c0079f5 Merge pull request #24086 from rallytime/bp-22806
- f728f55 use cmd.run_all instead of cmd.run_stdout

**PR #24024: (*jayeshka*) adding states/mongodb_user unit test case** *@ 2015-05-22T20:53:19Z*

- 09de253 Merge pull request #24024 from jayeshka/mongodb_user-states-unit-test
- f31dc92 resolved errors

- d038b1f adding states/mongodb_user unit test case

**PR #24065: (*kiorky*) continue to fix #23883**

refs: #24080 #24066

*@ 2015-05-22T18:59:21Z*

**ISSUE #23883**: (*kaithar*) max_event_size seems broken * bfd812c Merge pull request #24065 from makinacorpus/real23883 * 028282e continue to fix #23883

**PR #24029: (*kiorky*) Fix providers handling** *@ 2015-05-22T16:56:06Z*

**ISSUE #24017: (*arthurlogilab*) [salt-cloud openstack] TypeError: unhashable type: `dict' on map creation**

refs: #24029

- 429adfe Merge pull request #24029 from makinacorpus/fixproviders
- 412b39b Fix providers handling

**PR #23936: (*jfindlay*) remove unreachable returns in file state** *@ 2015-05-22T16:26:49Z*

- a42cccc Merge pull request #23936 from jfindlay/file_state
- ac29c0c also validate file.recurse source parameter
- 57f7388 remove unreachable returns in file state

**PR #24063: (*jayeshka*) removed tuple index error** *@ 2015-05-22T14:58:20Z*

- 8b69b41 Merge pull request #24063 from jayeshka/mount-states-module
- b9745d5 removed tuple index error

**PR #24057: (*rallytime*) Backport #22572 to 2015.5** *@ 2015-05-22T05:36:25Z*

**PR #22572: (*The-Loeki*) Small docfix for GitPillar**

refs: #24057

- 02ac4aa Merge pull request #24057 from rallytime/bp-22572
- 49aad84 Small docfix for GitPillar

**PR #24040: (*rallytime*) Backport #24027 to 2015.5** *@ 2015-05-21T23:43:54Z*

**ISSUE #23088: (*wfhg*) Segfault when adding a Zypper repo on SLES 11.3**

refs: #24027

**PR #24027: (*wfhg*) Add baseurl to salt.modules.zypper.mod_repo**

refs: #24040

- 82de059 Merge pull request #24040 from rallytime/bp-24027
- 37d25d8 Added baseurl as alias for url and mirrorlist in salt.modules.zypper.mod_repo.

**PR #24039: (*rallytime*) Backport #24015 to 2015.5** *@ 2015-05-21T23:43:25Z*

**PR #24015: (*YanChii*) minor improvement of solarisips docs & fix typos**

refs: #24039

- d909781 Merge pull request #24039 from rallytime/bp-24015
- 6bfaa94 minor improvement of solarisips docs & fix typos

**PR #24038: (*rallytime*) Backport #19599 to 2015.5** *@ 2015-05-21T23:43:10Z*

**ISSUE #19598: (*fayetted*) ssh_auth.present test=true incorectly reports changes will be made**

refs: #19599

**PR #19599: (*fayetted*) Fix ssh_auth test mode, compare lines not just key**

refs: #24038

- 4a0f254 Merge pull request #24038 from rallytime/bp-19599
- ea00d3e Fix ssh_auth test mode, compare lines not just key

**PR #24046: (*rallytime*) Remove key management test from digital ocean cloud tests** *@ 2015-05-21T22:32:04Z*

- 42b87f1 Merge pull request #24046 from rallytime/remove_key_test
- 1d031ca Remove key management test from digital ocean cloud tests

**PR #24044: (*cro*) Remove spurious log message, fix typo in doc** *@ 2015-05-21T22:31:49Z*

- eff54b1 Merge pull request #24044 from cro/pgjsonb
- de06633 Remove spurious log message, fix typo in doc

**PR #24001: (*msteed*) issue #23883** *@ 2015-05-21T20:32:30Z*

**ISSUE** #23883: (*kaithar*) max_event_size seems broken * ac32000 Merge pull request #24001 from msteed/issue-23883 * bea97a8 issue #23883

**PR #23995: (*kiorky*) Lxc path pre** *@ 2015-05-21T17:26:03Z*

- f7fae26 Merge pull request #23995 from makinacorpus/lxc_path_pre
- 319282a lint
- 1dc67e5 lxc: versionadded
- fcad7cb lxc: states improvements
- 644bd72 lxc: more consistence for profiles
- 139372c lxc: remove merge cruft
- 725b046 lxc: Repair merge

**PR #24032: (*kartiksubbarao*) Update augeas_cfg.py** *@ 2015-05-21T17:03:42Z*

**ISSUE #16383: (*interjection*) salt.states.augeas.change example from docs fails with exception**

refs: #24032

- 26d6851 Merge pull request #24032 from kartiksubbarao/augeas_insert_16383
- 3686dcd Update augeas_cfg.py

**PR #24025: (*jayeshka*) adding timezone unit test case** *@ 2015-05-21T16:50:53Z*

- 55c9245 Merge pull request #24025 from jayeshka/timezone-unit-test
- 1ec33e2 removed assertion error
- 16ecb28 adding timezone unit test case

**PR #24023: (*jayeshka*) adding states/mongodb_database unit test case** *@ 2015-05-21T16:49:17Z*

- e243617 Merge pull request #24023 from jayeshka/mongodb_database-states-unit-test
- 5a9ac7e adding states/mongodb_database unit test case

**PR #24022: (*jayeshka*) adding states/modjk_worker unit test case** *@ 2015-05-21T16:48:29Z*

- b377bd9 Merge pull request #24022 from jayeshka/modjk_worker-states-unit-test
- 05c0a98 adding states/modjk_worker unit test case

**PR #24005: (*msteed*) issue #23776** @ *2015-05-21T01:55:34Z*

**ISSUE** #23776: (*enblde*) Presence change events constantly reporting all minions as new in 2015.5 * 701c51b Merge pull request #24005 from msteed/issue-23776 * 62e67d8 issue #23776

**PR #23996: (*neogenix*) iptables state generates a 0 position which is invalid in iptables cli #23950** @ *2015-05-20T22:44:27Z*

**ISSUE #23950: (*neogenix*) iptables state generates a 0 position which is invalid in iptables cli**

refs: #23996

- 17b7c0b Merge pull request #23996 from neogenix/2015.5-23950
- ad417a5 fix for #23950

**PR #23994: (*rallytime*) Skip the gpodder pkgrepo test for Ubuntu 15 - they don't have vivid ppa up yet** @ *2015-05-20T21:18:21Z*

- 4cb8773 Merge pull request #23994 from rallytime/skip_test_ubuntu_15
- 9e0ec07 Skip the gpodder pkgrepo test - they don't have vivid ppa up yet

### 18.2.27 Salt 2015.5.3 Release Notes

Extended Changelog Courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2015-07-01T19:40:52Z*

Statistics:

- Total Merges: **177**
- Total Issue references: **81**
- Total PR references: **231**

Changes:

- **PR** #25096: (*jfindlay*) Postgres group test @ *2015-07-01T18:48:26Z*
  - **PR** #24330: (*jayeshka*) adding states/postgres_group unit test case. | refs: #25096
  - 21709aa Merge pull request #25096 from jfindlay/postgres_group_test
  - 3c379dc declobber postgres state unit test mocking
  - a162ffa adding states/postgres_group unit test case.
- **PR** #25085: (*jfindlay*) accept all sources in the file state @ *2015-07-01T18:23:45Z*
  - **ISSUE** #25041: (*wt*) REGRESSION: pillar.get of integer fails to render in sls | refs: #25085
  - 0a84640 Merge pull request #25085 from jfindlay/fix_file
  - 937a252 remove unnecessary file state tests
  - 6f238e9 integration test file.managed sources
  - a5978d3 iterate an iterable source othwerise list+str it
- **PR** #25095: (*jfindlay*) Win groupadd unit tests @ *2015-07-01T18:18:53Z*
  - **PR** #24207: (*jayeshka*) adding win_groupadd unit test case. | refs: #25095

  - a983942 Merge pull request #25095 from jfindlay/win_groupadd_test
  - 564dffd depend on win libs rather than mocking them
  - 9b9aeb8 resolved all errors.
  - aaf8935 adding win_groupadd unit test case.
- **PR** #25089: (*jfindlay*) fix minion sudo @ *2015-07-01T15:53:16Z*
  - **ISSUE** #21520: (*jfindlay*) sudo.salt_call is broken | refs: #25089
  - **PR** #20226: (*thatch45*) Allow sudo priv escalation | refs: #25089
  - 7c8d2a8 Merge pull request #25089 from jfindlay/fix_sudo
  - d8f91d4 add some apprehension to the sudo exec module
  - a9269c0 adding sudo exec module docs
  - e4a40b7 comment whitespace in minion config
  - 44cb167 adding sudo_user minion config docs
  - d461060 adding sudo_user minion config to default
- **PR** #25099: (*driskell*) Fix broken batch results @ *2015-07-01T15:51:29Z*
  - **ISSUE** #24875: (*ahammond*) ValueError: list.remove(x): x not in list in File ``/usr/lib/python2.6/site-packages/salt/cli/batch.py'', line 179, in run active.remove(minion) | refs: #25099
  - 4d6078e Merge pull request #25099 from driskell/patch-1
  - 59b23e5 Fix broken batch results
- **PR** #25083: (*steverweber*) ipmi: get_sensor_data would always fail @ *2015-06-30T20:57:21Z*
  - 4635079 Merge pull request #25083 from steverweber/fix_ipmi_stat
  - 836f48c include _ in IpmiCommand
  - 817e434 get_sensor_data would always fail
- **PR** #25067: (*The-Loeki*) Fix for maxdepth=0 in find @ *2015-06-30T20:54:06Z*
  - 15f2a40 Merge pull request #25067 from The-Loeki/patch-1
  - 61edad3 Fix for maxdepth=0 in find
- **PR** #25078: (*terminalmage*) Use smaller number for upper limit of mac_user's _first_avail_uid helper function @ *2015-06-30T20:53:24Z*
  - 58d933c Merge pull request #25078 from terminalmage/fix-mac-uid
  - df2ab7e Use smaller number for upper limit of mac_user's _first_avail_uid helper function
- **PR** #25045: (*garethgreenaway*) Fixes to debian_ip.py in 2015.5 @ *2015-06-30T17:36:43Z*
  - **ISSUE** #24521: (*multani*) State network.managed fails on Debian (Jessie) | refs: #25045
  - ebd6cdc Merge pull request #25045 from garethgreenaway/24521_debian_networking
  - 6f2a6c9 having proto default to static since it's needed to build the template.
- **PR** #25065: (*lorengordon*) Add download links for 2015.5.1-3 and 2015.5.2 Windows installers @ *2015-06-30T15:29:31Z*
  - **ISSUE** #25057: (*TheBigBear*) why is there still no newer salt-minion for windows than ver. 2015.5.0-2? no 2015.5.1 or 2015.5.2?

  - ae31b27 Merge pull request #25065 from lorengordon/update-windows-installer-links
  - 40a0c13 Add download links for 2015.5.1-3 and 2015.5.2, Fixes #25057
- **PR** #25052: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-06-30T01:05:00Z*
  - **ISSUE** #15209: (*hubez*) file.manage: source_hash not working with s3:// (2014.7.0rc1) | refs: #25011
  - **PR** #25011: (*notpeter*) Add s3 to protocols for remote source_hash (2014.7 backport)
  - ddaeb0f Merge pull request #25052 from basepi/merge-forward-2015.5
  - 2c5e664 Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
  - a7154e7 Merge pull request #25011 from notpeter/s3_2014.7_backport
    * 8b8af64 Add s3 to protocols for remote source_hash
- **PR** #25038: (*jfindlay*) versionadded @ *2015-06-29T19:49:27Z*
  - **PR** #24747: (*msciciel*) add get_route function to network module | refs: #25038
  - c7003d4 Merge pull request #25038 from jfindlay/versionadded
  - d6dc6f9 versionadded
- **PR** #24747: (*msciciel*) add get_route function to network module | refs: #25038 @ *2015-06-29T16:51:43Z*
  - 28c87ca Merge pull request #24747 from msciciel/2015.5
  - 79b4ec2 network module lint fix
  - 0b6ef78 network module: fix for ipv6
  - f3d184c add get_route function to network module
- **PR** #24975: (*ryan-lane*) Fix update of undefined env var in npm module @ *2015-06-29T16:45:05Z*
  - 46a9677 Merge pull request #24975 from lyft/npm-module-fix
  - 6fde581 Try byte literals rather than unicode strings in the env
  - c8514de Fix update of undefined env var in npm module
- **PR** #24986: (*heewa*) Don't modify empty change @ *2015-06-29T16:44:17Z*
  - 9cf8550 Merge pull request #24986 from heewa/fix-pkg-hold-when-errored
  - d47a448 Don't modify empty change
- **PR** #24999: (*rallytime*) Provide a less confusing error when cloud provider is misconfigured @ *2015-06-29T16:43:31Z*
  - **ISSUE** #24969: (*bradthurber*) salt-cloud 2015.5.0: missing azure dependency results in misleading error | refs: #24999
  - ece897d Merge pull request #24999 from rallytime/cloud_error_help
  - 1e81a88 Clean up
  - be19a67 Provide a less confusing error when cloud provider is misconfigured
- **PR** #24987: (*heewa*) Don't try to cache a template when it's not a file @ *2015-06-29T14:02:59Z*
  - 4af15cf Merge pull request #24987 from heewa/fix-trying-to-cache-no-file
  - 9ae0c78 Don't try to cache a template when it's not a file
- **PR** #25022: (*jfindlay*) revise label and milestone documentation @ *2015-06-29T13:51:24Z*
  - 8eeaddb Merge pull request #25022 from jfindlay/label_docs

  - 8575192 revise label and milestone documentation

- **PR** #25029: (*jayeshka*) adding redismod unit test case. @ *2015-06-29T13:50:33Z*
  - 89c2e01 Merge pull request #25029 from jayeshka/redismod-unit-test
  - e3045be adding redismod unit test case.
- **PR** #24995: (*rallytime*) Fix deprecated pymongo usage causing errors in latest pymongo @ *2015-06-27T22:28:56Z*
  - **PR** #24175: (*trevor-h*) fix deprecated pymongo usage causing errors in latest pymongo | refs: #24995
  - 6425252 Merge pull request #24995 from rallytime/tops_mongo
  - a3c1063 fix deprecated pymongo usage causing errors in latest pymongo
- **PR** #24994: (*garethgreenaway*) Another Fix to gpg.py in 2015.5 @ *2015-06-27T22:28:15Z*
  - **ISSUE** #24862: (*dkatsanikakis*) gpg.import_key returns error after successfully completed | refs: #24966 #24994
  - e9aaa11 Merge pull request #24994 from garethgreenaway/2015_5_24862_gpg_import_key
  - d2f0d8f variable was referenced before assignment. Just removing the variable and checking the return from distutils.version.LooseVersion directly.
- **PR** #24988: (*jayeshka*) adding states/supervisord unit test case. @ *2015-06-27T22:24:42Z*
  - ebd666e Merge pull request #24988 from jayeshka/supervisord-states-unit-test
  - bb0a6d5 adding states/supervisord unit test case.
- **PR** #25007: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-06-26T21:28:57Z*
  - **ISSUE** #24915: (*jtand*) Salt-cloud not working in 2014.7.6 | refs: #24944
  - **PR** #24944: (*techhat*) Double-check main_cloud_config
  - **PR** #24936: (*jtand*) Fixed ps module to not use depreciated psutil commands
  - 0487c3c Merge pull request #25007 from basepi/merge-forward-2015.5
  - 4980fd5 Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
  - a11e4c6 Merge pull request #24944 from techhat/issue24915
    * 59c3081 Double-check main_cloud_config
  - d26a544 Merge pull request #24936 from jtand/psutil
    * bdb7a19 Fixed ps module to not use depreciated psutil commands
- **PR** #25003: (*jacobhammons*) Updated man pages @ *2015-06-26T19:13:41Z*
  - 91a60e1 Merge pull request #25003 from jacobhammons/man-pages
  - cf97a4a Updated man pages
- **PR** #25002: (*jacobhammons*) sphinx html theme updates @ *2015-06-26T18:39:14Z*
  - a60a2c4 Merge pull request #25002 from jacobhammons/doc-announcements
  - f88f344 sphinx html theme updates
- **PR** #24977: (*rallytime*) Only warn about digital ocean deprecation if digital ocean is configured @ *2015-06-25T23:54:46Z*
  - a791b23 Merge pull request #24977 from rallytime/do_move_warning

  - 6b54422 Only warn about digital ocean deprecation if digital ocean is configured

- **PR** #24966: (*garethgreenaway*) Fixes to gpg.py in 2015.5 @ *2015-06-25T19:58:49Z*
  - **ISSUE** #24862: (*dkatsanikakis*) gpg.import_key returns error after successfully completed | refs: #24966 #24994
  - a71c1b7 Merge pull request #24966 from garethgreenaway/2015_5_24862_gpg_import_key
  - 55eb73b fixing unit tests.
  - 80c24be Fixing an issue with the import_key method. Different results depending on which gnupg python module is installed.
- **PR** #24965: (*jacksontj*) Fix memory leak in saltnado @ *2015-06-25T18:48:03Z*
  - **ISSUE** #24846: (*mavenAtHouzz*) Memory leak issue in rest_tornado EventListener | refs: #24965
  - 8622184 Merge pull request #24965 from jacksontj/2015.5
  - 48b5e16 pylint
  - 87adca4 Fix memory leak in saltnado
- **PR** #24948: (*jfindlay*) fix some malformed doc links and anchors @ *2015-06-25T15:51:38Z*
  - 773c4cf Merge pull request #24948 from jfindlay/doc_links
  - 152a9b2 fix some malformed doc links and anchors
- **PR** #24886: (*anlutro*) Be more careful about stripping away root_dir from directory options @ *2015-06-25T15:50:11Z*
  - **ISSUE** #24885: (*anlutro*) Master config - Directories starting with a dot have the dot stripped when root_dir is . | refs: #24886
  - 4ebc01e Merge pull request #24886 from alprs/fix-root_dir_bug
  - 52ccafd os.sep is the correct directory separator constant
  - 0ecbf26 Be more careful about stripping away root_dir from directory options
- **PR** #24930: (*jacksontj*) Don't refetch file templates 100% of the time-- Performance optimization for templated files @ *2015-06-24T21:22:47Z*
  - f52f7e1 Merge pull request #24930 from jacksontj/2015.5
  - 5fb7534 Only parse the source if we have one
  - c03a6fa Add support for sources of managed files to be local
  - 4cf78a0 pylint
  - d70914e Don't refetch the template 100% of the time-- Performance optimization for templated files
- **PR** #24935: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-06-24T18:17:54Z*
  - **PR** #24918: (*BretFisher*) SmartOS SMF minion startup fix
  - **PR** #473: (*whiteinge*) Added a couple functions to work with the minion file cache | refs: #24918
  - 925a4d9 Merge pull request #24935 from basepi/merge-forward-2015.5
  - 8d8bf34 Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
  - eeb05a1 Merge pull request #24918 from BretFisher/minion-start-smartos-smf-fix
    * d7bfb0c Smartos smf minion fix
- **PR** #24873: (*jfindlay*) convert osrelease grain to str before str op @ *2015-06-24T16:43:08Z*

  - **ISSUE** #24826: (*rakai93*) rh_service.py: `int' object has no attribute `startswith' | refs: #24873
  - 4e8ed0d Merge pull request #24873 from jfindlay/rh_service
  - febe6ef convert osrelease grain to str before str op
- **PR** #24923: (*jayeshka*) adding states/status unit test case. @ *2015-06-24T15:50:07Z*
  - 90819f9 Merge pull request #24923 from jayeshka/status-states-unit-test
  - baec650 adding states/status unit test case.
- **PR** #24902: (*cro*) Fix minion failover, document same @ *2015-06-24T15:20:43Z*
  - 2dd24ec Merge pull request #24902 from cro/fixfo2
  - 90c73ff References to documentation.
  - f0c9204 Add references to failover parameters in conf
  - 9da96a8 Docs
  - e2314f0 Move comment.
  - b9a756f Fix master failover and add documentation for same. Factor in syndics. Syndics will not failover (yet).
- **PR** #24926: (*rallytime*) Back-port #22263 to 2015.5 @ *2015-06-24T15:09:40Z*
  - **PR** #22263: (*cachedout*) Prevent a load from being written if one already exists | refs: #24926
  - 087ee09 Merge pull request #24926 from rallytime/bp-22263
  - 8c92d9c Prevent a load from being written if one already exists
- **PR** #24900: (*rallytime*) Back-port #24848 to 2015.5 @ *2015-06-24T15:09:18Z*
  - **PR** #24848: (*nmadhok*) Correcting bash code blocks | refs: #24900
  - b34a74f Merge pull request #24900 from rallytime/bp-24848
  - d2b5456 Correcting bash code blocks
- **PR** #24899: (*rallytime*) Back-port #24847 to 2015.5 @ *2015-06-24T15:09:01Z*
  - **PR** #24847: (*borutmrak*) unset size parameter for lxc.create when backing=zfs | refs: #24899
  - a546e8e Merge pull request #24899 from rallytime/bp-24847
  - 1e4ec7a unset size parameter for lxc.create when backing=zfs
- **PR** #24898: (*rallytime*) Back-port #24845 to 2015.5 @ *2015-06-24T15:06:09Z*
  - **PR** #24845: (*porterjamesj*) fix bug in docker.loaded | refs: #24898
  - d4dd8d2 Merge pull request #24898 from rallytime/bp-24845
  - 071049a fix bug in docker.loaded
- **PR** #24897: (*rallytime*) Back-port #24839 to 2015.5 @ *2015-06-24T15:05:35Z*
  - **ISSUE** #24799: (*infestdead*) Forced remount because options changed when no options changed (glusterfs)
  - **PR** #24839: (*infestdead*) fix for issue #24799 | refs: #24897
  - 6930855 Merge pull request #24897 from rallytime/bp-24839
  - f3b20d5 fix for issue #24799
- **PR** #24891: (*jayeshka*) adding states/ssh_known_hosts unit test case. @ *2015-06-23T16:46:58Z*

  - 1650233 Merge pull request #24891 from jayeshka/ssh_known_hosts-states-unit-test
  - ef1347f adding states/ssh_known_hosts unit test case.

- **PR** #24874: (*dkiser*) Fix for salt-cloud when ssh key used to auth and using sudo. @ *2015-06-22T23:46:08Z*
  - **ISSUE** #24870: (*dkiser*) salt-cloud fails on sudo password prompt when using ssh key to auth | refs: #24874
  - c32aae9 Merge pull request #24874 from dkiser/salt-cloud-24870
  - 6c31143 Fix key error for the PR to fix #24870.
  - bdcf7d8 Fix pylint for #24874.
  - 8f66d19 Fix for salt-cloud when ssh key used to auth and using sudo.

- **PR** #24880: (*dkiser*) Fix to allow password for salt-cloud to be set outside of a vm specif... @ *2015-06-22T23:44:59Z*
  - **ISSUE** #24871: (*dkiser*) salt-cloud fails to honor `password' in cloud options before raising an exception | refs: #24880
  - ddaa21c Merge pull request #24880 from dkiser/salt-cloud-24871
  - 4f6c035 Fix to allow password for salt-cloud to be set outside of a vm specific context.

- **PR** #24852: (*pruiz*) Fix issue 24851: regular expression so it now matches packages with `.' or `-` at pkg name @ *2015-06-22T20:37:13Z*
  - 3902b16 Merge pull request #24852 from pruiz/issue-24851
  - 73adb1d Fix regular expression so it now matches packages with `.' or `-` at pkg name.

- **PR** #24861: (*jayeshka*) adding states/ssh_auth unit test case. @ *2015-06-22T16:20:01Z*
  - 6c5b788 Merge pull request #24861 from jayeshka/ssh_auth-states-unit-test
  - e5d7b0d adding states/ssh_auth unit test case.

- **PR** #24824: (*kev009*) Detect bhyve virtual type for FreeBSD guests @ *2015-06-22T15:24:35Z*
  - **ISSUE** #23478: (*calvinhp*) grains.get virtual reports ``physical'' on bhyve FreeBSD VM | refs: #24824
  - 9e3321c Merge pull request #24824 from kev009/grains-bhyve-bsd
  - a226209 Detect bhyve virtual type for freebsd guests

- **PR** #24795: (*anlutro*) Fix state.apply for salt-ssh @ *2015-06-22T15:23:57Z*
  - **ISSUE** #24746: (*anlutro*) state.apply doesn't seem to work | refs: #24795
  - 7b07ef9 Merge pull request #24795 from alprs/fix-salt_ssh_state_apply
  - 905840b Fix state.apply for salt-ssh

- **PR** #24832: (*jacksontj*) Don't incur a ``_load_all'' of the lazy_loader while looking for mod_init. @ *2015-06-22T15:17:10Z*
  - **PR** #20540: (*jacksontj*) Loader nomerge: Don't allow modules to ``merge'' | refs: #24832
  - **PR** #20481: (*jacksontj*) Add submodule support to LazyLoader | refs: #20540
  - **PR** #20473: (*jacksontj*) Add ``disabled'' support | refs: #20481
  - **PR** #20274: (*jacksontj*) Loader overhaul to LazyLoader | refs: #20473
  - **PR** #12327: (*jacksontj*) Add a LazyLoader class which will lazily load modules (with the given lo... | refs: #20274

  - 31d4c13 Merge pull request #24832 from jacksontj/2015.5
  - cfa7c0a pylint
  - be18439 Don't incur a ``_load_all'' of the lazy_loader while looking for mod_init.
- **PR** #24834: (*rallytime*) Back-port #24811 to 2015.5 @ *2015-06-19T18:43:49Z*
  - **ISSUE** #14666: (*luciddr34m3r*) salt-cloud GoGrid exception when using map file | refs: #24811
  - **PR** #24811: (*rallytime*) Add notes to map and gogrid docs -- don't use -P with map files | refs: #24834
  - 2d8148f Merge pull request #24834 from rallytime/bp-24811
  - e2684ec Add notes to map and gogrid docs -- don't use -P with map files
- **PR** #24790: (*rallytime*) Back-port #24741 to 2015.5 @ *2015-06-19T17:25:58Z*
  - **PR** #24741: (*CameronNemo*) Improve Upstart enable/disable handling | refs: #24790
  - d2edb63 Merge pull request #24790 from rallytime/bp-24741
  - a54245f Add missing import
  - 4ce6370 salt.modules.upstart: fix lint errors
  - aec53ec Improve Upstart enable/disable handling
- **PR** #24789: (*rallytime*) Back-port #24717 to 2015.5 @ *2015-06-19T17:17:00Z*
  - **PR** #24717: (*gthb*) virtualenv.managed: document user and no_chown | refs: #24789
  - 645e62a Merge pull request #24789 from rallytime/bp-24717
  - 95ac4eb virtualenv.managed: document user and no_chown
- **PR** #24823: (*jayeshka*) adding states/splunk_search unit test case. @ *2015-06-19T17:14:12Z*
  - 0a6c70f Merge pull request #24823 from jayeshka/splunk_search-states-unit-test
  - 98831a8 adding states/splunk_search unit test case.
- **PR** #24809: (*jodv*) Correctly create single item list for failover master type with string value for master opt @ *2015-06-19T15:22:20Z*
  - 4c5a708 Merge pull request #24809 from jodv/single_item_master_list
  - 18ceebc single item list vs. list of characters
- **PR** #24802: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-06-18T20:11:58Z*
  - **ISSUE** #24776: (*nmadhok*) --static option in salt raises ValueError and has been broken for a very long time | refs: #24777
  - **ISSUE** #21318: (*thanatos*) get_full_returns raises KeyError | refs: #24769
  - **ISSUE** #18994: (*njhartwell*) salt.client.get_cli_returns errors when called immediately after run_job | refs: #24769
  - **ISSUE** #17041: (*xenophonf*) Confusing Salt error messages due to limited/incomplete PowerShell command error handling | refs: #24690
  - **ISSUE** #19: (*thatch45*) Sending a faulty command kills all the minions!
  - **PR** #24780: (*nmadhok*) Backporting PR #24777 to 2014.7 branch
  - **PR** #24779: (*nmadhok*) Backporting Changes to 2014.7 branch | refs: #24777
  - **PR** #24778: (*nmadhok*) Backporting PR #24777 to 2015.2 branch | refs: #24777

  - **PR** #24777: (*nmadhok*) Fixing issue where --static option fails with ValueError Fixes #24776 | refs: #24778 #24780
  - **PR** #24769: (*msteed*) Fix stacktrace in get_cli_returns()
  - **PR** #24690: (*twangboy*) Report powershell output instead of error
  - ae05e70 Merge pull request #24802 from basepi/merge-forward-2015.5
  - 5b7a65d Merge pull request #19 from twangboy/merge-forward-fixes
    * 98e7e90 Fixed test failures for Colton
  - b949856 Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
    * 4281dff Merge pull request #24780 from nmadhok/backport-2014.7-24777
      · c53b0d9 Backporting PR #24777 to 2014.7 branch
    * f3c5cb2 Merge pull request #24769 from msteed/issue-21318
      · f40a9d5 Fix stacktrace in get_cli_returns()
    * 59db246 Merge pull request #24690 from twangboy/fix_17041
      · 7a01538 Added additional reporting
      · d84ad5d Fixed capitalization... Failed and Already
      · e955245 Merge branch `2014.7' of https://github.com/saltstack/salt into fix_17041
      · 144bff2 Report powershell output instead of error
- **PR** #24798: (*jtand*) Revert ``adding states/postgres_database unit test case.'' @ *2015-06-18T17:56:17Z*
  - **PR** #24329: (*jayeshka*) adding states/postgres_database unit test case. | refs: #24798
  - daa76c3 Merge pull request #24798 from saltstack/revert-24329-postgres_database-states-unit-test
  - 179ce03 Revert ``adding states/postgres_database unit test case.''
- **PR** #24791: (*rallytime*) Back-port #24749 to 2015.5 @ *2015-06-18T17:43:15Z*
  - **PR** #24749: (*obestwalter*) add windows specific default for multiprocessing | refs: #24791
  - 7073a9f Merge pull request #24791 from rallytime/bp-24749
  - be43b2b add windows specific default for multiprocessing
- **PR** #24792: (*rallytime*) Back-port #24757 to 2015.5 @ *2015-06-18T15:58:35Z*
  - **PR** #24757: (*cachedout*) Fix loader call in pyobjects | refs: #24792
  - **PR** #24668: (*grischa*) enable virtual package names in pyobjects renderer | refs: #24721 #24757
  - 1a158e8 Merge pull request #24792 from rallytime/bp-24757
  - 6c804f0 Fix loader call in pyobjects
- **PR** #24768: (*jfindlay*) fix yum versionlock on RHEL/CentOS 5, disable corresponding test @ *2015-06-18T15:13:12Z*
  - 0f92982 Merge pull request #24768 from jfindlay/pkg_mod
  - 7a26c2b disable pkg.hold test for RHEL/CentOS 5
  - 4cacd93 use correct yum versionlock pkg name on centos 5
- **PR** #24778: (*nmadhok*) Backporting PR #24777 to 2015.2 branch | refs: #24777 @ *2015-06-18T14:53:04Z*

  - **ISSUE** #24776: (*nmadhok*) --static option in salt raises ValueError and has been broken for a very long time | refs: #24777
  - **PR** #24779: (*nmadhok*) Backporting Changes to 2014.7 branch | refs: #24777
  - **PR** #24777: (*nmadhok*) Fixing issue where --static option fails with ValueError Fixes #24776 | refs: #24778 #24780
  - 39f088a Merge pull request #24778 from nmadhok/backport-2015.2-24777
  - ae3701f Backporting PR #24777 to 2015.2 branch
- **PR** #24774: (*zefrog*) Fix lxc lvname parameter command @ *2015-06-18T14:49:06Z*
  - 2a4f65f Merge pull request #24774 from zefrog/fix-lxc-lvname-param
  - 21e0cd4 Fixed typo in lxc module: lvname parameter typo
  - 283d86e Fixed bug in lxc module: lvname using wrong parameter in cmd
- **PR** #24782: (*jayeshka*) adding states/slack unit test case. @ *2015-06-18T14:33:55Z*
  - fd73390 Merge pull request #24782 from jayeshka/slack-states-unit-test
  - e2b6214 adding states/slack unit test case.
- **PR** #24771: (*jacksontj*) Always extend requisites, instead of replacing them @ *2015-06-18T14:29:09Z*
  - **ISSUE** #24770: (*jacksontj*) *Requisite* and *Requisite_in* don't play nice together | refs: #24771
  - c9c90af Merge pull request #24771 from jacksontj/2015.5
  - b1211c5 Re-enable tests for complex prereq and prereq_in
  - 378f6bf Only merge when the merge is of requisites
- **PR** #24766: (*msteed*) Remove doc references to obsolete minion opt @ *2015-06-17T21:36:55Z*
  - 5fe4de8 Merge pull request #24766 from msteed/undoc-dns_check
  - f92a769 Remove doc references to obsolete minion opt
- **PR** #24329: (*jayeshka*) adding states/postgres_database unit test case. | refs: #24798 @ *2015-06-17T19:11:02Z*
  - a407ab7 Merge pull request #24329 from jayeshka/postgres_database-states-unit-test
  - ee06f1a adding states/postgres_database unit test case.
- **PR** #24632: (*jacobhammons*) Doc bug fixes @ *2015-06-17T18:40:02Z*
  - **ISSUE** #24560: (*hydrosine*) Documentation missing on parameter | refs: #24632
  - **ISSUE** #24547: (*dragonpaw*) Artifactory docs say module is `jboss7'. | refs: #24632
  - **ISSUE** #24375: (*companykitchen-dev*) Custom grain won't sync under any circumstances | refs: #24632
  - **ISSUE** #24275: (*kartiksubbarao*) augeas issue with apache and recognizing changes that have been already made | refs: #24632
  - **ISSUE** #24163: (*tbaker57*) enable_gpu_grains default value confusion | refs: #24632
  - 3ff6eff Merge pull request #24632 from jacobhammons/bug-fixes
  - 7c52012 Fixed typos
  - c7cdd41 Doc bug fixes Refs #24547 Refs #24275 Refs #24375 Refs #24560 Refs #24163
- **PR** #24607: (*garethgreenaway*) fixes to minion.py @ *2015-06-17T18:16:42Z*
  - **ISSUE** #24198: (*ahammond*) salt-call event.send doesn't send events from minion | refs: #24607

  - 9995f64 Merge pull request #24607 from garethgreenaway/2015_5_sending_events_multi_master
  - 8abd3f0 A fix if you have multiple masters configured and try to fire events to the minion. Currently they fail silently. Might be the cause of #24198.
- **PR** #24755: (*rallytime*) Remove SALT_CLOUD_REQS from setup.py @ *2015-06-17T17:42:25Z*
  - bf2dd94 Merge pull request #24755 from rallytime/fix_setup_15
  - 48769a5 Remove SALT_CLOUD_REQS from setup.py
- **PR** #24740: (*rallytime*) Backport #24720 to 2015.5 @ *2015-06-17T16:43:37Z*
  - **PR** #24720: (*TheScriptSage*) Issue 24621 - AD/LDAP Group Auth Issue | refs: #24740
  - 3d53d79 Merge pull request #24740 from rallytime/bp-24720
  - a9bcdb5 Updating master.py to properly check against groups when user is only authed against group. Tested against unit.auth_test.
- **PR** #24723: (*rallytime*) Back-port #20124 to 2015.5 @ *2015-06-17T16:43:20Z*
  - **PR** #20124: (*cgtx*) add init system to default grains | refs: #24723
  - ac2851b Merge pull request #24723 from rallytime/bp-20124
  - 4d0061b fix infinite loop introduced by #20124 when the init system is not in the supported_inits list
  - 0c7fa0f Optimizations for #20124
  - f353454 add init system to default grains (resolve #20124)
- **PR** #24754: (*anlutro*) salt-cloud documentation - Add information about linode location @ *2015-06-17T16:04:48Z*
  - 78cd09b Merge pull request #24754 from alprs/docs-add_linode_location_option
  - d88e071 add information about linode location
- **PR** #24748: (*jayeshka*) adding states/serverdensity_device unit test case. @ *2015-06-17T15:39:07Z*
  - d5554f7 Merge pull request #24748 from jayeshka/serverdensity_device-states-unit-test
  - 1a4c241 adding states/serverdensity_device unit test case.
- **PR** #24739: (*rallytime*) Back-port #24735 to 2015.5 @ *2015-06-17T15:16:47Z*
  - **PR** #24735: (*notpeter*) Add 2015.5 codename to version numbers docs | refs: #24739
  - 0b7e7ef Merge pull request #24739 from rallytime/bp-24735
  - 64c565d Add .0 to version number
  - 5ed801b Add codenames for 2015.5 and future versions. Trailing newline.
- **PR** #24732: (*msteed*) Fix stacktrace when *--summary* is used @ *2015-06-17T03:27:57Z*
  - **ISSUE** #24111: (*yermulnik*) cli option `--summary' got broken after upgrade to 2015.5.1 | refs: #24732
  - c8713f2 Merge pull request #24732 from msteed/issue-24111
  - 54b33dd Fix stacktrace when --summary is used
- **PR** #24721: (*rallytime*) Back-port #24668 to 2015.5 @ *2015-06-17T03:23:47Z*
  - **PR** #24668: (*grischa*) enable virtual package names in pyobjects renderer | refs: #24721 #24757
  - 70d3781 Merge pull request #24721 from rallytime/bp-24668
  - 68fb5af fixing other test

  - ba4f262 fixing text for virtual support in pyobjects
  - b349d91 enable virtual package names in pyobjects renderer
- **PR** #24718: (*rallytime*) Added some missing config documentation to the vsphere driver @ *2015-06-17T03:19:35Z*
  - **ISSUE** #21923: (*Fluro*) Salt cloud not running provisioning script as root | refs: #24718
  - **ISSUE** #17241: (*hasues*) Salt-Cloud for vSphere needs additional documentation | refs: #24718
  - 1b9d689 Merge pull request #24718 from rallytime/update_vsphere_docs
  - bfdebb6 Added some missing config documentation to the vsphere driver
- **PR** #24714: (*rallytime*) Remove cloud-requirements.txt @ *2015-06-17T03:17:04Z*
  - 64857c7 Merge pull request #24714 from rallytime/remove_cloud_reqs_15
  - 67b796d Remove cloud-requirements.txt
- **PR** #24733: (*msteed*) Include Tornado in versions report @ *2015-06-17T03:13:53Z*
  - **ISSUE** #24439: (*bechtoldt*) Add tornado version to versions report | refs: #24733
  - f96b1d6 Merge pull request #24733 from msteed/issue-24439
  - 76cfef0 Include Tornado in versions report
- **PR** #24737: (*jacksontj*) Move AES command logging to trace @ *2015-06-17T01:48:11Z*
  - a861fe0 Merge pull request #24737 from jacksontj/2015.5
  - a4ed41a Move AES command logging to trace
- **PR** #24724: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-06-16T22:46:27Z*
  - **ISSUE** #24196: (*johnccfm*) Exception when using user.present with Windows | refs: #24646
  - **PR** #24646: (*twangboy*) Fixed user.present on existing user
  - 0d2dc46 Merge pull request #24724 from basepi/merge-forward-2015.5
  - 4641028 Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
  - a18dada Merge pull request #24646 from twangboy/fix_24196
    * a208e1d Fixed user.present on existing user
- **PR** #24701: (*jayeshka*) adding states/selinux unit test case. @ *2015-06-16T15:27:29Z*
  - 3d33fe7 Merge pull request #24701 from jayeshka/selinux-states-unit-test
  - 0c136fd adding states/selinux unit test case.
- **PR** #24687: (*cachedout*) Note about minimum worker_threads @ *2015-06-15T20:46:23Z*
  - 2e287a9 Merge pull request #24687 from cachedout/min_worker_threads
  - b7bb7ea Note about minimum worker_threads
- **PR** #24688: (*cachedout*) Update AUTHORS @ *2015-06-15T20:46:03Z*
  - 432478c Merge pull request #24688 from cachedout/update_authors
  - 3f6880e Better email
  - 6c7b773 Update AUTHORS
- **PR** #24649: (*cachedout*) Improved error reporting for failed states @ *2015-06-15T16:04:20Z*

  - **ISSUE** #22385: (*cachedout*) States which require unavailable modules should display the reason | refs: #24649
  - 9a2b50d Merge pull request #24649 from cachedout/issue_22385
  - b9fe792 States will now return the reason behind failure if a module could not be loaded
- **PR** #24673: (*jayeshka*) adding states/schedule unit test case. @ *2015-06-15T15:24:52Z*
  - 66e9e16 Merge pull request #24673 from jayeshka/schedule-states-unit-test
  - 54aaaa5 adding states/schedule unit test case.
- **PR** #24663: (*kartiksubbarao*) Update augeas_cfg.py @ *2015-06-15T15:18:48Z*
  - **ISSUE** #24661: (*kartiksubbarao*) augeas.change doesn't support setting empty values | refs: #24663
  - 5eb19c4 Merge pull request #24663 from kartiksubbarao/patch-2
  - e18db50 Update augeas_cfg.py
- **PR** #24667: (*dkiser*) fix for #24583 clouds/openstack.py kerying first time succeeds @ *2015-06-14T21:58:58Z*
  - **ISSUE** #24583: (*dkiser*) salt-cloud keyring password referenced before assignment | refs: #24667
  - 4450432 Merge pull request #24667 from dkiser/fix-cloud-keyring
  - c92c05f fix for #24583 clouds/openstack.py kerying first time succeeds
- **PR** #24659: (*kartiksubbarao*) Update aliases.py @ *2015-06-13T17:31:42Z*
  - **ISSUE** #24537: (*kartiksubbarao*) alias.present doesn't update alias values that are substrings of the existing value | refs: #24659
  - 4c64ee9 Merge pull request #24659 from kartiksubbarao/patch-1
  - d683474 Update aliases.py
- **PR** #24644: (*cro*) Merge forward 2014.7->2015.5 @ *2015-06-12T21:31:41Z*
  - **PR** #24643: (*cro*) Add reference to salt-announce mailing list
  - **PR** #24620: (*twangboy*) Fixed comment and uncomment functions in file.py
  - 89eb616 Merge pull request #24644 from cro/2014.7-2015.5-20150612
  - 4136dc3 Merge forward from 2014.7 to 2015.5
  - b99484f Merge pull request #24643 from cro/saltannounce
    * ecb0623 Add salt-announce mailing list.
  - 635121e Merge pull request #24620 from twangboy/fix_24215
    * d7a9999 Fixed comment and uncomment functions in file.py
- **PR** #24642: (*basepi*) Revert ``fix target rule, remove unneeded quotation mark'' @ *2015-06-12T20:14:26Z*
  - **PR** #24595: (*tankywoo*) fix target rule, remove unneeded quotation mark | refs: #24642
  - b896a0d Merge pull request #24642 from saltstack/revert-24595-fix-iptables-target
  - 5ff3224 Revert ``fix target rule, remove unneeded quotation mark''
- **PR** #24628: (*jayeshka*) adding states/reg unit test case. @ *2015-06-12T17:29:11Z*
  - 01092c2 Merge pull request #24628 from jayeshka/reg_states-unit-test
  - af1bd8f adding states/reg unit test case.
- **PR** #24631: (*rallytime*) Back-port #24591 to 2015.5 @ *2015-06-12T16:54:32Z*

  - **ISSUE** #24494: (*arnoutpierre*) Computed comments in jinja states | refs: #24591
  - **ISSUE** #24073: (*primechuck*) State.highstate uses stale grain data. | refs: #24492
  - **ISSUE** #23359: (*BalintSzigeti*) init.sls parsing issue | refs: #24591
  - **ISSUE** #21217: (*Colstuwjx*) Maybe a bug for jinja render? | refs: #24591
  - **PR** #24591: (*tbaker57*) Add some documentation surrounding Jinja vs yaml comments - | refs: #24631
  - **PR** #24492: (*DmitryKuzmenko*) Don't remove grains from opts
  - 5f491f9 Merge pull request #24631 from rallytime/bp-24591
  - f13cd41 Add extra clarification why jinja comments are needed.
  - 2374971 Fix typo
  - 6a91747 Add some documentation surrounding Jinja comments - refs #24492, #21217, #23359
- **PR** #24616: (*garethgreenaway*) additional logging in state.py module @ *2015-06-12T16:25:39Z*
  - f23f99e Merge pull request #24616 from garethgreenaway/2015_5_logging_disabled_states
  - 4dbf0ef Adding some logging statement to give feedback when states, including highstate, are disabled. Useful when running from scheduler.
- **PR** #24595: (*tankywoo*) fix target rule, remove unneeded quotation mark | refs: #24642 @ *2015-06-12T16:23:22Z*
  - 6dccbb0 Merge pull request #24595 from tankywoo/fix-iptables-target
  - 10a5160 fix target rule, remove unneeded quotation mark
- **PR** #24604: (*jfindlay*) fix pkg module integration tests @ *2015-06-12T16:04:26Z*
  - 8ac3d94 Merge pull request #24604 from jfindlay/pkg_tests
  - d88fb22 fix pkg module integration tests on CentOS 5
  - fb91b40 fix pkg module integration tests on ubuntu 12
- **PR** #24600: (*basepi*) [2015.5] Remove __kwarg__ from salt-ssh keyword args @ *2015-06-12T04:21:29Z*
  - 0ff545c Merge pull request #24600 from basepi/salt-ssh.orchestrate.20615
  - 9b55683 Remove __kwarg__ from salt-ssh keyword args
- **PR** #24608: (*basepi*) [2015.5] Normalize salt-ssh flat roster minion IDs to strings @ *2015-06-11T21:35:07Z*
  - **ISSUE** #22843: (*Xiol*) salt-ssh roster doesn't support integers as host keys | refs: #24608
  - 832916f Merge pull request #24608 from basepi/salt-ssh.flat.roster.integers.22843
  - 381820f Normalize salt-ssh flat roster minion IDs to strings
- **PR** #24605: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-06-11T19:15:21Z*
  - **PR** #24589: (*BretFisher*) Fixed Mine example for jinja code block
  - 4eb5bb2 Merge pull request #24605 from basepi/merge-forward-2015.5
  - f96c502 Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
  - d83928a Merge pull request #24589 from BretFisher/patch-1
    * 65a1133 Fixed Mine example for jinja code block
- **PR** #24598: (*jacobhammons*) 2015.5.2 release changes @ *2015-06-11T17:24:11Z*
  - **ISSUE** #24457: (*ryan-lane*) When selecting the version of docs on the docs site, it brings you to the homepage | refs: #24598

  - **ISSUE** #24250: (*jfindlay*) have version links on docs page link to that version of the current page | refs: #24598
  - e0bb177 Merge pull request #24598 from jacobhammons/doc-fixes
  - f3f34dd 2015.5.2 release changes Refs #24250 Refs #24457
- **PR** #24588: (*basepi*) Fixes for saltmod.function for salt-ssh @ *2015-06-11T16:15:21Z*
  - **ISSUE** #20615: (*aurynn*) 2014.7.1: salt/states/saltmod using incorrect return dict for orchestrate | refs: #24588
  - 26930b4 Merge pull request #24588 from basepi/salt-ssh.orchestrate.20615
  - 826936c Move documentation into docstring instead of comments
  - de052e7 Assign `return' to `ret' if necessary in saltmod.function
  - 34ff989 Convert keyword args to key=value strings in salt-ssh
- **PR** #24593: (*jayeshka*) adding states/redismod unit test case. @ *2015-06-11T15:55:27Z*
  - 5a21ad1 Merge pull request #24593 from jayeshka/redismod_states-unit-test
  - 3b95744 adding states/redismod unit test case.
- **PR** #24581: (*rallytime*) Disabled some flaky tests until we can figure out how to make them more reliable @ *2015-06-11T15:51:41Z*
  - **ISSUE** #40: (*thatch45*) Clean up timeouts | refs: #22857
  - **PR** #24217: (*jfindlay*) disable intermittently failing tests | refs: #24581
  - **PR** #23623: (*jfindlay*) Fix /jobs endpoint's return | refs: #24217
  - **PR** #22857: (*jacksontj*) Fix /jobs endpoint's return | refs: #23623
  - 8ffb86e Merge pull request #24581 from rallytime/disable_some_flaky_tests
  - c82f135 Disabled some flaky tests until we can figure out how to make them more reliable
- **PR** #24566: (*jayeshka*) adding states/rdp unit test case. @ *2015-06-11T02:14:39Z*
  - a570d7f Merge pull request #24566 from jayeshka/rdp_states-unit-test
  - 273b994 adding states/rdp unit test case.
- **PR** #24551: (*joejulian*) 2015.5 don't pollute environment @ *2015-06-11T02:13:06Z*
  - **ISSUE** #24480: (*kiorky*) [CRITICAL] [2015.5] tls breaks tzinfo | refs: #24551
  - 20ada1f Merge pull request #24551 from joejulian/2015.5_dont_pollute_environment
  - cfc3b43 Don't pollute the TZ environment variable
  - cba8d3f pep8
  - 9cb7015 Mark keyword version adds
  - 76e2583 Merge tls changes from develop
- **PR** #24574: (*jacobhammons*) Refs #19901 @ *2015-06-10T20:09:23Z*
  - **ISSUE** #19901: (*clinta*) State cache is not documented | refs: #24468
  - bb2fd6a Merge pull request #24574 from jacobhammons/19901
  - e2a2946 Refs #19901
- **PR** #24577: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-06-10T19:46:22Z*

    - **ISSUE** #24427: (*fayetted*) 2015.5.1-3 Windows 64Bit Minion fails to start after install | refs: #24530
    - **PR** #24530: (*twangboy*) Start Minion Service on Silent Install
    - b03166c Merge pull request #24577 from basepi/merge-forward-2015.5
    - e1d45cc Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
    - d376390 Merge pull request #24530 from twangboy/fix_24427
        * 673e1d8 Added missing panel.bmp for installer
        * cc50218 Start Minion Service on Silent Install
- **PR** #24571: (*jacobhammons*) Refs #24235 @ *2015-06-10T17:02:18Z*
    - **ISSUE** #24235: (*tomasfejfar*) Difference between running from minion and from master | refs: #24468
    - 3ec457b Merge pull request #24571 from jacobhammons/24235
    - 8df5d53 Refs #24235
- **PR** #24565: (*pille*) fix backtrace, when listing plugins @ *2015-06-10T16:33:11Z*
    - fe07eb5 Merge pull request #24565 from pille/munin-ignore-broken-symlinks
    - 8511a6c fix backtrace, when listing plugins
- **PR** #24554: (*ryan-lane*) Fix yes usage for pecl defaults @ *2015-06-09T23:59:49Z*
    - 251c8f9 Merge pull request #24554 from lyft/pecl-module-fix
    - 56a9cfc Fix yes usage for pecl defaults
- **PR** #24535: (*rallytime*) Back-port #24518 to 2015.5 @ *2015-06-09T20:06:18Z*
    - **PR** #24518: (*rallytime*) Merge #24448 with Pylint Fixes | refs: #24535
    - **PR** #24448: (*codertux*) Update modules path for operating systems using systemd | refs: #24518
    - dbd49b4 Merge pull request #24535 from rallytime/bp-24518
    - fc75197 Pylint fix
    - 3e08840 Update modules path for operating systems using systemd
- **PR** #24538: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-06-09T17:27:20Z*
    - **PR** #24513: (*jquast*) bugfix use of `iteritem' in 2014.7 branch
    - **PR** #24511: (*jquast*) bugfix: trailing "...done" in rabbitmq output | refs: #24513
    - 485ed3c Merge pull request #24538 from basepi/merge-forward-2015.5
    - 6a8039d Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
    - 6ebc476 Merge pull request #24513 from jquast/2014.7-bugfix-iteritem
        * 2be0180 bugfix use of `iteritem' in 2014.7 branch
- **PR** #24495: (*jayeshka*) adding states/rabbitmq_vhost unit test case. @ *2015-06-09T15:33:23Z*
    - 73e6388 Merge pull request #24495 from jayeshka/rabbitmq_vhost_states-unit-test
    - 31889e3 cosmetic change.
    - cf501cf resolved error.
    - 4bb6087 Merge branch `2015.5' of https://github.com/saltstack/salt into rabbitmq_vhost_states-unit-test
    - 3ad7714 adding states/rabbitmq_vhost unit test case.

- **PR** #24445: (*jayeshka*) adding states/pyrax_queues unit test case. @ *2015-06-09T15:28:45Z*
  - bf1abcc Merge pull request #24445 from jayeshka/pyrax_queues_states-unit-test
  - ea27cef adding states/pyrax_queues unit test case.
- **PR** #24490: (*aneeshusa*) Fix pacman.list_upgrades for new python_shell default. @ *2015-06-09T15:13:16Z*
  - 0247e8d Merge pull request #24490 from aneeshusa/fix-pacman-list-upgrades
  - 980e1cb Lint fix.
  - dca33f1 Fix pacman.list_upgrades for new python_shell default.
- **PR** #24517: (*steverweber*) small fixes to the ipmi docs @ *2015-06-09T15:10:14Z*
  - 6268ddb Merge pull request #24517 from steverweber/ipmi_doc
  - 6413712 lint
  - e78aea9 more small fixes to the ipmi docs
- **PR** #24524: (*jayeshka*) any() takes list oy tuple. @ *2015-06-09T13:49:42Z*
  - 3728b3f Merge pull request #24524 from jayeshka/rabbitmq_vhost_states-module
  - 01c99ad any() takes list oy tuple.
- **PR** #24482: (*eliasp*) `docker.running' needs now the `image' param. @ *2015-06-09T04:43:04Z*
  - dd23de8 Merge pull request #24482 from eliasp/2015.5-states.dockerio-docker.running-doc
  - 5de741d `docker.running' needs now the `image' param.
- **PR** #24515: (*basepi*) [2015.5] Add xml library to the salt-thin @ *2015-06-09T04:10:06Z*
  - **ISSUE** #23503: (*jfindlay*) salt-ssh fails on CentOS 7 when python-zmq is not installed | refs: #24515
  - 2a727c3 Merge pull request #24515 from basepi/susexml23503
  - 078b33e Add xml library to the thin
- **PR** #24497: (*jayeshka*) adding states/rbenv unit test case. @ *2015-06-09T03:56:10Z*
  - fce998a Merge pull request #24497 from jayeshka/rbenv_states-unit-test
  - 79d343a adding states/rbenv unit test case.
- **PR** #24496: (*jayeshka*) adding states/rabbitmq_user unit test case. @ *2015-06-09T03:55:23Z*
  - 2bcb4b1 Merge pull request #24496 from jayeshka/rabbitmq_user_states-unit-test
  - 7d96f27 adding states/rabbitmq_user unit test case.
- **PR** #24481: (*eliasp*) Fix typo (licnese → license). @ *2015-06-09T03:30:25Z*
  - 02a597b Merge pull request #24481 from eliasp/2015.5-salt.states.powerpath-license_typo
  - 1280054 Fix typo (licnese â⌧ license).
- **PR** #24467: (*thenewwazoo*) Fix dockerio bound volumes @ *2015-06-09T01:40:23Z*
  - 5ad3db5 Merge pull request #24467 from thenewwazoo/fix-dockerio-bound-volumes
  - db4e3dc Let's raise an exception if create fails
  - d1d85dd Add logging
  - ddc63f0 Fix volume handling when creating containers
- **PR** #24504: (*rallytime*) Move vsphere deprecation to 2015.5 @ *2015-06-08T22:43:05Z*

  - **PR** #24487: (*nmadhok*) Deprecating vsphere cloud driver in favor of vmware cloud driver | refs: #24504
  - d236fbd Merge pull request #24504 from rallytime/move_vsphere_deprecation_2015.5
  - d876535 Add Getting Started with VSphere doc to 2015.5
  - b685ebc Add vSphere deprecation warnings to 2015.5
- **PR** #24506: (*rallytime*) Backport #24450 to 2015.5 @ *2015-06-08T22:42:14Z*
  - **PR** #24450: (*ruzarowski*) Fix salt cli runs with batch-size set | refs: #24506
  - cb55460 Merge pull request #24506 from rallytime/bp-24450
  - 1c0fca2 Backport #24450 to 2015.5
- **PR** #24498: (*rallytime*) Added ``CLI Example'' to make failing test happy on 2015.5 @ *2015-06-08T15:48:40Z*
  - 3173fd1 Merge pull request #24498 from rallytime/fix_doc_failure_fifteen
  - d992ef4 Added ``CLI Example'' to make failing test happy on 2015.5
- **PR** #24471: (*anlutro*) Set up salt-ssh file logging @ *2015-06-08T15:26:49Z*
  - 3639e41 Merge pull request #24471 from alprs/fix-salt_ssh_logging
  - 6a11ec8 set up salt-ssh file logging
- **PR** #24469: (*jfindlay*) correctly handle user environment info for npm @ *2015-06-08T15:26:02Z*
  - **ISSUE** #24231: (*tarwich*) npm.bootstrap | refs: #24469
  - 551e70f Merge pull request #24469 from jfindlay/npm_env
  - 8140c96 update npm's user info envs
  - cb572f8 add *env* parameter to npm.uninstall
- **PR** #24468: (*jacobhammons*) Bug fixes and build errors @ *2015-06-08T15:25:40Z*
  - **ISSUE** #24268: (*tkent-xetus*) Ability to specify revision for win_gitrepos undocumented | refs: #24468
  - **ISSUE** #24235: (*tomasfejfar*) Difference between running from minion and from master | refs: #24468
  - **ISSUE** #24193: (*abng88*) Update ext_pillar docs to mention that this feature is supported masterless as well | refs: #24468
  - **ISSUE** #24172: (*zhujinhe*) Can lists be passed in the pillar on the command line on version 2015.5.0? | refs: #24468
  - **ISSUE** #23211: (*lloesche*) Document that salt://| escapes special characters in filenames | refs: #24468
  - **ISSUE** #19901: (*clinta*) State cache is not documented | refs: #24468
  - **ISSUE** #19801: (*ksalman*) How are grains static? | refs: #24468
  - 0d9e0c2 Merge pull request #24468 from jacobhammons/doc-fixes
  - 1035959 Appended .0 to version added
  - d45c4ed Bug fixes and build errors Refs #23211 Refs #24268 Refs #24235 Refs #24193 Refs #24172 Refs #19901 Refs #19801
- **PR** #24465: (*jfindlay*) catch exception from softwarerepositories @ *2015-06-08T15:25:19Z*
  - **ISSUE** #24318: (*favadi*) uncaught exception for pkgrepo.absent for invalid PPA | refs: #24465
  - be6905a Merge pull request #24465 from jfindlay/unknown_ppa
  - 19c9128 catch exception from softwarerepositories

- **PR** #24464: (*jfindlay*) fix typo in modules/mount.py @ *2015-06-08T15:25:07Z*
  - **ISSUE** #24296: (*objectx*) mount.mount calls file.mkdir with incorrect named argument | refs: #24464
  - 58d1ea8 Merge pull request #24464 from jfindlay/file_mkdir
  - 6e8cd44 fix typo in modules/mount.py
- **PR** #24461: (*dkiser*) fix for #24434 @ *2015-06-08T15:24:53Z*
  - **ISSUE** #24434: (*dkiser*) multimaster failover fails due to logic from issue #23611
  - 4f332a7 Merge pull request #24461 from dkiser/multimaster_minion_fix
  - 1944a74 fix for #24434
- **PR** #24479: (*ahus1*) change ``path'' to ``name'' for ``file'' operations @ *2015-06-07T17:56:11Z*
  - 8917416 Merge pull request #24479 from ahus1/patch-1
  - 7d6b60c change ``path'' to ``name'' for ``file'' operations
- **PR** #24475: (*rallytime*) Back-port #24454 to 2015.5 @ *2015-06-07T01:29:32Z*
  - **PR** #24454: (*rhertzog*) Strip extraneous newline character added in last environment variable | refs: #24475
  - 8618d5b Merge pull request #24475 from rallytime/bp-24454
  - a793c19 Avoid extraneous newline character added in last environment variable
- **PR** #24474: (*rallytime*) Back-port #24420 to 2015.5 @ *2015-06-07T01:29:11Z*
  - **ISSUE** #24407: (*aboe76*) Please expand salt module random | refs: #24420
  - **PR** #24420: (*aboe76*) added random integer module to mod_random.py | refs: #24474
  - 61658ff Merge pull request #24474 from rallytime/bp-24420
  - 4219b40 Fix lint error and update versionadded to 2015.5.3
  - 3613cc9 added random integer module to mod_random.py
- **PR** #24472: (*variia*) ensure {} output is not treated as change in module.py state, fixes #... @ *2015-06-06T14:45:44Z*
  - **ISSUE** #24233: (*variia*) yumpkg.group_install keeps returning state change
  - 508d7dd Merge pull request #24472 from variia/Fix-yumpkg_group_install-return-change-#24233
  - 37e8827 ensure {} output is not treated as change in module.py state, fixes #24233
- **PR** #24466: (*basepi*) [2015.5] Fix for # in inner strings in yaml arguments @ *2015-06-06T14:35:56Z*
  - **ISSUE** #18045: (*dstokes*) Pillar kwargs parse error with # | refs: #24466
  - **ISSUE** #8585: (*UtahDave*) `#' in single quoted option on cli not making it into the execution module | refs: #24466
  - 0292e67 Merge pull request #24466 from basepi/fixhashinargs18045
  - 2e0609f Fix for # in inner strings in yaml arguments
- **PR** #24456: (*rallytime*) Back-port #24441 to 2015.5 @ *2015-06-05T22:32:25Z*
  - **PR** #24441: (*arthurlogilab*) [doc] Alignement fix on external_auth documentation | refs: #24456
  - ced558a Merge pull request #24456 from rallytime/bp-24441
  - 7002855 yaml indentations should be 2 spaces

  - 21b51ab [doc] Alignement fix on external_auth documentation
- **PR** #24398: (*kiorky*) VirtualName for states.apt | refs: #24399 @ *2015-06-05T17:40:04Z*
  - **ISSUE** #24397: (*kiorky*) on debian: states.apt should use virtualname as it shadows system apt module | refs: #24398 #24398 #24399 #24399 #24400
  - **PR** #24399: (*kiorky*) Versionvirtual | refs: #24398
  - c0ff411 Merge pull request #24398 from makinacorpus/aptv
  - 785d277 VirtualName for states.apt
- **PR** #24447: (*jayeshka*) adding states/rabbitmq_policy unit test case. @ *2015-06-05T15:26:11Z*
  - 3626340 Merge pull request #24447 from jayeshka/rabbitmq_policy_states-unit-test
  - 9b038ab adding states/rabbitmq_policy unit test case.
- **PR** #24446: (*jayeshka*) adding states/rabbitmq_plugin unit test case. @ *2015-06-05T15:25:33Z*
  - 8445a3f Merge pull request #24446 from jayeshka/rabbitmq_plugin_states-unit-test
  - cb0c99a adding states/rabbitmq_plugin unit test case.
- **PR** #24426: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-06-05T03:59:11Z*
  - **ISSUE** #24276: (*markuskramerIgitt*) Live salt-master Profiling with SIGUSR2 fails
  - **PR** #24405: (*jacksontj*) Fix for #24276
  - **PR** #24395: (*hvnsweeting*) handle exceptions when received data is not in good shape
  - **PR** #24305: (*twangboy*) Added documentation, fixed formatting
  - 9cc3808 Merge pull request #24426 from basepi/merge-forward-2015.5
  - eafa20c Merge remote-tracking branch `upstream/2014.7' into merge-forward-2015.5
    * 83f853b Merge pull request #24405 from jacksontj/2014.7
      · 2c7afae Fix for #24276
    * cef919c Merge pull request #24395 from hvnsweeting/handle-exception-get-file
      · bb798a0 handle exceptions when received data is not in good shape
    * efba1a9 Merge pull request #24305 from twangboy/win_path_docs
    * 36804253 Fixed pylint error caused by \P... added r
    * bc42a4b triple double quotes to triple single quotes
    * 77cd930 Added documentation, fixed formatting
- **PR** #24429: (*jacobhammons*) Salt cloud doc updates, build errors and bug fixes @ *2015-06-05T00:27:38Z*
  - **ISSUE** #24309: (*steverweber*) missing docs | refs: #24429
  - 5d738b8 Merge pull request #24429 from jacobhammons/cloud-doc-updates
  - 1f7a13d Salt cloud doc updates, build errors and bug fixes Refs #24309
- **PR** #24408: (*rallytime*) Backport #24392 to 2015.5 @ *2015-06-04T20:22:09Z*
  - **PR** #24392: (*quixoten*) Fix ``No such file or directory'' in grains/core.py | refs: #24408
  - cdffc02 Merge pull request #24408 from rallytime/bp-24392
  - ff7461b Use path found by salt.utils.which

- **PR** #24380: (*rallytime*) Backport #24357 to 2015.5 @ *2015-06-04T20:13:51Z*
  - **PR** #24357: (*zhujinhe*) fix invoke issues of Jinja Macros example | refs: #24380
  - a6a1f87 Merge pull request #24380 from rallytime/bp-24357
  - f08c875 fix invoke issues of Jinja Macros example
- **PR** #24388: (*pengyao*) fixes #24358 @ *2015-06-04T20:07:40Z*
  - **ISSUE** #24358: (*pengyao*) Netapi SSH client don't support ssh_user and ssh_passwd arguments | refs: #24388
  - 86ce9db Merge pull request #24388 from pengyao/sshclient-kwargs
  - 5c08ca4 fixes #24358
- **PR** #24367: (*terminalmage*) Improve error message when module does not exist @ *2015-06-04T20:07:12Z*
  - **ISSUE** #22958: (*highlyunavailable*) Weird error when typoing a command | refs: #24367
  - 72d2eae Merge pull request #24367 from terminalmage/issue22958
  - d0d7a54 Improve error message when module does not exist
- **PR** #24412: (*jfindlay*) backport #23387 @ *2015-06-04T20:06:03Z*
  - **ISSUE** #23101: (*gravyboat*) Create a docs page for labels | refs: #23387
  - **PR** #23387: (*rallytime*) Add some ``What are all these labels for?'' documentation | refs: #24412
  - a628778 Merge pull request #24412 from jfindlay/bp-23387
  - bf85772 Make sure the parameters are in the correct order
  - 9f53809 Add ``* Change'' label parameters
  - b27a15e Remove ``workaround'' wording
  - 9fff35a Some small fixes
  - 54a7089 Link the new labels doc in contributing and hacking docs
  - 375695e Add pull request label definitions
  - de94563 Add Feature Request label definition
  - 684f291 Add issue definition and augment functional areas section
  - 2da13dd Start a ``what are all of these labels for?'' doc
- **PR** #24336: (*twangboy*) Added line to give more descriptive error @ *2015-06-04T19:56:00Z*
  - **ISSUE** #24154: (*ssgward*) Exception when running cp.get_url | refs: #24336
  - 485116c Merge pull request #24336 from twangboy/fix_cp_get_url
  - 37b11f9 Added line to give more descriptive error
- **PR** #24413: (*techhat*) Add more namespaced functions to GoGrid driver @ *2015-06-04T19:51:22Z*
  - b3d39cc Merge pull request #24413 from techhat/gogridnamespace
  - 1b397cb Adding blank line
  - da08cc9 Add more namespaced functions to GoGrid driver
- **PR** #24399: (*kiorky*) Versionvirtual | refs: #24398 @ *2015-06-04T18:02:22Z*
  - **ISSUE** #24397: (*kiorky*) on debian: states.apt should use virtualname as it shadows system apt module | refs: #24398 #24398 #24399 #24399 #24400

  - **PR** #24398: (*kiorky*) VirtualName for states.apt | refs: #24399
  - 27f109b Merge pull request #24399 from makinacorpus/versionvirtual
  - 235c78d Use apt_pkg.version_compare if available
  - 1c0cd45 reindent block to isolate conflict on merge forward
  - 699ecea use var to isolate conflict on merge forward
- **PR** #24371: (*joejulian*) 2015.5 tls module tests @ *2015-06-04T15:20:16Z*
  - deaee68 Merge pull request #24371 from joejulian/2015.5_tls_module_tests
  - 4c5dee1 Add @destructiveTest decorator to destructive tests
  - 274bbd4 Accept results from older pyOpenSSL
  - 161f913 All cert info should be in UTC always
  - 9affcca See the whole diff if dict compare fails
  - 94f6208 Ignore extensions for now. Resolve this as part of fixing issue 24338.
  - 84904d3 Mask lint warning for unused imported module
  - 5675b78 Do not test if PyOpenSSL is not installed
  - 563cc66 Add tls tests
- **PR** #24403: (*jayeshka*) adding states/process unit test case. @ *2015-06-04T15:19:01Z*
  - 84686ee Merge pull request #24403 from jayeshka/process_states-unit-test
  - fcb71fb adding states/process unit test case.
- **PR** #24402: (*jayeshka*) adding states/pyenv unit test case. @ *2015-06-04T15:18:11Z*
  - 35de8d7 Merge pull request #24402 from jayeshka/pyenv_states-unit-test
  - 5f263ab adding states/pyenc unit test case.
- **PR** #24401: (*jayeshka*) adding states/powerpath unit test case. @ *2015-06-04T15:17:46Z*
  - 632f838 Merge pull request #24401 from jayeshka/powerpath-states-unit-test
  - 49ff927 adding states/powerpath unit test case.
- **PR** #24400: (*kiorky*) Aptversion @ *2015-06-04T15:17:19Z*
  - **ISSUE** #24397: (*kiorky*) on debian: states.apt should use virtualname as it shadows system apt module | refs: #24398 #24398 #24399 #24399 #24400
  - 0a6e5e0 Merge pull request #24400 from makinacorpus/aptversion
  - e15cb93 Use apt_pkg.version_compare if available
  - 953725a Fix too much quoting in apt.version_cmp
- **PR** #24385: (*jeanpralo*) Fix salt.modules.dockerio.start method @ *2015-06-04T15:00:22Z*
  - a904055 Merge pull request #24385 from jeanpralo/Fix-binds-dockerio.start
  - a0fed31 binds dict if not specified should remain to none otherwise docker-py will try to create a new host config and all volume and ports binds are lost. config should be done at the creation of the container not when we start it
- **PR** #24381: (*jtand*) Disabled flaky test to review later @ *2015-06-04T14:57:43Z*
  - 9890bc4 Merge pull request #24381 from jtand/seed_test

  - 7570ae9 Disabled flaky test to review later

- **PR** #24382: (*basepi*) [2015.5] Handle CommandExecutionError in grains commands, Fixes #23342 @ *2015-06-04T12:44:04Z*
  - **ISSUE** #23342: (*philipsd6*) salt-ssh 2015.2.0rc2 fails when target doesn't have lspci available | refs: #24382
  - b3fa8fe Merge pull request #24382 from basepi/grainscommandnotfound23342
  - 85b91d6 Handle CommandExecutionError in grains commands
- **PR** #24379: (*Starblade42*) Fixes an issue where Pagerduty states/modules couldn't find their profile in the Pillar @ *2015-06-04T12:41:13Z*
  - 52587a4 Merge pull request #24379 from Starblade42/2015.5
  - b93dc5e Linting!
  - 2dd5904 Fixes an issue where Pagerduty states/modules couldn't find it's profile in the Pillar
- **PR** #24366: (*terminalmage*) Use yes $'\n' instead of printf `\n' for pecl commands @ *2015-06-03T21:28:58Z*
  - 3ca35d1 Merge pull request #24366 from terminalmage/pecl-yes
  - dcd9ad8 Use yes $'\n' instead of printf `\n' for pecl commands
- **PR** #24348: (*kiorky*) Try to close input pipes before calling lxc-start @ *2015-06-03T19:38:07Z*
  - **ISSUE** #24284: (*kiorky*) systemd lxc containers need use_vt=True at lxc-start stage | refs: #24348
  - **PR** #548: (*Lanzaa*) Salt is now platform dependent. Use get_python_lib(1) | refs: #24348
  - 86a3b31 Merge pull request #24348 from makinacorpus/lxcpre
  - 0cb11a2 lxc: typo
  - d71efa6 Try to close input pipes before calling lxc-start

### 18.2.28 Salt 2015.5.4 Release Notes

Version 2015.5.4 is a bugfix release for *2015.5.0*.

Changes:

- The `cron.present` state now correctly defaults to state ID as identifier.
- When querying for VMs in `digital_ocean_v2.py`, the number of VMs to include in a page was changed from 20 (default) to 200 to reduce the number of API calls to Digital Ocean.
- The `vmware` Salt-Cloud driver was back-ported from the develop branch in order for installations of Salt that are older than 2015.8.0 to be able to use the `vmware` driver without stack-tracing on various deprecation paths that were implemented in the 2015.8.0 release.

#### Changes for v2015.5.3..v2015.5.4

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2015-08-13T20:23:30Z*

Statistics:

- Total Merges: **247**
- Total Issue references: **140**

- Total PR references: **330**

Changes:

- **PR** #26292: (*jquast*) Rabbitmq 3.2.4 on Ubuntu has "...done.", not "...done" @ *2015-08-13T19:53:29Z*
- **PR** #26296: (*jquast*) bugfix missing `runas=None' for rabbitmqctl cmds (backport to 2015.5) @ *2015-08-13T19:52:40Z*
- **PR** #26293: (*jfindlay*) Fix #26268 @ *2015-08-13T19:48:06Z*
  - **ISSUE** #25618: (*twangboy*) Fix reg.py to work with the registry properly | refs: #26268
  - **PR** #26268: (*twangboy*) Multiple improvements to reg executionmod and state mod | refs: #26293
- **PR** #26290: (*rallytime*) Only call convert_to_arn when action name is provided @ *2015-08-13T18:48:58Z*
  - **ISSUE** #25192: (*deuscapturus*) 2015.5.2 boto_cloudwatch_alarm.present not working. | refs: #26290
- **PR** #26288: (*bbinet*) allow deleting grains which value is False @ *2015-08-13T18:24:36Z*
- **PR** #26263: (*rallytime*) Don't make changes when test=True for openstack present/absent funcs @ *2015-08-13T16:30:31Z*
  - **ISSUE** #24882: (*nmadhok*) salt.states.openstack_config.present and salt.states.openstack_config.absent make changes when test=True | refs: #26263
- **PR** #26265: (*rallytime*) Don't stacktrace on query return in ec2.create_snapshot @ *2015-08-13T16:28:48Z*
  - **ISSUE** #24484: (*codehotter*) clouds/ec2.py: create_snapshot throws exception | refs: #26265
- **PR** #26285: (*stanislavb*) Remove explicit version from instance identity URL @ *2015-08-13T16:25:32Z*
- **PR** #26275: (*cachedout*) Re-init modules on multi-master reconnect @ *2015-08-13T15:52:50Z*
- **PR** #26273: (*garethgreenaway*) Fixes to schedule module in 2015.5 @ *2015-08-13T15:34:43Z*
- **PR** #26271: (*rallytime*) Fix del_root_vol_on_destroy and del_all_vols_on_destroy functionality on ec2 @ *2015-08-12T23:22:47Z*
  - **ISSUE** #24483: (*codehotter*) clouds/ec2.py: del_root_vol_on_destroy and del_all_vols_on_destroy not working | refs: #26271
- **PR** #26219: (*anlutro*) cron: make identifier default to state ID @ *2015-08-12T18:42:33Z*
  - **ISSUE** #25958: (*anlutro*) Cron identifier does not default to state ID as documented | refs: #26219
- **PR** #26257: (*rallytime*) Back-port #26237 to 2015.5 @ *2015-08-12T18:40:35Z*
  - **ISSUE** #26207: (*fullermd*) group members setting fails with obscure error message on FreeBSD | refs: #26237
  - **PR** #26237: (*silenius*) fix issue #26207 | refs: #26257
- **PR** #26258: (*nmadhok*) Fix permission on tests/runtests.py on 2015.5 branch @ *2015-08-12T18:40:04Z*
- **PR** #26261: (*nmadhok*) Correct spelling of integration in docs @ *2015-08-12T18:14:48Z*
  - **PR** #2015: (*thekuffs*) Esky / bbfreeze support
- **PR** #26247: (*nmadhok*) Initial commit of unit tests for vmware cloud driver @ *2015-08-12T16:58:24Z*
- **PR** #26246: (*nmadhok*) Backport additions to VMware cloud driver from develop to 2015.5 branch @ *2015-08-12T15:11:26Z*
- **PR** #26239: (*opdude*) Fixed documentation to match function name @ *2015-08-12T14:48:52Z*
- **PR** #26232: (*garethgreenaway*) Fix to trust_key in gpg module for 2015.5. @ *2015-08-12T04:48:27Z*

- **PR** #26084: (*twangboy*) Added python_shell=True, quoted user input @ *2015-08-10T21:29:35Z*
  - **ISSUE** #25802: (*jefftucker*) Running module ``npm.list'' fails on Windows for masterless minion | refs: #26084
- **PR** #26183: (*cro*) Fix LDAP configuration issue. @ *2015-08-10T19:09:41Z*
- **PR** #26186: (*jacobhammons*) regenerated man pages @ *2015-08-10T19:07:44Z*
- **PR** #26182: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-08-10T19:00:10Z*
  - **ISSUE** #25961: (*getabc*) [2015.5.3-2] salt-winrepo.git/salt-minion.sls fails certificate `*.wpengine.com' or `wpengine.com' | refs: #26047
  - **ISSUE** #25751: (*basepi*) Document *master_finger* more prominently | refs: #26088
  - **PR** #26116: (*corux*) file.replace fails if repl string is an invalid regex and append/prepend is used
  - **PR** #26088: (*jacobhammons*) Master finger
  - **PR** #26047: (*jacobhammons*) Updated windows download links in the docs to https://repo.saltstack.com
- **PR** #26000: (*driskell*) Implement full event caching for subscribed tags @ *2015-08-10T18:57:17Z*
  - **ISSUE** #25998: (*driskell*) Event subsystem discarding required events during --batch breaking it for slow running commands | refs: #26000
- **PR** #26175: (*rallytime*) Back-port #26153 to 2015.5 @ *2015-08-10T18:22:32Z*
  - **PR** #26153: (*loa*) Fix dockerio state documentation typo | refs: #26175
- **PR** #26177: (*rallytime*) Back-port #26147 to 2015.5 @ *2015-08-10T18:22:01Z*
  - **ISSUE** #26024: (*jpic*) lxc_conf_unset in cloud.profile is ignored
  - **PR** #26147: (*martinhoefling*) Fixes #26024 | refs: #26177
- **PR** #26179: (*rallytime*) Back-port #25404 to 2015.5 @ *2015-08-10T18:21:50Z*
  - **ISSUE** #21082: (*clinta*) master_type failover does not failover on DNS errors | refs: #25404
  - **PR** #25404: (*DmitryKuzmenko*) Fixed minion failover to next master on DNS errors. | refs: #26179
- **PR** #26180: (*jfindlay*) fix processing of state.template @ *2015-08-10T18:21:38Z*
  - **ISSUE** #26112: (*wt*) state.template fails with unclear error with template with only an include | refs: #26180
- **PR** #26172: (*nmadhok*) [Backport] Make sure variable is a dictionary before popping something from it. @ *2015-08-10T16:42:50Z*
  - **ISSUE** #26162: (*nmadhok*) VMware cloud driver create function failing with traceback on latest develop | refs: #26163 #26172
  - **PR** #26163: (*nmadhok*) Make sure variable is a dictionary before popping something from it.
- **PR** #26168: (*cachedout*) Fix slack docs @ *2015-08-10T14:57:18Z*
  - **ISSUE** #26098: (*rdinoff*) SALT.STATES.SLACK Doc update | refs: #26168
- **PR** #26127: (*garethgreenaway*) Fixes to salt.utils.http related to cp.get_file_str bug. @ *2015-08-10T14:38:25Z*
  - **ISSUE** #24106: (*nvx*) fileclient.py#get_url ignores HTTP Auth again (2015.5 regression) | refs: #26127
- **PR** #26140: (*nmadhok*) VMware cloud driver fixes @ *2015-08-10T13:15:58Z*
  - **ISSUE** #26141: (*nmadhok*) salt-cloud VMware driver fails with error in parsing configuration file | refs: #26140

  - **ISSUE** #25809: (*o-sleep*) vmware cloud module error message | refs: #26140
  - **ISSUE** #25625: (*steverweber*) cloud vmware driver does not provide mac_address unless vmware tools is running | refs: #26137 #26140
- **PR** #26137: (*steverweber*) use device mac address if vmtools not active @ *2015-08-09T03:05:36Z*
  - **ISSUE** #25625: (*steverweber*) cloud vmware driver does not provide mac_address unless vmware tools is running | refs: #26137 #26140
- **PR** #26119: (*jodv*) Backport eauth bugfix to 2015.5 @ *2015-08-09T02:19:52Z*
- **PR** #26135: (*cro*) Fix proxy minions in 2015.5 and significantly update documentation. @ *2015-08-09T02:19:21Z*
- **PR** #26132: (*TheBigBear*) minor edit @ *2015-08-08T21:05:34Z*
- **PR** #26133: (*amontalban*) Fixed #25915 in salt/modules/pkgng.py and salt/states/pkg.py @ *2015-08-08T21:05:05Z*
  - **ISSUE** #25915: (*ari*) FreeBSD pkg install fails
- **PR** #26111: (*anlutro*) Better error messages when virtualenv creation fails @ *2015-08-07T21:42:09Z*
- **PR** #26110: (*jfindlay*) check for sources before adding them to cmd str @ *2015-08-07T21:33:23Z*
  - **ISSUE** #26093: (*freedba*) archive.tar bug | refs: #26110
- **PR** #26106: (*vr-jack*) Update __init__.py @ *2015-08-07T21:15:55Z*
- **PR** #26101: (*rallytime*) Back-port #25984 to 2015.5 @ *2015-08-07T18:56:26Z*
  - **ISSUE** #25983: (*jmdcal*) Trying to get md5 of local zip | refs: #25984
  - **PR** #25984: (*jmdcal*) Support local files without md5sum | refs: #26101
- **PR** #26080: (*techhat*) Fix string checking in s3fs @ *2015-08-06T23:36:09Z*
- **PR** #26079: (*cachedout*) Update docs to remove state.over @ *2015-08-06T23:35:26Z*
  - **ISSUE** #26039: (*basepi*) Update scheduler docs to use orchestrate instead of overstate | refs: #26079
- **PR** #26058: (*opdude*) Fix choco version on chocolatey versions below 0.9.9 @ *2015-08-06T18:50:10Z*
- **PR** #26068: (*jfindlay*) fix autoruns.list looking in wrong directory @ *2015-08-06T18:49:48Z*
- **PR** #26065: (*s0undt3ch*) [2015.5] Update to latest bootstrap stable release v2015.06.08 @ *2015-08-06T17:09:35Z*
  - **ISSUE** #634: (*loupgaroublond*) /srv/salt/_grains/ not documented | refs: #26065
  - **ISSUE** #631: (*fatbox*) Can't extend the same item multiple times | refs: #26065
  - **ISSUE** #625: (*whiteinge*) *cmd.run* state *user* flag is not working | refs: #25506 #632
  - **PR** #640: (*terminalmage*) fix syntax errors introduced in 0f776c13 | refs: #26065
  - **PR** #638: (*blast-hardcheese*) Tightened up configuration documentation | refs: #26065
  - **PR** #633: (*epoelke*) Bug fix to salt-key | refs: #26065
  - **PR** #632: (*whiteinge*) Change the `cmd.run` state to use the new `runas` arg | refs: #26065
- **PR** #26061: (*gmcwhistler*) Patch for issue #25994 @ *2015-08-06T17:07:34Z*
  - **ISSUE** #25994: (*gmcwhistler*) module.ilo tempfile creation in __execute_cmd results in TypeError: cannot concatenate `str' and `int' objects
- **PR** #26064: (*s0undt3ch*) Don't stacktrace when trying to get the default locale. @ *2015-08-06T16:11:05Z*
  - **ISSUE** #26063: (*saltstack-bot*) not working with salt-cloud shows unknown locale error | refs: #26064

- **PR** #26048: (*jacobhammons*) Updated windows download links in the docs to https://repo.saltstack.com @ *2015-08-05T22:59:50Z*
- **PR** #26044: (*rallytime*) Make sure the key we're comparing is also lowercase @ *2015-08-05T19:23:54Z*
  - **ISSUE** #25616: (*rallytime*) [2015.5] Provisioning Linodes Stacktraces | refs: #26044
- **PR** #26042: (*jfindlay*) fix test mode logic in state docs @ *2015-08-05T19:23:07Z*
- **PR** #26036: (*nicholascapo*) survey.hash: Remove manually printed text @ *2015-08-05T19:21:59Z*
  - **ISSUE** #24460: (*nicholascapo*) Survey runner does not follow *--out* flag | refs: #26036
- **PR** #26030: (*opdude*) Fix a bug in choco version that returned odd data @ *2015-08-05T16:30:25Z*
- **PR** #26032: (*jfindlay*) add test logic to state reult doc @ *2015-08-05T16:28:32Z*
- **PR** #26031: (*alekti*) Revert ``Add file as supported protocol for file source_hash. Fixes #23764'' @ *2015-08-05T15:32:01Z*
  - **ISSUE** #23764: (*es1o*) source_hash from local file is not supported. | refs: #25750
- **PR** #26021: (*anlutro*) Documentation: Specify versionadded for git.present shared argument @ *2015-08-05T14:17:38Z*
- **PR** #26020: (*alekti*) Correctly resolve conflict merging pull 25750 to 2015.5 @ *2015-08-05T14:16:58Z*
  - **ISSUE** #23764: (*es1o*) source_hash from local file is not supported. | refs: #25750
  - **PR** #25750: (*alekti*) Add file as supported protocol for file source_hash. Fixes #25701. | refs: #26020
- **PR** #26016: (*basepi*) Revert ``Deep merge of pillar lists'' @ *2015-08-05T04:59:52Z*
  - **ISSUE** #22241: (*masterkorp*) Salt master not properly generating the map | refs: #25358
  - **PR** #25358: (*dkiser*) Deep merge of pillar lists | refs: #26016
- **PR** #25992: (*twangboy*) Refactor win_system.py @ *2015-08-05T04:54:18Z*
  - **ISSUE** #12255: (*eliasp*) `system.set_computer_desc' fails with non-ASCII chars | refs: #25992
  - **ISSUE** #3: (*thatch45*) libvirt module
- **PR** #26002: (*twangboy*) Fixed regex to account for comment character followed by whitespace @ *2015-08-04T22:28:11Z*
  - **ISSUE** #25948: (*twangboy*) Fix uncomment function to handle spaces | refs: #26002
- **PR** #25970: (*jfindlay*) accept addition of layman overlay @ *2015-08-04T15:42:28Z*
  - **ISSUE** #25949: (*godlike64*) layman.add does not work with unofficial overlays | refs: #25970
- **PR** #25971: (*basepi*) [2015.5] salt.modules.reg Add spaces for strings split across multiple lines @ *2015-08-04T15:39:48Z*
- **PR** #25990: (*rallytime*) Back-port #25976 to 2015.5 @ *2015-08-04T14:36:53Z*
  - **PR** #25976: (*fleaflicker*) Typo in help output | refs: #25990
- **PR** #25996: (*attiasr*) fix msiexec package remove @ *2015-08-04T14:36:31Z*
- **PR** #25966: (*rallytime*) Back-port #25864 to 2015.5 @ *2015-08-03T18:48:26Z*
  - **ISSUE** #25863: (*peterdemin*) pkg.installed fails on already installed package if it is in versionlock.list | refs: #25864
  - **PR** #25864: (*peterdemin*) #25863 state.pkg.installed fix | refs: #25966
- **PR** #25967: (*rallytime*) Back-port #25917 to 2015.5 @ *2015-08-03T18:48:02Z*

  - **PR** #25917: (*jmdcal*) adding missing format string | refs: #25967
- **PR** #25895: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-08-03T17:12:37Z*
  - **ISSUE** #23764: (*es1o*) source_hash from local file is not supported. | refs: #25750
  - **PR** #25750: (*alekti*) Add file as supported protocol for file source_hash. Fixes #25701. | refs: #26020
  - **PR** #25704: (*cachedout*) Ensure prior alignment with master_type in 2014.7
  - **PR** #25657: (*MrCitron*) Add the ability to specify a base pattern for carbon returner
  - **PR** #25633: (*AkhterAli*) Update loader.py
- **PR** #25941: (*jfindlay*) add timelib to dependency versions @ *2015-08-03T12:23:42Z*
  - **ISSUE** #25850: (*ssgward*) Need to add packages to --versions-report | refs: #25941
- **PR** #25951: (*garethgreenaway*) Log when event.fire and event.fire_master fail. @ *2015-08-03T00:19:45Z*
- **PR** #25942: (*jfindlay*) typo in minion doc @ *2015-07-31T23:34:55Z*
  - **ISSUE** #25838: (*grep4linux*) docs disable_modules documentation typo | refs: #25942
- **PR** #25938: (*jacobhammons*) Doc on using syndic with multimaster @ *2015-07-31T23:05:05Z*
  - **PR** #14690: (*jacksontj*) Multi syndic | refs: #25938
- **PR** #25848: (*twangboy*) Added allusers="1" when installing msi @ *2015-07-31T20:33:17Z*
  - **ISSUE** #25839: (*twangboy*) ALLUSERS="1" should be a default when installing MSI's | refs: #25848
- **PR** #25898: (*jfindlay*) clarify and expand syndic docs @ *2015-07-31T20:01:23Z*
- **PR** #25927: (*jacksontj*) Pass actual renderers to the Reactor's Compiler @ *2015-07-31T20:00:17Z*
  - **ISSUE** #25852: (*UtahDave*) Salt loader is not loading Salt vars in reactor python renderer | refs: #25927
- **PR** #25921: (*cachedout*) Handle non-ascii in state log @ *2015-07-31T17:41:30Z*
  - **ISSUE** #25810: (*nvx*) winpkg highstate fails when a new package name contains a unicide character | refs: #25921
- **PR** #25919: (*TheBigBear*) Minor update to msi un-installer info @ *2015-07-31T17:39:48Z*
- **PR** #25905: (*rallytime*) Back-port #25982 to 2015.5 @ *2015-07-30T23:24:19Z*
  - **PR** #25892: (*TheBigBear*) Update 7-zip msi un-installer instructions | refs: #25905
- **PR** #25890: (*rallytime*) Back-port #25698 to 2015.5 @ *2015-07-30T23:12:09Z*
  - **ISSUE** #25577: (*yellow1912*) Wrong indentation in document | refs: #25696
  - **PR** #25698: (*rallytime*) Back-port #25659 to 2015.8 | refs: #25890
  - **PR** #25696: (*AkhterAli*) Update schedule.py
  - **PR** #25659: (*isbm*) Bugfix: crash at getting non-existing repo | refs: #25698
- **PR** #25894: (*jacobhammons*) Minor doc bug fixes @ *2015-07-30T23:02:34Z*
  - **ISSUE** #25650: (*jacksontj*) state.running documentation is incorrect | refs: #25894
  - **ISSUE** #24042: (*whiteinge*) The state_events setting is not documented | refs: #25894
  - **ISSUE** #23788: (*k5jj*) functions in drac.py module do not match documentation | refs: #25894
  - **ISSUE** #21296: (*Lothiraldan*) Possible minion enumeration using saltutil.find_job and eauth | refs: #25894
- **PR** #25877: (*rallytime*) Protect against passing a map file in addition to VM names with --destroy @ *2015-07-30T21:55:45Z*

  - **ISSUE** #24036: (*arthurlogilab*) [salt-cloud] Protect against passing command line arguments as names for the --destroy command in map files | refs: #25877

- **PR** #25870: (*rallytime*) Back-port #25824 to 2015.5 @ *2015-07-30T21:54:35Z*
  - **PR** #25824: (*klyr*) Fix get_managed() in file.py module for local files | refs: #25870
- **PR** #25885: (*t0rrant*) Update Debian changelog @ *2015-07-30T20:05:59Z*
- **PR** #25875: (*rallytime*) Back-port #25862 to 2015.5 @ *2015-07-30T17:34:02Z*
  - **ISSUE** #25478: (*zyio*) salt-ssh - Unable to locate current thin version | refs: #25862
  - **ISSUE** #25026: (*sylvia-wang*) salt-ssh ``Failure deploying thin'' when using salt module functions | refs: #25862
  - **PR** #25862: (*zyio*) Adding SCP_NOT_FOUND exit code | refs: #25875
- **PR** #25873: (*rallytime*) Back-port #25855 to 2015.5 @ *2015-07-30T17:33:55Z*
  - **PR** #25855: (*puneetk*) Patch 3 | refs: #25873
- **PR** #25871: (*rallytime*) Back-port #25829 to 2015.5 @ *2015-07-30T17:33:43Z*
  - **PR** #25829: (*peterdemin*) Fixed typo in salt.states.saltmod.function doc string | refs: #25871
- **PR** #25869: (*rallytime*) Back-port #25788 to 2015.5 @ *2015-07-30T17:33:33Z*
  - **ISSUE** #24002: (*csakoda*) File lock contention on windows minions causing highstate crash | refs: #25788
  - **PR** #25788: (*opdude*) Catch a hard crash when running highstate on windows | refs: #25869
- **PR** #25853: (*davidjb*) Make ssh-id-wrapper accessible to non-root users @ *2015-07-30T16:49:47Z*
  - **ISSUE** #19532: (*stolendog*) salt-ssh running git clone with not root user | refs: #25853
- **PR** #25856: (*jfindlay*) expand minion reauth scalability documentation @ *2015-07-30T15:33:17Z*
  - **ISSUE** #25447: (*spo0nman*) SaltMaster is crippled with Minion Re-Authentication | refs: #25856
- **PR** #25840: (*jfindlay*) add note to winrepo state docs about required grain @ *2015-07-30T14:38:27Z*
  - **ISSUE** #25801: (*themalkolm*) Update docs that salt.states.winrepo requires *roles:salt-master* in grains. | refs: #25840
- **PR** #25846: (*jfindlay*) rework deprecation documentation for release names @ *2015-07-30T13:26:21Z*
  - **ISSUE** #25827: (*0xf10e*) ``Deprecating Code'' doesn't mention Usage of warn_until() w/ Release Names | refs: #25846
- **PR** #25833: (*jahamn*) Allows cp.push to recreate empty files @ *2015-07-29T16:14:48Z*
  - **ISSUE** #23288: (*UtahDave*) cp.push fails to recreate empty files. | refs: #25833
- **PR** #25831: (*rallytime*) Add salt:// to key_url options to docs for pkgrepo.managed @ *2015-07-29T15:38:43Z*
  - **ISSUE** #11474: (*JensRantil*) pkgrepo.managed key_url: salt:// always use *base* env | refs: #25831
- **PR** #25807: (*rallytime*) Provide helpful error when using actions with a mapfile @ *2015-07-29T15:30:15Z*
  - **ISSUE** #22699: (*arthurlogilab*) salt-cloud fails on KeyError when given a nonexistent action | refs: #25807
- **PR** #25818: (*jfindlay*) fix autoruns list @ *2015-07-29T15:29:20Z*
- **PR** #25826: (*anlutro*) Check that ``onchanges'' is a list @ *2015-07-29T15:00:28Z*
- **PR** #25798: (*twangboy*) Fixed stacktrace on package name not found @ *2015-07-28T22:40:14Z*
  - **ISSUE** #25258: (*nickw8*) windows minion repo not updating | refs: #25798

- **PR** #25797: (*twangboy*) Changed repocache back to cached_repo @ *2015-07-28T22:39:32Z*
  - **ISSUE** #25437: (*lorengordon*) Stacktrace on Windows when running pkg.list_pkgs | refs: #25598 #25763
  - **PR** #25763: (*twangboy*) Fix 25437 | refs: #25797
- **PR** #25793: (*rallytime*) Back-port #25730 to 2015.5 @ *2015-07-28T19:37:34Z*
  - **PR** #25730: (*sjorge*) patchelf lives in pkgsrc | refs: #25793
- **PR** #25792: (*rallytime*) Back-port #25688 to 2015.5 @ *2015-07-28T19:37:17Z*
  - **PR** #25688: (*bclermont*) Don't acquire lock if there is no formatter | refs: #25792
- **PR** #25796: (*cachedout*) Remove debug from docs @ *2015-07-28T17:35:59Z*
- **PR** #25749: (*jahamn*) Allow zpool.create on character devices @ *2015-07-28T16:01:40Z*
  - **ISSUE** #24920: (*voileux*) module.zpool.create on character device is not possible by salt | refs: #25749
- **PR** #25685: (*twangboy*) Fixed regex issues with comment and uncomment @ *2015-07-28T15:29:49Z*
- **PR** #25763: (*twangboy*) Fix 25437 | refs: #25797 @ *2015-07-28T15:29:27Z*
  - **ISSUE** #25437: (*lorengordon*) Stacktrace on Windows when running pkg.list_pkgs | refs: #25598 #25763
- **PR** #25752: (*thatch45*) State top saltenv @ *2015-07-28T01:02:10Z*
- **PR** #25755: (*twangboy*) Fixed problem with dunder functions not being passed @ *2015-07-27T19:31:22Z*
  - **ISSUE** #25717: (*twangboy*) Problem with chocolatey module not loading | refs: #25755
- **PR** #25648: (*twangboy*) Clarified functionality of reg module, fixed state to work with new module @ *2015-07-27T19:30:33Z*
  - **ISSUE** #25352: (*m03*) reg.absent reporting incorrect results | refs: #25648
  - **ISSUE** #1: (*thatch45*) Enable regex on the salt cli
- **PR** #25740: (*rallytime*) Back-port #25722 to 2015.5 @ *2015-07-27T16:08:40Z*
  - **ISSUE** #25154: (*uvsmtid*) All data mixed on STDOUT together should generate valid JSON output | refs: #25722
  - **ISSUE** #25153: (*uvsmtid*) Multiple results should generate valid JSON output | refs: #25722
  - **PR** #25722: (*uvsmtid*) Minor docs changes to emphasize JSON output problems without *--static* option | refs: #25740
- **PR** #25739: (*rallytime*) Back-port #25709 to 2015.5 @ *2015-07-27T16:08:27Z*
  - **PR** #25709: (*colekowalski*) add direct-io-mode to mount_invisible_options | refs: #25739
  - **PR** #25699: (*rallytime*) Back-port #25660 to 2015.5 | refs: #25709
  - **PR** #25660: (*colekowalski*) add glusterfs' direct-io-mode to mount_invisible_keys | refs: #25699 #25709
- **PR** #25738: (*rallytime*) Back-port #25671 to 2015.5 @ *2015-07-27T16:08:23Z*
  - **PR** #25671: (*niq000*) added a parameter so verifying SSL is now optional instead of hard-coded | refs: #25738
- **PR** #25737: (*rallytime*) Back-port #25608 to 2015.5 @ *2015-07-27T16:08:18Z*
  - **ISSUE** #25229: (*rall0r*) Module git.latest kills target directory when test=True | refs: #25608
  - **PR** #25608: (*rall0r*) Fix: prevent git.latest from removing target | refs: #25737
- **PR** #25733: (*davidjb*) Avoid IndexError when listing mounts if mount output ends in newline @ *2015-07-27T16:08:05Z*

- **PR** #25705: (*blackduckx*) Support for setm augeas command. @ *2015-07-27T16:07:10Z*
  - **ISSUE** #22460: (*onmeac*) Command setm is not supported (yet) | refs: #25705
- **PR** #25703: (*cachedout*) Return to *str* for master_type for 2015.5 @ *2015-07-27T16:06:22Z*
- **PR** #25702: (*twangboy*) Fixed win_user module for groups with spaces in the name @ *2015-07-27T15:06:33Z*
  - **ISSUE** #25144: (*johnccfm*) user.present on Windows fails to add user to groups if group name contains a space | refs: #25702
- **PR** #25711: (*twangboy*) Fixed problem with win_servermanager.list_installed @ *2015-07-27T15:05:48Z*
  - **ISSUE** #25351: (*m03*) win_servermanager.list_installed failing with ``IndexError: list index out of range'' | refs: #25711
- **PR** #25714: (*cachedout*) Display warning when progressbar can't be loaded @ *2015-07-25T00:10:13Z*
  - **ISSUE** #25435: (*yee379*) progressbar dependency missing | refs: #25714
- **PR** #25699: (*rallytime*) Back-port #25660 to 2015.5 | refs: #25709 @ *2015-07-24T22:11:40Z*
  - **PR** #25660: (*colekowalski*) add glusterfs' direct-io-mode to mount_invisible_keys | refs: #25699 #25709
- **PR** #25694: (*s0undt3ch*) Salt-SSH fix for #25689 @ *2015-07-24T21:41:57Z*
  - **ISSUE** #25689: (*anlutro*) Minion log in salt-ssh | refs: #25694
- **PR** #25710: (*jahamn*) Integration Testcase for Issue 25250 @ *2015-07-24T20:57:33Z*
  - **ISSUE** #25250: (*wipfs*) `force' option in copy state deletes target file | refs: #25461 #25710
- **PR** #25680: (*basepi*) [2015.5] Move cmd.run jinja aliasing to a wrapper class to prevent side effects @ *2015-07-24T19:52:10Z*
  - **PR** #25049: (*terminalmage*) Fix cmd.run when cross-called in a state/execution module | refs: #25680
- **PR** #25682: (*basepi*) [2015.5] Fix parsing args with just a hash (#) @ *2015-07-24T19:52:01Z*
- **PR** #25695: (*stanislavb*) Configurable AWS region & region from IAM metadata @ *2015-07-24T19:36:40Z*
- **PR** #25645: (*kev009*) Fix pkgng provider to work with a sources list and the underlying pkg... @ *2015-07-24T16:33:18Z*
- **PR** #25677: (*aneeshusa*) Fix pacman.list_upgrades when refresh=True. @ *2015-07-24T16:30:06Z*
- **PR** #25675: (*UtahDave*) Use OS line endings with contents on file.managed @ *2015-07-24T16:29:50Z*
  - **ISSUE** #25674: (*UtahDave*) file.managed with contents parameter uses wrong line endings on Windows | refs: #25675
- **PR** #25676: (*basepi*) Update release candidate docs to 2015.8.0rc2 @ *2015-07-23T20:29:37Z*
- **PR** #25666: (*nmadhok*) Check if the properties exist before looping over them causing KeyError @ *2015-07-23T17:55:40Z*
  - **ISSUE** #25665: (*nmadhok*) salt-cloud VMware driver fails with KeyErrors if there's any existing machine in the VMware infrastructure in (invalid state) | refs: #25666
- **PR** #25656: (*anlutro*) Fix locale detection in debian/gentoo @ *2015-07-23T16:46:40Z*
- **PR** #25661: (*rallytime*) Back-port #25624 to 2015.5 @ *2015-07-23T16:26:48Z*
  - **PR** #25624: (*bobrik*) Fix typo in get_routes example for debian_ip | refs: #25661
- **PR** #25662: (*rallytime*) Back-port #25638 to 2015.5 @ *2015-07-23T16:26:40Z*
  - **ISSUE** #15209: (*hubez*) file.manage: source_hash not working with s3:// (2014.7.0rc1) | refs: #25638

  - **PR** #25638: (*TronPaul*) fix bad merge in 99fc7ec | refs: #25662

- **PR** #25644: (*cachedout*) pillar doc fix @ *2015-07-22T22:57:23Z*
  - **ISSUE** #25413: (*zizkebab*) pillar_opts default behavior is not reflected in the docs | refs: #25644
- **PR** #25642: (*cachedout*) Warn on pillar schedule delete @ *2015-07-22T22:04:12Z*
  - **ISSUE** #25540: (*dennisjac*) salt highstate schedule cannot be removed | refs: #25642
- **PR** #25598: (*twangboy*) Fixed problem trying to load file with name of boolean type @ *2015-07-22T17:07:49Z*
  - **ISSUE** #25437: (*lorengordon*) Stacktrace on Windows when running pkg.list_pkgs | refs: #25598 #25763
  - 7b79e433 Merge pull request #25598 from twangboy/fix_25437
- **PR** #25604: (*terminalmage*) Move patching of mock_open to within test @ *2015-07-22T16:53:55Z*
  - **ISSUE** #25323: (*terminalmage*) unit.modules.tls_test fails with older mock | refs: #25604
- **PR** #25609: (*s0undt3ch*) [2015.5] Update the bootstrap script to latest release v2015.07.22 @ *2015-07-22T16:28:52Z*
  - **ISSUE** #630: (*syphernl*) Allow for an include statement in config files | refs: #25609
  - **PR** #627: (*chjohnst*) add saltversion grain | refs: #25609
- **PR** #25603: (*terminalmage*) Add version_cmp function to yumpkg.py @ *2015-07-22T15:42:29Z*
  - **ISSUE** #21912: (*rvora*) pkg.latest not updating the package on CentOS though yum reports an update available | refs: #25603
- **PR** #25590: (*garethgreenaway*) 2015.5 scheduled jobs return data @ *2015-07-21T21:57:42Z*
  - **ISSUE** #25560: (*dennisjac*) scheduled highstate runs don't return results to the job cache | refs: #25590
- **PR** #25584: (*rallytime*) Back-port #24054 and #25576 to 2015.5 @ *2015-07-21T21:16:38Z*
  - **PR** #25576: (*pcn*) s3fs breaks when fetching files from s3 | refs: #25584
  - **PR** #24054: (*mgwilliams*) s3.head: return useful data | refs: #25584
- **PR** #25589: (*jahamn*) Fixes ssh_known_host not taking port into account @ *2015-07-21T21:15:06Z*
  - **ISSUE** #23626: (*mirko*) salt state `ssh_known_hosts' doesn't take `port' into account | refs: #25589
- **PR** #25573: (*EvaSDK*) Do not execute bootstrap script twice @ *2015-07-21T18:20:04Z*
  - **PR** #25465: (*EvaSDK*) 2015.5.3 LXC module fixes | refs: #25573
- **PR** #25580: (*attiasr*) use explicit utf-8 decoding (#25532) @ *2015-07-21T15:40:49Z*
  - **ISSUE** #25532: (*attiasr*) salt/modules/win_pkg.py list_pkgs is broken (encoding issues) | refs: #25556 #25580
- **PR** #25568: (*twangboy*) Fixed win_useradd module to add fullname @ *2015-07-21T14:30:25Z*
  - **ISSUE** #25206: (*jfindlay*) fullname issues with user.add state on windows | refs: #25568
- **PR** #25561: (*twangboy*) Fixed the gem module to work on windows… without injection @ *2015-07-20T21:12:15Z*
  - **ISSUE** #21041: (*deuscapturus*) state module gem.installed not working on Windows. | refs: #25430 #25561 #25428
  - **PR** #25428: (*twangboy*) Fixed the gem module to work on windows | refs: #25561
- **PR** #25521: (*cachedout*) Fix outputter for state.orch @ *2015-07-20T19:30:14Z*
- **PR** #25563: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-07-20T19:27:36Z*

  - **PR** #25416: (*cachedout*) Fix broken keyword
- **PR** #25559: (*cachedout*) Lint win_pkg @ *2015-07-20T17:46:29Z*
- **PR** #25556: (*attiasr*) fix for #25532 @ *2015-07-20T17:45:11Z*
  - **ISSUE** #25532: (*attiasr*) salt/modules/win_pkg.py list_pkgs is broken (encoding issues) | refs: #25556 #25580
- **PR** #25554: (*jfindlay*) verify_ssl=True for s3 ext pillar @ *2015-07-20T17:43:38Z*
  - **ISSUE** #25538: (*stanislavb*) S3 ext_pillar configuration requires verify_ssl | refs: #25554
- **PR** #25551: (*rallytime*) Backport #25530 to 2015.5 @ *2015-07-20T17:43:00Z*
  - **PR** #25530: (*andre-luiz-dos-santos*) The variable name must be last | refs: #25551
- **PR** #25533: (*attiasr*) port 445 for windows bootstraping @ *2015-07-20T15:13:06Z*
- **PR** #25525: (*gtmanfred*) add make _prepare an alias for postinitio @ *2015-07-20T15:12:38Z*
  - **ISSUE** #25432: (*gtmanfred*) [2015.5.3][raet] raet error with SaltRaetRoadStackJoiner | refs: #25525
- **PR** #25519: (*rallytime*) Backport vmware driver to 2015.5 branch @ *2015-07-20T15:11:26Z*
  - **ISSUE** #25511: (*rallytime*) Make provider --> driver change backward compatible | refs: #25519 #25519
  - **ISSUE** #23574: (*CedNantes*) Failed to Deploy Salt-Minion on a Win 2012 R2 using wmware Cloud Driver from Develop branch | refs: #25519
- **PR** #25542: (*Oro*) Fix hipchat.send_message when using API v2 @ *2015-07-20T15:09:13Z*
- **PR** #25531: (*rallytime*) Back-port #25529 to 2015.5 @ *2015-07-18T19:16:10Z*
  - **PR** #25529: (*davidjb*) Fix minor typo in best practice example | refs: #25531
- **PR** #25528: (*davidjb*) Fix typo in extend declaration doco @ *2015-07-18T14:22:06Z*
- **PR** #25517: (*rallytime*) Back-port #25486 to 2015.5 @ *2015-07-17T21:49:26Z*
  - **ISSUE** #25486: (*whiteinge*) Highstate outputter not used for state.apply | refs: #25517
  - **PR** #25485: (*attiasr*) fix file downloads on windows
- **PR** #25516: (*rallytime*) Back-port #25483 to 2015.5 @ *2015-07-17T21:49:05Z*
  - **ISSUE** #25479: (*alexandrsushko*) multiple mount.mounted of one device | refs: #25483
  - **PR** #25483: (*alexandrsushko*) Added `none' to the set of specialFSes | refs: #25516
- **PR** #25513: (*garethgreenaway*) fixes to schedule.add documentation in 2015.5 @ *2015-07-17T17:03:24Z*
  - **ISSUE** #25493: (*blackduckx*) Issue with job_args on schedule.add command | refs: #25513
- **PR** #25465: (*EvaSDK*) 2015.5.3 LXC module fixes | refs: #25573 @ *2015-07-17T15:57:54Z*
- **PR** #25506: (*s0undt3ch*) [2015.5] Update bootstrap script to latest stable release, v2015.07.17 @ *2015-07-17T15:40:38Z*
  - **ISSUE** #25456: (*julienlavergne*) [2015.8.0rc1] salt-bootstrap fails to install salt master | refs: #25506
  - **ISSUE** #25270: (*iggy*) [2015.8.0rc1] salt-bootstrap fails to properly install a minion | refs: #25506
  - **ISSUE** #625: (*whiteinge*) *cmd.run* state *user* flag is not working | refs: #25506 #632
  - **ISSUE** #611: (*fatbox*) Peer interface fails to return data occasionally | refs: #25506
  - **ISSUE** #607: (*thatch45*) next level -X support | refs: #25506
  - **ISSUE** #598: (*syphernl*) Explanation on how to execute interactive installs | refs: #25506

  - **ISSUE** #455: (*whiteinge*) Document common troubleshooting tips | refs: #25506
  - **PR** #624: (*chjohnst*) Docs are not correct with network.ping as args are not supported | refs: #25506
  - **PR** #621: (*akoumjian*) Adding ec2 cloud-init bootstrap docs | refs: #25506
  - **PR** #606: (*terminalmage*) need empty line before code blocks. added ones that were missing. | refs: #25506
  - **PR** #602: (*terminalmage*) State-related documentation changes | refs: #25506
- **PR** #25498: (*jfindlay*) only read /proc/1/cmdline if it exists @ *2015-07-17T15:35:33Z*
  - **ISSUE** #25454: (*mschiff*) Regression: salt 2015.5 not working in secure chroot anymore. | refs: #25498
- **PR** #25487: (*rallytime*) Back-port #25464 to 2015.5 @ *2015-07-16T16:58:36Z*
  - **PR** #25464: (*jquast*) docfix: ``cache_jobs: False'' => grains_cache: False'' | refs: #25487
- **PR** #25482: (*oeuftete*) Fix docker.running detection of running container @ *2015-07-16T16:58:29Z*
  - **PR** #2015: (*thekuffs*) Esky / bbfreeze support
- **PR** #25468: (*joejulian*) Add support for pyOpenSSL > 0.10 @ *2015-07-16T15:10:30Z*
  - **ISSUE** #25384: (*rickh563*) pyopenssl 0.14 requirement in 2015.5.3 does not work in RHEL6 : ZD-364 | refs: #25468
- **PR** #25467: (*rallytime*) Add lxml dependency to opennebula docs @ *2015-07-16T15:09:57Z*
- **PR** #25461: (*jahamn*) Update file, if force option and content not same @ *2015-07-15T20:15:07Z*
  - **ISSUE** #25250: (*wipfs*) `force' option in copy state deletes target file | refs: #25461 #25710
  - **ISSUE** #24647: (*nmadhok*) salt.states.file.copy does not copy the file if it already exists with force=True | refs: #25461
- **PR** #25438: (*rallytime*) Reduce digital_ocean_v2 API call frequency @ *2015-07-15T19:40:18Z*
  - **ISSUE** #25431: (*namcois*) Digital Ocean v2 reducing API calls by adding per_page | refs: #25438
- **PR** #25457: (*jacksontj*) Saltnado @ *2015-07-15T17:50:12Z*
  - **PR** #25427: (*tony-cocco*) Saltnado runner client results in blocking call despite being set-up as Runner.async | refs: #25457
- **PR** #25459: (*jahamn*) Fixed `defulats' typo in verify.py @ *2015-07-15T16:53:06Z*
- **PR** #25426: (*jquast*) bugfix: trailing "...done" in rabbitmq output (backport from `develop' to 2015.5) @ *2015-07-15T14:48:05Z*
- **PR** #25433: (*jleroy*) Support for IPv6 addresses scopes in network.interfaces (ifconfig) @ *2015-07-15T14:44:09Z*
  - **PR** #25151: (*jleroy*) Support for IPv6 addresses scopes in network.interfaces | refs: #25274 #25433
- **PR** #25430: (*twangboy*) Disabled rbenv execution module for Windows @ *2015-07-15T14:41:18Z*
  - **ISSUE** #21041: (*deuscapturus*) state module gem.installed not working on Windows. | refs: #25430 #25561 #25428
- c4b1584 Additional test case for question raised in #1846
  - **ISSUE** #1846: (*seanchannel*) development dependencies
- **PR** #25420: (*techhat*) Move S3 to use AWS Signature Version 4 @ *2015-07-14T22:03:09Z*
- **PR** #25418: (*twangboy*) Fixed problem with file.managed test=True @ *2015-07-14T21:26:59Z*

  - **ISSUE** #20441: (*deuscapturus*) State module file.managed returns an error on Windows and test=Test | refs: #25418

- **PR** #25417: (*ahus1*) extended documentation about dependencies for dig module @ *2015-07-14T20:49:51Z*
- **PR** #25411: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-07-14T17:55:26Z*
  - **PR** #25375: (*cachedout*) Fix error in config.py for master_type
  - **PR** #25324: (*jacobhammons*) Latest help theme updates
- **PR** #25406: (*anlutro*) Force arguments to aptpkg.version_cmp into strings @ *2015-07-14T16:15:41Z*
- **PR** #25408: (*rallytime*) Back-port #25399 to 2015.5 @ *2015-07-14T16:09:06Z*
  - **PR** #25399: (*jarpy*) Demonstrate per-minion client_acl. | refs: #25408
- **PR** #25240: (*tankywoo*) file make os.walk only be called one @ *2015-07-14T16:04:49Z*
- **PR** #25395: (*rallytime*) Back-port #25389 to 2015.5 @ *2015-07-14T03:26:34Z*
  - **PR** #25389: (*l2ol33rt*) Adding entropy note for gpg renderer | refs: #25395
- **PR** #25392: (*rallytime*) Back-port #25256 to 2015.5 @ *2015-07-14T03:25:13Z*
  - **PR** #25256: (*yanatan16*) Don't assume source_hash exists | refs: #25392
- **PR** #25398: (*twangboy*) Fix date @ *2015-07-14T03:21:17Z*
- **PR** #25397: (*GideonRed*) Introduce standard error output when cli exits with non-zero status @ *2015-07-14T03:20:24Z*
- **PR** #25386: (*cachedout*) Lint #25383 @ *2015-07-13T21:01:10Z*
  - **ISSUE** #24444: (*michaelkrupp*) file.managed does not handle dead symlinks | refs: #25383
  - **PR** #25383: (*jahamn*) Fix manage_file function in salt/modules/file.py to handle broken sym…
- **PR** #25383: (*jahamn*) Fix manage_file function in salt/modules/file.py to handle broken sym… @ *2015-07-13T20:58:23Z*
  - **ISSUE** #24444: (*michaelkrupp*) file.managed does not handle dead symlinks | refs: #25383
- **PR** #25369: (*anlutro*) Fix aptpkg.version_cmp @ *2015-07-13T20:18:45Z*
- **PR** #25379: (*jfindlay*) check for cwd before getting it @ *2015-07-13T19:50:27Z*
  - **ISSUE** #25337: (*eliasp*) *salt-call* from non-existend cwd backtraces | refs: #25379
- **PR** #25334: (*jfindlay*) return all cmd info back to zypper fcn @ *2015-07-13T17:03:29Z*
  - **ISSUE** #25320: (*podloucky-init*) zypper module list_upgrades broken (2015.5.2) | refs: #25334
- **PR** #25339: (*jfindlay*) update orchestration docs @ *2015-07-13T16:04:26Z*
- **PR** #25358: (*dkiser*) Deep merge of pillar lists | refs: #26016 @ *2015-07-13T15:51:01Z*
  - **ISSUE** #22241: (*masterkorp*) Salt master not properly generating the map | refs: #25358
- **PR** #25346: (*bechtoldt*) set correct indention in states/requisites.rst (docs), fixes #25281 @ *2015-07-13T15:34:45Z*
  - **ISSUE** #25281: (*shinshenjs*) Unless usage in Official Doc syntax error?
- **PR** #25336: (*terminalmage*) Don't try to read init binary if it wasn't found @ *2015-07-13T09:45:30Z*
- **PR** #25350: (*davidjb*) Fix documentation for file.blockreplace @ *2015-07-13T03:41:20Z*
- **PR** #25326: (*rallytime*) Back-port #20972 to 2015.5 @ *2015-07-10T18:49:44Z*

  - **ISSUE** #19288: (*oba11*) AssociatePublicIpAddress doesn't work with salt-cloud 2014.7.0 | refs: #20972 #25326
  - **PR** #20972: (*JohannesEbke*) Fix interface cleanup when using AssociatePublicIpAddress in #19288 | refs: #25326
- **PR** #25327: (*rallytime*) Back-port #25290 to 2015.5 @ *2015-07-10T18:49:37Z*
  - **ISSUE** #24433: (*chrimi*) Salt locale state fails, if locale has not been generated | refs: #25290
  - **PR** #25290: (*pcdummy*) Simple fix for locale.present on Ubuntu. | refs: #25327
- **PR** #25328: (*rallytime*) Back-port #25309 to 2015.5 @ *2015-07-10T17:22:59Z*
  - **ISSUE** #24827: (*yermulnik*) locale.present doesn't generate locales | refs: #25309
  - **PR** #25309: (*davidjb*) Format /etc/locale.gen correctly in salt.modules.localemod.gen_locale | refs: #25328
- **PR** #25322: (*jacobhammons*) version change to 2015.5.3 @ *2015-07-10T16:11:24Z*
- **PR** #25308: (*jacksontj*) Make clear commands trace level logging @ *2015-07-10T14:20:06Z*
  - **PR** #24737: (*jacksontj*) Move AES command logging to trace | refs: #25308
- **PR** #25269: (*jfindlay*) Extract tomcat war version @ *2015-07-10T01:28:21Z*
  - **ISSUE** #24520: (*nvx*) Tomcat module fails to extract version number from snapshot builds (2015.5 regression) | refs: #24927
  - **PR** #24927: (*egarbi*) Tomcat module fails to extract version number from snapshot builds #2… | refs: #25269
- **PR** #25238: (*DmitryKuzmenko*) Pillarenv backport 2015.5 @ *2015-07-10T01:25:07Z*
  - **ISSUE** #18808: (*amendlik*) Add command line argument to select pillar environment | refs: #25238
  - **PR** #23719: (*DmitryKuzmenko*) Support pillarenv cmdline in state.sls
- **PR** #25299: (*twangboy*) Added -NonInteractive so powershell doesn't hang waiting for input @ *2015-07-09T21:00:16Z*
  - **ISSUE** #13943: (*Supermathie*) Powershell commands that expect input hang forever | refs: #25299
- **PR** #25301: (*jacobhammons*) bug fix for module function display in help @ *2015-07-09T20:46:34Z*
- **PR** #25279: (*jacobhammons*) Additional docs on external and master job cache, assorted doc fixes @ *2015-07-09T16:46:26Z*
  - **ISSUE** #25277: (*jacobhammons*) CherryPy recommended versions | refs: #25279
- **PR** #25274: (*jleroy*) Fix for issue #25268 @ *2015-07-09T13:36:26Z*
  - **ISSUE** #25268: (*lichtamberg*) Salt not working anymore in 2015.8/develop: ValueError: `scope' is not in list | refs: #25274
  - **PR** #25151: (*jleroy*) Support for IPv6 addresses scopes in network.interfaces | refs: #25274 #25433
- **PR** #25272: (*twangboy*) Fixed problem with service not starting @ *2015-07-08T23:29:48Z*
- **PR** #25225: (*nmadhok*) Backporting fix for issue #25223 on 2015.5 branch @ *2015-07-08T15:16:18Z*
  - **ISSUE** #25223: (*nmadhok*) Runner occasionally fails with a RuntimeError when fired by a reactor | refs: #25225
- **PR** #25214: (*rallytime*) A couple of doc fixes for the http tutorial @ *2015-07-07T22:23:07Z*
- **PR** #25194: (*rallytime*) Update moto version check in boto_vpc_test and update min version @ *2015-07-07T18:27:32Z*

  - **ISSUE** #24272: (*rallytime*) Fix boto_vpc_test moto version check | refs: #25194
- **PR** #25205: (*basepi*) Update releasecandidate docs @ *2015-07-07T15:25:24Z*
- **PR** #25187: (*UtahDave*) Doc fixes: Fix misspelling and remove extraneous double spaces @ *2015-07-07T01:07:04Z*
- **PR** #25182: (*cachedout*) Try to re-pack long floats as strs @ *2015-07-07T01:06:43Z*
- **PR** #25185: (*rallytime*) Back-port #25128 to 2015.5 @ *2015-07-07T00:58:00Z*
  - **ISSUE** #23822: (*sidcarter*) Zip file extracted permissions are incorrect | refs: #25128
  - **PR** #25128: (*stanislavb*) Use cmd_unzip to preserve permissions | refs: #25185
- **PR** #25181: (*rallytime*) Back-port #25102 to 2015.5 @ *2015-07-07T00:57:13Z*
  - **PR** #25102: (*derBroBro*) Update win_network.py | refs: #25181
- **PR** #25179: (*rallytime*) Back-port #25059 to 2015.5 @ *2015-07-07T00:56:44Z*
  - **ISSUE** #24301: (*iggy*) influxdb_user and influxdb_database states need virtual functions | refs: #25059
  - **PR** #25059: (*babilen*) Add virtual functions to influxdb state modules | refs: #25179
- **PR** #25196: (*twangboy*) Fixed #18919 false-positive on pkg.refresh @ *2015-07-07T00:24:13Z*
  - **ISSUE** #18919: (*giner*) Windows: pkg.refresh_db returns false-positive success | refs: #25196
- **PR** #25180: (*rallytime*) Back-port #25088 to 2015.5 @ *2015-07-06T20:33:45Z*
  - **PR** #25088: (*supertom*) Update | refs: #25180
- **PR** #25191: (*basepi*) Add extrndest back to fileclient.is_cached in 2015.5 @ *2015-07-06T19:35:24Z*
  - **PR** #25117: (*basepi*) Fix fileclient.is_cached | refs: #25191
- **PR** #25175: (*rallytime*) Back-port #25020 to 2015.5 @ *2015-07-06T18:53:19Z*
  - **ISSUE** #25016: (*martinhoefling*) salt-run doc.execution fails with AttributeError
  - **PR** #25020: (*martinhoefling*) Fix for issue #25016 | refs: #25175
- **PR** #25173: (*rallytime*) Partial back-port of #25019 @ *2015-07-06T18:52:59Z*
  - **ISSUE** #21879: (*bechtoldt*) Reference pages in documentation are outdated again | refs: #25019
  - **ISSUE** #19262: (*bechtoldt*) salt.pillar.file_tree doesn't appear in the documentation | refs: #25019
  - **PR** #25019: (*bechtoldt*) add missing module documentation to references | refs: #25173
  - **PR** #24421: (*bechtoldt*) add missing module documentation | refs: #25019
  - **PR** #21880: (*bechtoldt*) update references, fixes #21879 | refs: #25019
  - **PR** #20039: (*bechtoldt*) completing some doc references | refs: #25019
- **PR** #25171: (*rallytime*) Back-port #25001 to 2015.5 @ *2015-07-06T18:51:53Z*
  - **PR** #25001: (*jasonkeene*) Add docs for key arg in ssh_known_hosts.present | refs: #25171
- **PR** #25170: (*rallytime*) Back-port #24982 to 2015.5 @ *2015-07-06T16:34:43Z*
  - **PR** #24982: (*asyncsrc*) ec2 network_interfaces fix | refs: #25170
- **PR** #25161: (*aneeshusa*) Allow checking for non-normalized systemd units. @ *2015-07-06T15:15:31Z*
- **PR** #25151: (*jleroy*) Support for IPv6 addresses scopes in network.interfaces | refs: #25274 #25433 @ *2015-07-06T14:43:03Z*
- **PR** #25166: (*cachedout*) Lint #25149 @ *2015-07-06T14:40:29Z*

  - **ISSUE** #24979: (*mavenAtHouzz*) [Discussion] Support for more than 1 netapi.rest_tornado server process | refs: #25149
  - **PR** #25149: (*jacksontj*) Saltnado multiprocess support | refs: #25166
- **PR** #25149: (*jacksontj*) Saltnado multiprocess support | refs: #25166 @ *2015-07-06T14:38:43Z*
  - **ISSUE** #24979: (*mavenAtHouzz*) [Discussion] Support for more than 1 netapi.rest_tornado server process | refs: #25149
- **PR** #25120: (*d--j*) add missing continue for exception case @ *2015-07-02T19:38:45Z*
- **PR** #25117: (*basepi*) Fix fileclient.is_cached | refs: #25191 @ *2015-07-02T19:38:26Z*
- **PR** #25087: (*0xf10e*) Fix execution module for glance - now based on 2015.5! @ *2015-07-02T19:36:27Z*
- **PR** #25129: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-07-02T17:37:40Z*
  - **ISSUE** #18447: (*ryan-lane*) Can't install salt with raet using pip -e git
  - **PR** #25093: (*jaybocc2*) quick fix for issue #18447
  - **PR** #25069: (*puneetk*) Add a helper module function called list_enabled
- **PR** #25114: (*jfindlay*) Revert ``Revert ``adding states/postgres_database unit test case.'''' @ *2015-07-02T01:01:29Z*
  - **PR** #24798: (*jtand*) Revert ``adding states/postgres_database unit test case.'' | refs: #25114
  - **PR** #24329: (*jayeshka*) adding states/postgres_database unit test case. | refs: #24798
- **PR** #24362: (*jayeshka*) adding states/postgres_user unit test case. @ *2015-07-01T21:45:31Z*
- **PR** #24361: (*jayeshka*) adding states/postgres_schema unit test case. @ *2015-07-01T21:44:56Z*
- **PR** #24331: (*jayeshka*) adding states/postgres_extension unit test case. @ *2015-07-01T21:43:58Z*

### 18.2.29 Salt 2015.5.5 Release Notes

Version 2015.5.5 is a bugfix release for *2015.5.0*.

Changes:

- The `cron.present` state now correctly defaults to state ID as identifier.
- When querying for VMs in `ditigal_ocean_v2.py`, the number of VMs to include in a page was changed from 20 (default) to 200 to reduce the number of API calls to Digital Ocean.
- The `vmware` Salt-Cloud driver was back-ported from the develop branch in order for installations of Salt that are older than 2015.8.0 to be able to use the `vmware` driver without stack-tracing on various deprecation paths that were implemented in the 2015.8.0 release.

#### Changes for v2015.5.3..v2015.5.5

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2015-08-20T17:02:37Z*

Statistics:

- Total Merges: **280**
- Total Issue references: **168**
- Total PR references: **371**

Changes:

- **PR** #26292: (*jquast*) Rabbitmq 3.2.4 on Ubuntu has "...done.", not "...done" @ *2015-08-13T19:53:29Z*
- **PR** #26296: (*jquast*) bugfix missing `runas=None' for rabbitmqctl cmds (backport to 2015.5) @ *2015-08-13T19:52:40Z*
- **PR** #26293: (*jfindlay*) Fix #26268 @ *2015-08-13T19:48:06Z*
  - **ISSUE** #25618: (*twangboy*) Fix reg.py to work with the registry properly | refs: #26268
  - **PR** #26268: (*twangboy*) Multiple improvements to reg executionmod and state mod | refs: #26293
- **PR** #26290: (*rallytime*) Only call convert_to_arn when action name is provided @ *2015-08-13T18:48:58Z*
  - **ISSUE** #25192: (*deuscapturus*) 2015.5.2 boto_cloudwatch_alarm.present not working. | refs: #26290
- **PR** #26288: (*bbinet*) allow deleting grains which value is False @ *2015-08-13T18:24:36Z*
- **PR** #26263: (*rallytime*) Don't make changes when test=True for openstack present/absent funcs @ *2015-08-13T16:30:31Z*
  - **ISSUE** #24882: (*nmadhok*) salt.states.openstack_config.present and salt.states.openstack_config.absent make changes when test=True | refs: #26263
- **PR** #26265: (*rallytime*) Don't stacktrace on query return in ec2.create_snapshot @ *2015-08-13T16:28:48Z*
  - **ISSUE** #24484: (*codehotter*) clouds/ec2.py: create_snapshot throws exception | refs: #26265
- **PR** #26285: (*stanislavb*) Remove explicit version from instance identity URL @ *2015-08-13T16:25:32Z*
- **PR** #26275: (*cachedout*) Re-init modules on multi-master reconnect @ *2015-08-13T15:52:50Z*
- **PR** #26273: (*garethgreenaway*) Fixes to schedule module in 2015.5 @ *2015-08-13T15:34:43Z*
- **PR** #26271: (*rallytime*) Fix del_root_vol_on_destroy and del_all_vols_on_destroy functionality on ec2 @ *2015-08-12T23:22:47Z*
  - **ISSUE** #24483: (*codehotter*) clouds/ec2.py: del_root_vol_on_destroy and del_all_vols_on_destroy not working | refs: #26271
- **PR** #26219: (*anlutro*) cron: make identifier default to state ID @ *2015-08-12T18:42:33Z*
  - **ISSUE** #25958: (*anlutro*) Cron identifier does not default to state ID as documented | refs: #26219
- **PR** #26257: (*rallytime*) Back-port #26237 to 2015.5 @ *2015-08-12T18:40:35Z*
  - **ISSUE** #26207: (*fullermd*) group members setting fails with obscure error message on FreeBSD | refs: #26237
  - **PR** #26237: (*silenius*) fix issue #26207 | refs: #26257
- **PR** #26258: (*nmadhok*) Fix permission on tests/runtests.py on 2015.5 branch @ *2015-08-12T18:40:04Z*
- **PR** #26261: (*nmadhok*) Correct spelling of integration in docs @ *2015-08-12T18:14:48Z*
  - **PR** #2015: (*thekuffs*) Esky / bbfreeze support
- **PR** #26247: (*nmadhok*) Initial commit of unit tests for vmware cloud driver @ *2015-08-12T16:58:24Z*
- **PR** #26246: (*nmadhok*) Backport additions to VMware cloud driver from develop to 2015.5 branch @ *2015-08-12T15:11:26Z*
- **PR** #26239: (*opdude*) Fixed documentation to match function name @ *2015-08-12T14:48:52Z*
- **PR** #26232: (*garethgreenaway*) Fix to trust_key in gpg module for 2015.5. @ *2015-08-12T04:48:27Z*
- **PR** #26084: (*twangboy*) Added python_shell=True, quoted user input @ *2015-08-10T21:29:35Z*

  - **ISSUE** #25802: (*jefftucker*) Running module ``npm.list'' fails on Windows for masterless minion | refs: #26084

- **PR** #26183: (*cro*) Fix LDAP configuration issue. @ *2015-08-10T19:09:41Z*
- **PR** #26186: (*jacobhammons*) regenerated man pages @ *2015-08-10T19:07:44Z*
- **PR** #26182: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-08-10T19:00:10Z*
  - **ISSUE** #25961: (*getabc*) [2015.5.3-2] salt-winrepo.git/salt-minion.sls fails certificate `*.wpengine.com' or `wpengine.com' | refs: #26047
  - **ISSUE** #25751: (*basepi*) Document *master_finger* more prominently | refs: #26088
  - **PR** #26116: (*corux*) file.replace fails if repl string is an invalid regex and append/prepend is used
  - **PR** #26088: (*jacobhammons*) Master finger
  - **PR** #26047: (*jacobhammons*) Updated windows download links in the docs to https://repo.saltstack.com
- **PR** #26000: (*driskell*) Implement full event caching for subscribed tags @ *2015-08-10T18:57:17Z*
  - **ISSUE** #25998: (*driskell*) Event subsystem discarding required events during --batch breaking it for slow running commands | refs: #26000
- **PR** #26175: (*rallytime*) Back-port #26153 to 2015.5 @ *2015-08-10T18:22:32Z*
  - **PR** #26153: (*loa*) Fix dockerio state documentation typo | refs: #26175
- **PR** #26177: (*rallytime*) Back-port #26147 to 2015.5 @ *2015-08-10T18:22:01Z*
  - **ISSUE** #26024: (*jpic*) lxc_conf_unset in cloud.profile is ignored
  - **PR** #26147: (*martinhoefling*) Fixes #26024 | refs: #26177
- **PR** #26179: (*rallytime*) Back-port #25404 to 2015.5 @ *2015-08-10T18:21:50Z*
  - **ISSUE** #21082: (*clinta*) master_type failover does not failover on DNS errors | refs: #25404
  - **PR** #25404: (*DmitryKuzmenko*) Fixed minion failover to next master on DNS errors. | refs: #26179
- **PR** #26180: (*jfindlay*) fix processing of state.template @ *2015-08-10T18:21:38Z*
  - **ISSUE** #26112: (*wt*) state.template fails with unclear error with template with only an include | refs: #26180
- **PR** #26172: (*nmadhok*) [Backport] Make sure variable is a dictionary before popping something from it. @ *2015-08-10T16:42:50Z*
  - **ISSUE** #26162: (*nmadhok*) VMware cloud driver create function failing with traceback on latest develop | refs: #26163 #26172
  - **PR** #26163: (*nmadhok*) Make sure variable is a dictionary before popping something from it.
- **PR** #26168: (*cachedout*) Fix slack docs @ *2015-08-10T14:57:18Z*
  - **ISSUE** #26098: (*rdinoff*) SALT.STATES.SLACK Doc update | refs: #26168
- **PR** #26127: (*garethgreenaway*) Fixes to salt.utils.http related to cp.get_file_str bug. @ *2015-08-10T14:38:25Z*
  - **ISSUE** #24106: (*nvx*) fileclient.py#get_url ignores HTTP Auth again (2015.5 regression) | refs: #26127
- **PR** #26140: (*nmadhok*) VMware cloud driver fixes @ *2015-08-10T13:15:58Z*
  - **ISSUE** #26141: (*nmadhok*) salt-cloud VMware driver fails with error in parsing configuration file | refs: #26140
  - **ISSUE** #25809: (*o-sleep*) vmware cloud module error message | refs: #26140

  - **ISSUE** #25625: (*steverweber*) cloud vmware driver does not provide mac_address unless vmware tools is running | refs: #26137 #26140

- **PR** #26137: (*steverweber*) use device mac address if vmtools not active @ *2015-08-09T03:05:36Z*
  - **ISSUE** #25625: (*steverweber*) cloud vmware driver does not provide mac_address unless vmware tools is running | refs: #26137 #26140
- **PR** #26119: (*jodv*) Backport eauth bugfix to 2015.5 @ *2015-08-09T02:19:52Z*
- **PR** #26135: (*cro*) Fix proxy minions in 2015.5 and significantly update documentation. @ *2015-08-09T02:19:21Z*
- **PR** #26132: (*TheBigBear*) minor edit @ *2015-08-08T21:05:34Z*
- **PR** #26133: (*amontalban*) Fixed #25915 in salt/modules/pkgng.py and salt/states/pkg.py @ *2015-08-08T21:05:05Z*
  - **ISSUE** #25915: (*ari*) FreeBSD pkg install fails
- **PR** #26111: (*anlutro*) Better error messages when virtualenv creation fails @ *2015-08-07T21:42:09Z*
- **PR** #26110: (*jfindlay*) check for sources before adding them to cmd str @ *2015-08-07T21:33:23Z*
  - **ISSUE** #26093: (*freedba*) archive.tar bug | refs: #26110
- **PR** #26106: (*vr-jack*) Update __init__.py @ *2015-08-07T21:15:55Z*
- **PR** #26101: (*rallytime*) Back-port #25984 to 2015.5 @ *2015-08-07T18:56:26Z*
  - **ISSUE** #25983: (*jmdcal*) Trying to get md5 of local zip | refs: #25984
  - **PR** #25984: (*jmdcal*) Support local files without md5sum | refs: #26101
- **PR** #26080: (*techhat*) Fix string checking in s3fs @ *2015-08-06T23:36:09Z*
- **PR** #26079: (*cachedout*) Update docs to remove state.over @ *2015-08-06T23:35:26Z*
  - **ISSUE** #26039: (*basepi*) Update scheduler docs to use orchestrate instead of overstate | refs: #26079
- **PR** #26058: (*opdude*) Fix choco version on chocolatey versions below 0.9.9 @ *2015-08-06T18:50:10Z*
- **PR** #26068: (*jfindlay*) fix autoruns.list looking in wrong directory @ *2015-08-06T18:49:48Z*
- **PR** #26065: (*s0undt3ch*) [2015.5] Update to latest bootstrap stable release v2015.06.08 @ *2015-08-06T17:09:35Z*
  - **ISSUE** #634: (*loupgaroublond*) /srv/salt/_grains/ not documented | refs: #26065
  - **ISSUE** #631: (*fatbox*) Can't extend the same item multiple times | refs: #26065
  - **ISSUE** #625: (*whiteinge*) *cmd.run* state *user* flag is not working | refs: #25506 #632
  - **PR** #640: (*terminalmage*) fix syntax errors introduced in 0f776c13 | refs: #26065
  - **PR** #638: (*blast-hardcheese*) Tightened up configuration documentation | refs: #26065
  - **PR** #633: (*epoelke*) Bug fix to salt-key | refs: #26065
  - **PR** #632: (*whiteinge*) Change the `cmd.run` state to use the new `runas` arg | refs: #26065
- **PR** #26061: (*gmcwhistler*) Patch for issue #25994 @ *2015-08-06T17:07:34Z*
  - **ISSUE** #25994: (*gmcwhistler*) module.ilo tempfile creation in __execute_cmd results in TypeError: cannot concatenate `str' and `int' objects
- **PR** #26064: (*s0undt3ch*) Don't stacktrace when trying to get the default locale. @ *2015-08-06T16:11:05Z*
  - **ISSUE** #26063: (*saltstack-bot*) not working with salt-cloud shows unknown locale error | refs: #26064
- **PR** #26048: (*jacobhammons*) Updated windows download links in the docs to https://repo.saltstack.com @ *2015-08-05T22:59:50Z*

- **PR** #26044: (*rallytime*) Make sure the key we're comparing is also lowercase @ *2015-08-05T19:23:54Z*
  - **ISSUE** #25616: (*rallytime*) [2015.5] Provisioning Linodes Stacktraces | refs: #26044
- **PR** #26042: (*jfindlay*) fix test mode logic in state docs @ *2015-08-05T19:23:07Z*
- **PR** #26036: (*nicholascapo*) survey.hash: Remove manually printed text @ *2015-08-05T19:21:59Z*
  - **ISSUE** #24460: (*nicholascapo*) Survey runner does not follow *--out* flag | refs: #26036
- **PR** #26030: (*opdude*) Fix a bug in choco version that returned odd data @ *2015-08-05T16:30:25Z*
- **PR** #26032: (*jfindlay*) add test logic to state reult doc @ *2015-08-05T16:28:32Z*
- **PR** #26031: (*alekti*) Revert ``Add file as supported protocol for file source_hash. Fixes #23764'' @ *2015-08-05T15:32:01Z*
  - **ISSUE** #23764: (*es1o*) source_hash from local file is not supported. | refs: #25750
- **PR** #26021: (*anlutro*) Documentation: Specify versionadded for git.present shared argument @ *2015-08-05T14:17:38Z*
- **PR** #26020: (*alekti*) Correctly resolve conflict merging pull 25750 to 2015.5 @ *2015-08-05T14:16:58Z*
  - **ISSUE** #23764: (*es1o*) source_hash from local file is not supported. | refs: #25750
  - **PR** #25750: (*alekti*) Add file as supported protocol for file source_hash. Fixes #25701. | refs: #26020
- **PR** #26016: (*basepi*) Revert ``Deep merge of pillar lists'' @ *2015-08-05T04:59:52Z*
  - **ISSUE** #22241: (*masterkorp*) Salt master not properly generating the map | refs: #25358
  - **PR** #25358: (*dkiser*) Deep merge of pillar lists | refs: #26016
- **PR** #25992: (*twangboy*) Refactor win_system.py @ *2015-08-05T04:54:18Z*
  - **ISSUE** #12255: (*eliasp*) `system.set_computer_desc' fails with non-ASCII chars | refs: #25992
  - **ISSUE** #3: (*thatch45*) libvirt module
- **PR** #26002: (*twangboy*) Fixed regex to account for comment character followed by whitespace @ *2015-08-04T22:28:11Z*
  - **ISSUE** #25948: (*twangboy*) Fix uncomment function to handle spaces | refs: #26002
- **PR** #25970: (*jfindlay*) accept addition of layman overlay @ *2015-08-04T15:42:28Z*
  - **ISSUE** #25949: (*godlike64*) layman.add does not work with unofficial overlays | refs: #25970
- **PR** #25971: (*basepi*) [2015.5] salt.modules.reg Add spaces for strings split across multiple lines @ *2015-08-04T15:39:48Z*
- **PR** #25990: (*rallytime*) Back-port #25976 to 2015.5 @ *2015-08-04T14:36:53Z*
  - **PR** #25976: (*fleaflicker*) Typo in help output | refs: #25990
- **PR** #25996: (*attiasr*) fix msiexec package remove @ *2015-08-04T14:36:31Z*
- **PR** #25966: (*rallytime*) Back-port #25864 to 2015.5 @ *2015-08-03T18:48:26Z*
  - **ISSUE** #25863: (*peterdemin*) pkg.installed fails on already installed package if it is in versionlock.list | refs: #25864
  - **PR** #25864: (*peterdemin*) #25863 state.pkg.installed fix | refs: #25966
- **PR** #25967: (*rallytime*) Back-port #25917 to 2015.5 @ *2015-08-03T18:48:02Z*
  - **PR** #25917: (*jmdcal*) adding missing format string | refs: #25967
- **PR** #25895: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-08-03T17:12:37Z*

  - **ISSUE** #23764: (*es1o*) source_hash from local file is not supported. | refs: #25750
  - **PR** #25750: (*alekti*) Add file as supported protocol for file source_hash. Fixes #25701. | refs: #26020
  - **PR** #25704: (*cachedout*) Ensure prior alignment with master_type in 2014.7
  - **PR** #25657: (*MrCitron*) Add the ability to specify a base pattern for carbon returner
  - **PR** #25633: (*AkhterAli*) Update loader.py
- **PR** #25941: (*jfindlay*) add timelib to dependency versions @ *2015-08-03T12:23:42Z*
  - **ISSUE** #25850: (*ssgward*) Need to add packages to --versions-report | refs: #25941
- **PR** #25951: (*garethgreenaway*) Log when event.fire and event.fire_master fail. @ *2015-08-03T00:19:45Z*
- **PR** #25942: (*jfindlay*) typo in minion doc @ *2015-07-31T23:34:55Z*
  - **ISSUE** #25838: (*grep4linux*) docs disable_modules documentation typo | refs: #25942
- **PR** #25938: (*jacobhammons*) Doc on using syndic with multimaster @ *2015-07-31T23:05:05Z*
  - **PR** #14690: (*jacksontj*) Multi syndic | refs: #25938
- **PR** #25848: (*twangboy*) Added allusers="1" when installing msi @ *2015-07-31T20:33:17Z*
  - **ISSUE** #25839: (*twangboy*) ALLUSERS="1" should be a default when installing MSI's | refs: #25848
- **PR** #25898: (*jfindlay*) clarify and expand syndic docs @ *2015-07-31T20:01:23Z*
- **PR** #25927: (*jacksontj*) Pass actual renderers to the Reactor's Compiler @ *2015-07-31T20:00:17Z*
  - **ISSUE** #25852: (*UtahDave*) Salt loader is not loading Salt vars in reactor python renderer | refs: #25927
- **PR** #25921: (*cachedout*) Handle non-ascii in state log @ *2015-07-31T17:41:30Z*
  - **ISSUE** #25810: (*nvx*) winpkg highstate fails when a new package name contains a unicide character | refs: #25921
- **PR** #25919: (*TheBigBear*) Minor update to msi un-installer info @ *2015-07-31T17:39:48Z*
- **PR** #25905: (*rallytime*) Back-port #25982 to 2015.5 @ *2015-07-30T23:24:19Z*
  - **PR** #25892: (*TheBigBear*) Update 7-zip msi un-installer instructions | refs: #25905
- **PR** #25890: (*rallytime*) Back-port #25698 to 2015.5 @ *2015-07-30T23:12:09Z*
  - **ISSUE** #25577: (*yellow1912*) Wrong indentation in document | refs: #25696
  - **PR** #25698: (*rallytime*) Back-port #25659 to 2015.8 | refs: #25890
  - **PR** #25696: (*AkhterAli*) Update schedule.py
  - **PR** #25659: (*isbm*) Bugfix: crash at getting non-existing repo | refs: #25698
- **PR** #25894: (*jacobhammons*) Minor doc bug fixes @ *2015-07-30T23:02:34Z*
  - **ISSUE** #25650: (*jacksontj*) state.running documentation is incorrect | refs: #25894
  - **ISSUE** #24042: (*whiteinge*) The state_events setting is not documented | refs: #25894
  - **ISSUE** #23788: (*k5jj*) functions in drac.py module do not match documentation | refs: #25894
  - **ISSUE** #21296: (*Lothiraldan*) Possible minion enumeration using saltutil.find_job and eauth | refs: #25894
- **PR** #25877: (*rallytime*) Protect against passing a map file in addition to VM names with --destroy @ *2015-07-30T21:55:45Z*
  - **ISSUE** #24036: (*arthurlogilab*) [salt-cloud] Protect against passing command line arguments as names for the --destroy command in map files | refs: #25877

- **PR** #25870: (*rallytime*) Back-port #25824 to 2015.5 @ *2015-07-30T21:54:35Z*
  - **PR** #25824: (*klyr*) Fix get_managed() in file.py module for local files | refs: #25870
- **PR** #25885: (*t0rrant*) Update Debian changelog @ *2015-07-30T20:05:59Z*
- **PR** #25875: (*rallytime*) Back-port #25862 to 2015.5 @ *2015-07-30T17:34:02Z*
  - **ISSUE** #25478: (*zyio*) salt-ssh - Unable to locate current thin version | refs: #25862
  - **ISSUE** #25026: (*sylvia-wang*) salt-ssh ``Failure deploying thin'' when using salt module functions | refs: #25862
  - **PR** #25862: (*zyio*) Adding SCP_NOT_FOUND exit code | refs: #25875
- **PR** #25873: (*rallytime*) Back-port #25855 to 2015.5 @ *2015-07-30T17:33:55Z*
  - **PR** #25855: (*puneetk*) Patch 3 | refs: #25873
- **PR** #25871: (*rallytime*) Back-port #25829 to 2015.5 @ *2015-07-30T17:33:43Z*
  - **PR** #25829: (*peterdemin*) Fixed typo in salt.states.saltmod.function doc string | refs: #25871
- **PR** #25869: (*rallytime*) Back-port #25788 to 2015.5 @ *2015-07-30T17:33:33Z*
  - **ISSUE** #24002: (*csakoda*) File lock contention on windows minions causing highstate crash | refs: #25788
  - **PR** #25788: (*opdude*) Catch a hard crash when running highstate on windows | refs: #25869
- **PR** #25853: (*davidjb*) Make ssh-id-wrapper accessible to non-root users @ *2015-07-30T16:49:47Z*
  - **ISSUE** #19532: (*stolendog*) salt-ssh running git clone with not root user | refs: #25853
- **PR** #25856: (*jfindlay*) expand minion reauth scalability documentation @ *2015-07-30T15:33:17Z*
  - **ISSUE** #25447: (*spo0nman*) SaltMaster is crippled with Minion Re-Authentication | refs: #25856
- **PR** #25840: (*jfindlay*) add note to winrepo state docs about required grain @ *2015-07-30T14:38:27Z*
  - **ISSUE** #25801: (*themalkolm*) Update docs that salt.states.winrepo requires *roles:salt-master* in grains. | refs: #25840
- **PR** #25846: (*jfindlay*) rework deprecation documentation for release names @ *2015-07-30T13:26:21Z*
  - **ISSUE** #25827: (*0xf10e*) ``Deprecating Code'' doesn't mention Usage of warn_until() w/ Release Names | refs: #25846
- **PR** #25833: (*jahamn*) Allows cp.push to recreate empty files @ *2015-07-29T16:14:48Z*
  - **ISSUE** #23288: (*UtahDave*) cp.push fails to recreate empty files. | refs: #25833
- **PR** #25831: (*rallytime*) Add salt:// to key_url options to docs for pkgrepo.managed @ *2015-07-29T15:38:43Z*
  - **ISSUE** #11474: (*JensRantil*) pkgrepo.managed key_url: salt:// always use *base* env | refs: #25831
- **PR** #25807: (*rallytime*) Provide helpful error when using actions with a mapfile @ *2015-07-29T15:30:15Z*
  - **ISSUE** #22699: (*arthurlogilab*) salt-cloud fails on KeyError when given a nonexistent action | refs: #25807
- **PR** #25818: (*jfindlay*) fix autoruns list @ *2015-07-29T15:29:20Z*
- **PR** #25826: (*anlutro*) Check that ``onchanges'' is a list @ *2015-07-29T15:00:28Z*
- **PR** #25798: (*twangboy*) Fixed stacktrace on package name not found @ *2015-07-28T22:40:14Z*
  - **ISSUE** #25258: (*nickw8*) windows minion repo not updating | refs: #25798
- **PR** #25797: (*twangboy*) Changed repocache back to cached_repo @ *2015-07-28T22:39:32Z*
  - **ISSUE** #25437: (*lorengordon*) Stacktrace on Windows when running pkg.list_pkgs | refs: #25598 #25763

  - **PR** #25763: (*twangboy*) Fix 25437 | refs: #25797

- **PR** #25793: (*rallytime*) Back-port #25730 to 2015.5 @ *2015-07-28T19:37:34Z*
  - **PR** #25730: (*sjorge*) patchelf lives in pkgsrc | refs: #25793
- **PR** #25792: (*rallytime*) Back-port #25688 to 2015.5 @ *2015-07-28T19:37:17Z*
  - **PR** #25688: (*bclermont*) Don't acquire lock if there is no formatter | refs: #25792
- **PR** #25796: (*cachedout*) Remove debug from docs @ *2015-07-28T17:35:59Z*
- **PR** #25749: (*jahamn*) Allow zpool.create on character devices @ *2015-07-28T16:01:40Z*
  - **ISSUE** #24920: (*voileux*) module.zpool.create on character device is not possible by salt | refs: #25749
- **PR** #25685: (*twangboy*) Fixed regex issues with comment and uncomment @ *2015-07-28T15:29:49Z*
- **PR** #25763: (*twangboy*) Fix 25437 | refs: #25797 @ *2015-07-28T15:29:27Z*
  - **ISSUE** #25437: (*lorengordon*) Stacktrace on Windows when running pkg.list_pkgs | refs: #25598 #25763
- **PR** #25752: (*thatch45*) State top saltenv @ *2015-07-28T01:02:10Z*
- **PR** #25755: (*twangboy*) Fixed problem with dunder functions not being passed @ *2015-07-27T19:31:22Z*
  - **ISSUE** #25717: (*twangboy*) Problem with chocolatey module not loading | refs: #25755
- **PR** #25648: (*twangboy*) Clarified functionality of reg module, fixed state to work with new module @ *2015-07-27T19:30:33Z*
  - **ISSUE** #25352: (*m03*) reg.absent reporting incorrect results | refs: #25648
  - **ISSUE** #1: (*thatch45*) Enable regex on the salt cli
- **PR** #25740: (*rallytime*) Back-port #25722 to 2015.5 @ *2015-07-27T16:08:40Z*
  - **ISSUE** #25154: (*uvsmtid*) All data mixed on STDOUT together should generate valid JSON output | refs: #25722
  - **ISSUE** #25153: (*uvsmtid*) Multiple results should generate valid JSON output | refs: #25722
  - **PR** #25722: (*uvsmtid*) Minor docs changes to emphasize JSON output problems without *--static* option | refs: #25740
- **PR** #25739: (*rallytime*) Back-port #25709 to 2015.5 @ *2015-07-27T16:08:27Z*
  - **PR** #25709: (*colekowalski*) add direct-io-mode to mount_invisible_options | refs: #25739
  - **PR** #25699: (*rallytime*) Back-port #25660 to 2015.5 | refs: #25709
  - **PR** #25660: (*colekowalski*) add glusterfs' direct-io-mode to mount_invisible_keys | refs: #25699 #25709
- **PR** #25738: (*rallytime*) Back-port #25671 to 2015.5 @ *2015-07-27T16:08:23Z*
  - **PR** #25671: (*niq000*) added a parameter so verifying SSL is now optional instead of hard-coded | refs: #25738
- **PR** #25737: (*rallytime*) Back-port #25608 to 2015.5 @ *2015-07-27T16:08:18Z*
  - **ISSUE** #25229: (*rall0r*) Module git.latest kills target directory when test=True | refs: #25608
  - **PR** #25608: (*rall0r*) Fix: prevent git.latest from removing target | refs: #25737
- **PR** #25733: (*davidjb*) Avoid IndexError when listing mounts if mount output ends in newline @ *2015-07-27T16:08:05Z*
- **PR** #25705: (*blackduckx*) Support for setm augeas command. @ *2015-07-27T16:07:10Z*
  - **ISSUE** #22460: (*onmeac*) Command setm is not supported (yet) | refs: #25705

- **PR** #25703: (*cachedout*) Return to *str* for master_type for 2015.5 @ *2015-07-27T16:06:22Z*
- **PR** #25702: (*twangboy*) Fixed win_user module for groups with spaces in the name @ *2015-07-27T15:06:33Z*
  - **ISSUE** #25144: (*johnccfm*) user.present on Windows fails to add user to groups if group name contains a space | refs: #25702
- **PR** #25711: (*twangboy*) Fixed problem with win_servermanager.list_installed @ *2015-07-27T15:05:48Z*
  - **ISSUE** #25351: (*m03*) win_servermanager.list_installed failing with ``IndexError: list index out of range'' | refs: #25711
- **PR** #25714: (*cachedout*) Display warning when progressbar can't be loaded @ *2015-07-25T00:10:13Z*
  - **ISSUE** #25435: (*yee379*) progressbar dependency missing | refs: #25714
- **PR** #25699: (*rallytime*) Back-port #25660 to 2015.5 | refs: #25709 @ *2015-07-24T22:11:40Z*
  - **PR** #25660: (*colekowalski*) add glusterfs' direct-io-mode to mount_invisible_keys | refs: #25699 #25709
- **PR** #25694: (*s0undt3ch*) Salt-SSH fix for #25689 @ *2015-07-24T21:41:57Z*
  - **ISSUE** #25689: (*anlutro*) Minion log in salt-ssh | refs: #25694
- **PR** #25710: (*jahamn*) Integration Testcase for Issue 25250 @ *2015-07-24T20:57:33Z*
  - **ISSUE** #25250: (*wipfs*) `force' option in copy state deletes target file | refs: #25461 #25710
- **PR** #25680: (*basepi*) [2015.5] Move cmd.run jinja aliasing to a wrapper class to prevent side effects @ *2015-07-24T19:52:10Z*
  - **PR** #25049: (*terminalmage*) Fix cmd.run when cross-called in a state/execution module | refs: #25680
- **PR** #25682: (*basepi*) [2015.5] Fix parsing args with just a hash (#) @ *2015-07-24T19:52:01Z*
- **PR** #25695: (*stanislavb*) Configurable AWS region & region from IAM metadata @ *2015-07-24T19:36:40Z*
- **PR** #25645: (*kev009*) Fix pkgng provider to work with a sources list and the underlying pkg... @ *2015-07-24T16:33:18Z*
- **PR** #25677: (*aneeshusa*) Fix pacman.list_upgrades when refresh=True. @ *2015-07-24T16:30:06Z*
- **PR** #25675: (*UtahDave*) Use OS line endings with contents on file.managed @ *2015-07-24T16:29:50Z*
  - **ISSUE** #25674: (*UtahDave*) file.managed with contents parameter uses wrong line endings on Windows | refs: #25675
- **PR** #25676: (*basepi*) Update release candidate docs to 2015.8.0rc2 @ *2015-07-23T20:29:37Z*
- **PR** #25666: (*nmadhok*) Check if the properties exist before looping over them causing KeyError @ *2015-07-23T17:55:40Z*
  - **ISSUE** #25665: (*nmadhok*) salt-cloud VMware driver fails with KeyErrors if there's any existing machine in the VMware infrastructure in (invalid state) | refs: #25666
- **PR** #25656: (*anlutro*) Fix locale detection in debian/gentoo @ *2015-07-23T16:46:40Z*
- **PR** #25661: (*rallytime*) Back-port #25624 to 2015.5 @ *2015-07-23T16:26:48Z*
  - **PR** #25624: (*bobrik*) Fix typo in get_routes example for debian_ip | refs: #25661
- **PR** #25662: (*rallytime*) Back-port #25638 to 2015.5 @ *2015-07-23T16:26:40Z*
  - **ISSUE** #15209: (*hubez*) file.manage: source_hash not working with s3:// (2014.7.0rc1) | refs: #25638
  - **PR** #25638: (*TronPaul*) fix bad merge in 99fc7ec | refs: #25662
- **PR** #25644: (*cachedout*) pillar doc fix @ *2015-07-22T22:57:23Z*

  - **ISSUE** #25413: (*zizkebab*) pillar_opts default behavior is not reflected in the docs | refs: #25644
- **PR** #25642: (*cachedout*) Warn on pillar schedule delete @ *2015-07-22T22:04:12Z*
  - **ISSUE** #25540: (*dennisjac*) salt highstate schedule cannot be removed | refs: #25642
- **PR** #25598: (*twangboy*) Fixed problem trying to load file with name of boolean type @ *2015-07-22T17:07:49Z*
  - **ISSUE** #25437: (*lorengordon*) Stacktrace on Windows when running pkg.list_pkgs | refs: #25598 #25763
  - 7b79e433 Merge pull request #25598 from twangboy/fix_25437
- **PR** #25604: (*terminalmage*) Move patching of mock_open to within test @ *2015-07-22T16:53:55Z*
  - **ISSUE** #25323: (*terminalmage*) unit.modules.tls_test fails with older mock | refs: #25604
- **PR** #25609: (*s0undt3ch*) [2015.5] Update the bootstrap script to latest release v2015.07.22 @ *2015-07-22T16:28:52Z*
  - **ISSUE** #630: (*syphernl*) Allow for an include statement in config files | refs: #25609
  - **PR** #627: (*chjohnst*) add saltversion grain | refs: #25609
- **PR** #25603: (*terminalmage*) Add version_cmp function to yumpkg.py @ *2015-07-22T15:42:29Z*
  - **ISSUE** #21912: (*rvora*) pkg.latest not updating the package on CentOS though yum reports an update available | refs: #25603
- **PR** #25590: (*garethgreenaway*) 2015.5 scheduled jobs return data @ *2015-07-21T21:57:42Z*
  - **ISSUE** #25560: (*dennisjac*) scheduled highstate runs don't return results to the job cache | refs: #25590
- **PR** #25584: (*rallytime*) Back-port #24054 and #25576 to 2015.5 @ *2015-07-21T21:16:38Z*
  - **PR** #25576: (*pcn*) s3fs breaks when fetching files from s3 | refs: #25584
  - **PR** #24054: (*mgwilliams*) s3.head: return useful data | refs: #25584
- **PR** #25589: (*jahamn*) Fixes ssh_known_host not taking port into account @ *2015-07-21T21:15:06Z*
  - **ISSUE** #23626: (*mirko*) salt state `ssh_known_hosts' doesn't take `port' into account | refs: #25589
- **PR** #25573: (*EvaSDK*) Do not execute bootstrap script twice @ *2015-07-21T18:20:04Z*
  - **PR** #25465: (*EvaSDK*) 2015.5.3 LXC module fixes | refs: #25573
- **PR** #25580: (*attiasr*) use explicit utf-8 decoding (#25532) @ *2015-07-21T15:40:49Z*
  - **ISSUE** #25532: (*attiasr*) salt/modules/win_pkg.py list_pkgs is broken (encoding issues) | refs: #25556 #25580
- **PR** #25568: (*twangboy*) Fixed win_useradd module to add fullname @ *2015-07-21T14:30:25Z*
  - **ISSUE** #25206: (*jfindlay*) fullname issues with user.add state on windows | refs: #25568
- **PR** #25561: (*twangboy*) Fixed the gem module to work on windows… without injection @ *2015-07-20T21:12:15Z*
  - **ISSUE** #21041: (*deuscapturus*) state module gem.installed not working on Windows. | refs: #25430 #25561 #25428
  - **PR** #25428: (*twangboy*) Fixed the gem module to work on windows | refs: #25561
- **PR** #25521: (*cachedout*) Fix outputter for state.orch @ *2015-07-20T19:30:14Z*
- **PR** #25563: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-07-20T19:27:36Z*
  - **PR** #25416: (*cachedout*) Fix broken keyword
- **PR** #25559: (*cachedout*) Lint win_pkg @ *2015-07-20T17:46:29Z*

- **PR** #25556: (*attiasr*) fix for #25532 @ *2015-07-20T17:45:11Z*
  - **ISSUE** #25532: (*attiasr*) salt/modules/win_pkg.py list_pkgs is broken (encoding issues) | refs: #25556 #25580
- **PR** #25554: (*jfindlay*) verify_ssl=True for s3 ext pillar @ *2015-07-20T17:43:38Z*
  - **ISSUE** #25538: (*stanislavb*) S3 ext_pillar configuration requires verify_ssl | refs: #25554
- **PR** #25551: (*rallytime*) Backport #25530 to 2015.5 @ *2015-07-20T17:43:00Z*
  - **PR** #25530: (*andre-luiz-dos-santos*) The variable name must be last | refs: #25551
- **PR** #25533: (*attiasr*) port 445 for windows bootstraping @ *2015-07-20T15:13:06Z*
- **PR** #25525: (*gtmanfred*) add make _prepare an alias for postinitio @ *2015-07-20T15:12:38Z*
  - **ISSUE** #25432: (*gtmanfred*) [2015.5.3][raet] raet error with SaltRaetRoadStackJoiner | refs: #25525
- **PR** #25519: (*rallytime*) Backport vmware driver to 2015.5 branch @ *2015-07-20T15:11:26Z*
  - **ISSUE** #25511: (*rallytime*) Make provider --> driver change backward compatible | refs: #25519 #25519
  - **ISSUE** #23574: (*CedNantes*) Failed to Deploy Salt-Minion on a Win 2012 R2 using wmware Cloud Driver from Develop branch | refs: #25519
- **PR** #25542: (*Oro*) Fix hipchat.send_message when using API v2 @ *2015-07-20T15:09:13Z*
- **PR** #25531: (*rallytime*) Back-port #25529 to 2015.5 @ *2015-07-18T19:16:10Z*
  - **PR** #25529: (*davidjb*) Fix minor typo in best practice example | refs: #25531
- **PR** #25528: (*davidjb*) Fix typo in extend declaration doco @ *2015-07-18T14:22:06Z*
- **PR** #25517: (*rallytime*) Back-port #25486 to 2015.5 @ *2015-07-17T21:49:26Z*
  - **ISSUE** #25486: (*whiteinge*) Highstate outputter not used for state.apply | refs: #25517
  - **PR** #25485: (*attiasr*) fix file downloads on windows
- **PR** #25516: (*rallytime*) Back-port #25483 to 2015.5 @ *2015-07-17T21:49:05Z*
  - **ISSUE** #25479: (*alexandrsushko*) multiple mount.mounted of one device | refs: #25483
  - **PR** #25483: (*alexandrsushko*) Added `none' to the set of specialFSes | refs: #25516
- **PR** #25513: (*garethgreenaway*) fixes to schedule.add documentation in 2015.5 @ *2015-07-17T17:03:24Z*
  - **ISSUE** #25493: (*blackduckx*) Issue with job_args on schedule.add command | refs: #25513
- **PR** #25465: (*EvaSDK*) 2015.5.3 LXC module fixes | refs: #25573 @ *2015-07-17T15:57:54Z*
- **PR** #25506: (*s0undt3ch*) [2015.5] Update bootstrap script to latest stable release, v2015.07.17 @ *2015-07-17T15:40:38Z*
  - **ISSUE** #25456: (*julienlavergne*) [2015.8.0rc1] salt-bootstrap fails to install salt master | refs: #25506
  - **ISSUE** #25270: (*iggy*) [2015.8.0rc1] salt-bootstrap fails to properly install a minion | refs: #25506
  - **ISSUE** #625: (*whiteinge*) *cmd.run* state *user* flag is not working | refs: #25506 #632
  - **ISSUE** #611: (*fatbox*) Peer interface fails to return data occasionally | refs: #25506
  - **ISSUE** #607: (*thatch45*) next level -X support | refs: #25506
  - **ISSUE** #598: (*syphernl*) Explanation on how to execute interactive installs | refs: #25506
  - **ISSUE** #455: (*whiteinge*) Document common troubleshooting tips | refs: #25506
  - **PR** #624: (*chjohnst*) Docs are not correct with network.ping as args are not supported | refs: #25506

  - **PR** #621: (*akoumjian*) Adding ec2 cloud-init bootstrap docs | refs: #25506
  - **PR** #606: (*terminalmage*) need empty line before code blocks. added ones that were missing. | refs: #25506
  - **PR** #602: (*terminalmage*) State-related documentation changes | refs: #25506
- **PR** #25498: (*jfindlay*) only read /proc/1/cmdline if it exists @ *2015-07-17T15:35:33Z*
  - **ISSUE** #25454: (*mschiff*) Regression: salt 2015.5 not working in secure chroot anymore. | refs: #25498
- **PR** #25487: (*rallytime*) Back-port #25464 to 2015.5 @ *2015-07-16T16:58:36Z*
  - **PR** #25464: (*jquast*) docfix: ``cache_jobs: False'' => grains_cache: False'' | refs: #25487
- **PR** #25482: (*oeuftete*) Fix docker.running detection of running container @ *2015-07-16T16:58:29Z*
  - **PR** #2015: (*thekuffs*) Esky / bbfreeze support
- **PR** #25468: (*joejulian*) Add support for pyOpenSSL > 0.10 @ *2015-07-16T15:10:30Z*
  - **ISSUE** #25384: (*rickh563*) pyopenssl 0.14 requirement in 2015.5.3 does not work in RHEL6 : ZD-364 | refs: #25468
- **PR** #25467: (*rallytime*) Add lxml dependency to opennebula docs @ *2015-07-16T15:09:57Z*
- **PR** #25461: (*jahamn*) Update file, if force option and content not same @ *2015-07-15T20:15:07Z*
  - **ISSUE** #25250: (*wipfs*) `force' option in copy state deletes target file | refs: #25461 #25710
  - **ISSUE** #24647: (*nmadhok*) salt.states.file.copy does not copy the file if it already exists with force=True | refs: #25461
- **PR** #25438: (*rallytime*) Reduce digital_ocean_v2 API call frequency @ *2015-07-15T19:40:18Z*
  - **ISSUE** #25431: (*namcois*) Digital Ocean v2 reducing API calls by adding per_page | refs: #25438
- **PR** #25457: (*jacksontj*) Saltnado @ *2015-07-15T17:50:12Z*
  - **PR** #25427: (*tony-cocco*) Saltnado runner client results in blocking call despite being set-up as Runner.async | refs: #25457
- **PR** #25459: (*jahamn*) Fixed `defulats' typo in verify.py @ *2015-07-15T16:53:06Z*
- **PR** #25426: (*jquast*) bugfix: trailing "...done" in rabbitmq output (backport from `develop' to 2015.5) @ *2015-07-15T14:48:05Z*
- **PR** #25433: (*jleroy*) Support for IPv6 addresses scopes in network.interfaces (ifconfig) @ *2015-07-15T14:44:09Z*
  - **PR** #25151: (*jleroy*) Support for IPv6 addresses scopes in network.interfaces | refs: #25274 #25433
- **PR** #25430: (*twangboy*) Disabled rbenv execution module for Windows @ *2015-07-15T14:41:18Z*
  - **ISSUE** #21041: (*deuscapturus*) state module gem.installed not working on Windows. | refs: #25430 #25561 #25428
  - **ISSUE** #1846: (*seanchannel*) development dependencies
- **PR** #25420: (*techhat*) Move S3 to use AWS Signature Version 4 @ *2015-07-14T22:03:09Z*
- **PR** #25418: (*twangboy*) Fixed problem with file.managed test=True @ *2015-07-14T21:26:59Z*
  - **ISSUE** #20441: (*deuscapturus*) State module file.managed returns an error on Windows and test=Test | refs: #25418
- **PR** #25417: (*ahus1*) extended documentation about dependencies for dig module @ *2015-07-14T20:49:51Z*
- **PR** #25411: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-07-14T17:55:26Z*

  - **PR** #25375: (*cachedout*) Fix error in config.py for master_type
  - **PR** #25324: (*jacobhammons*) Latest help theme updates
- **PR** #25406: (*anlutro*) Force arguments to aptpkg.version_cmp into strings @ *2015-07-14T16:15:41Z*
- **PR** #25408: (*rallytime*) Back-port #25399 to 2015.5 @ *2015-07-14T16:09:06Z*
  - **PR** #25399: (*jarpy*) Demonstrate per-minion client_acl. | refs: #25408
- **PR** #25240: (*tankywoo*) file make os.walk only be called one @ *2015-07-14T16:04:49Z*
- **PR** #25395: (*rallytime*) Back-port #25389 to 2015.5 @ *2015-07-14T03:26:34Z*
  - **PR** #25389: (*l2ol33rt*) Adding entropy note for gpg renderer | refs: #25395
- **PR** #25392: (*rallytime*) Back-port #25256 to 2015.5 @ *2015-07-14T03:25:13Z*
  - **PR** #25256: (*yanatan16*) Don't assume source_hash exists | refs: #25392
- **PR** #25398: (*twangboy*) Fix date @ *2015-07-14T03:21:17Z*
- **PR** #25397: (*GideonRed*) Introduce standard error output when cli exits with non-zero status @ *2015-07-14T03:20:24Z*
- **PR** #25386: (*cachedout*) Lint #25383 @ *2015-07-13T21:01:10Z*
  - **ISSUE** #24444: (*michaelkrupp*) file.managed does not handle dead symlinks | refs: #25383
  - **PR** #25383: (*jahamn*) Fix manage_file function in salt/modules/file.py to handle broken sym...
- **PR** #25383: (*jahamn*) Fix manage_file function in salt/modules/file.py to handle broken sym... @ *2015-07-13T20:58:23Z*
  - **ISSUE** #24444: (*michaelkrupp*) file.managed does not handle dead symlinks | refs: #25383
- **PR** #25369: (*anlutro*) Fix aptpkg.version_cmp @ *2015-07-13T20:18:45Z*
- **PR** #25379: (*jfindlay*) check for cwd before getting it @ *2015-07-13T19:50:27Z*
  - **ISSUE** #25337: (*eliasp*) *salt-call* from non-existend cwd backtraces | refs: #25379
- **PR** #25334: (*jfindlay*) return all cmd info back to zypper fcn @ *2015-07-13T17:03:29Z*
  - **ISSUE** #25320: (*podloucky-init*) zypper module list_upgrades broken (2015.5.2) | refs: #25334
- **PR** #25339: (*jfindlay*) update orchestration docs @ *2015-07-13T16:04:26Z*
- **PR** #25358: (*dkiser*) Deep merge of pillar lists | refs: #26016 @ *2015-07-13T15:51:01Z*
  - **ISSUE** #22241: (*masterkorp*) Salt master not properly generating the map | refs: #25358
- **PR** #25346: (*bechtoldt*) set correct indention in states/requisites.rst (docs), fixes #25281 @ *2015-07-13T15:34:45Z*
  - **ISSUE** #25281: (*shinshenjs*) Unless usage in Official Doc syntax error?
- **PR** #25336: (*terminalmage*) Don't try to read init binary if it wasn't found @ *2015-07-13T09:45:30Z*
- **PR** #25350: (*davidjb*) Fix documentation for file.blockreplace @ *2015-07-13T03:41:20Z*
- **PR** #25326: (*rallytime*) Back-port #20972 to 2015.5 @ *2015-07-10T18:49:44Z*
  - **ISSUE** #19288: (*oba11*) AssociatePublicIpAddress doesn't work with salt-cloud 2014.7.0 | refs: #20972 #25326
  - **PR** #20972: (*JohannesEbke*) Fix interface cleanup when using AssociatePublicIpAddress in #19288 | refs: #25326
- **PR** #25327: (*rallytime*) Back-port #25290 to 2015.5 @ *2015-07-10T18:49:37Z*

  - **ISSUE** #24433: (*chrimi*) Salt locale state fails, if locale has not been generated | refs: #25290
  - **PR** #25290: (*pcdummy*) Simple fix for locale.present on Ubuntu. | refs: #25327
- **PR** #25328: (*rallytime*) Back-port #25309 to 2015.5 @ *2015-07-10T17:22:59Z*
  - **ISSUE** #24827: (*yermulnik*) locale.present doesn't generate locales | refs: #25309
  - **PR** #25309: (*davidjb*) Format /etc/locale.gen correctly in salt.modules.localemod.gen_locale | refs: #25328
- **PR** #25322: (*jacobhammons*) version change to 2015.5.3 @ *2015-07-10T16:11:24Z*
- **PR** #25308: (*jacksontj*) Make clear commands trace level logging @ *2015-07-10T14:20:06Z*
  - **PR** #24737: (*jacksontj*) Move AES command logging to trace | refs: #25308
- **PR** #25269: (*jfindlay*) Extract tomcat war version @ *2015-07-10T01:28:21Z*
  - **ISSUE** #24520: (*nvx*) Tomcat module fails to extract version number from snapshot builds (2015.5 regression) | refs: #24927
  - **PR** #24927: (*egarbi*) Tomcat module fails to extract version number from snapshot builds #2... | refs: #25269
- **PR** #25238: (*DmitryKuzmenko*) Pillarenv backport 2015.5 @ *2015-07-10T01:25:07Z*
  - **ISSUE** #18808: (*amendlik*) Add command line argument to select pillar environment | refs: #25238
  - **PR** #23719: (*DmitryKuzmenko*) Support pillarenv cmdline in state.sls
- **PR** #25299: (*twangboy*) Added -NonInteractive so powershell doesn't hang waiting for input @ *2015-07-09T21:00:16Z*
  - **ISSUE** #13943: (*Supermathie*) Powershell commands that expect input hang forever | refs: #25299
- **PR** #25301: (*jacobhammons*) bug fix for module function display in help @ *2015-07-09T20:46:34Z*
- **PR** #25279: (*jacobhammons*) Additional docs on external and master job cache, assorted doc fixes @ *2015-07-09T16:46:26Z*
  - **ISSUE** #25277: (*jacobhammons*) CherryPy recommended versions | refs: #25279
- **PR** #25274: (*jleroy*) Fix for issue #25268 @ *2015-07-09T13:36:26Z*
  - **ISSUE** #25268: (*lichtamberg*) Salt not working anymore in 2015.8/develop: ValueError: `scope' is not in list | refs: #25274
  - **PR** #25151: (*jleroy*) Support for IPv6 addresses scopes in network.interfaces | refs: #25274 #25433
- **PR** #25272: (*twangboy*) Fixed problem with service not starting @ *2015-07-08T23:29:48Z*
- **PR** #25225: (*nmadhok*) Backporting fix for issue #25223 on 2015.5 branch @ *2015-07-08T15:16:18Z*
  - **ISSUE** #25223: (*nmadhok*) Runner occasionally fails with a RuntimeError when fired by a reactor | refs: #25225
- **PR** #25214: (*rallytime*) A couple of doc fixes for the http tutorial @ *2015-07-07T22:23:07Z*
- **PR** #25194: (*rallytime*) Update moto version check in boto_vpc_test and update min version @ *2015-07-07T18:27:32Z*
  - **ISSUE** #24272: (*rallytime*) Fix boto_vpc_test moto version check | refs: #25194
- **PR** #25205: (*basepi*) Update releasecandidate docs @ *2015-07-07T15:25:24Z*
- **PR** #25187: (*UtahDave*) Doc fixes: Fix misspelling and remove extraneous double spaces @ *2015-07-07T01:07:04Z*
- **PR** #25182: (*cachedout*) Try to re-pack long floats as strs @ *2015-07-07T01:06:43Z*

- **PR** #25185: (*rallytime*) Back-port #25128 to 2015.5 @ *2015-07-07T00:58:00Z*
  - **ISSUE** #23822: (*sidcarter*) Zip file extracted permissions are incorrect | refs: #25128
  - **PR** #25128: (*stanislavb*) Use cmd_unzip to preserve permissions | refs: #25185
- **PR** #25181: (*rallytime*) Back-port #25102 to 2015.5 @ *2015-07-07T00:57:13Z*
  - **PR** #25102: (*derBroBro*) Update win_network.py | refs: #25181
- **PR** #25179: (*rallytime*) Back-port #25059 to 2015.5 @ *2015-07-07T00:56:44Z*
  - **ISSUE** #24301: (*iggy*) influxdb_user and influxdb_database states need virtual functions | refs: #25059
  - **PR** #25059: (*babilen*) Add virtual functions to influxdb state modules | refs: #25179
- **PR** #25196: (*twangboy*) Fixed #18919 false-positive on pkg.refresh @ *2015-07-07T00:24:13Z*
  - **ISSUE** #18919: (*giner*) Windows: pkg.refresh_db returns false-positive success | refs: #25196
- **PR** #25180: (*rallytime*) Back-port #25088 to 2015.5 @ *2015-07-06T20:33:45Z*
  - **PR** #25088: (*supertom*) Update | refs: #25180
- **PR** #25191: (*basepi*) Add extrndest back to fileclient.is_cached in 2015.5 @ *2015-07-06T19:35:24Z*
  - **PR** #25117: (*basepi*) Fix fileclient.is_cached | refs: #25191
- **PR** #25175: (*rallytime*) Back-port #25020 to 2015.5 @ *2015-07-06T18:53:19Z*
  - **ISSUE** #25016: (*martinhoefling*) salt-run doc.execution fails with AttributeError
  - **PR** #25020: (*martinhoefling*) Fix for issue #25016 | refs: #25175
- **PR** #25173: (*rallytime*) Partial back-port of #25019 @ *2015-07-06T18:52:59Z*
  - **ISSUE** #21879: (*bechtoldt*) Reference pages in documentation are outdated again | refs: #25019
  - **ISSUE** #19262: (*bechtoldt*) salt.pillar.file_tree doesn't appear in the documentation | refs: #25019
  - **PR** #25019: (*bechtoldt*) add missing module documentation to references | refs: #25173
  - **PR** #24421: (*bechtoldt*) add missing module documentation | refs: #25019
  - **PR** #21880: (*bechtoldt*) update references, fixes #21879 | refs: #25019
  - **PR** #20039: (*bechtoldt*) completing some doc references | refs: #25019
- **PR** #25171: (*rallytime*) Back-port #25001 to 2015.5 @ *2015-07-06T18:51:53Z*
  - **PR** #25001: (*jasonkeene*) Add docs for key arg in ssh_known_hosts.present | refs: #25171
- **PR** #25170: (*rallytime*) Back-port #24982 to 2015.5 @ *2015-07-06T16:34:43Z*
  - **PR** #24982: (*asyncsrc*) ec2 network_interfaces fix | refs: #25170
- **PR** #25161: (*aneeshusa*) Allow checking for non-normalized systemd units. @ *2015-07-06T15:15:31Z*
- **PR** #25151: (*jleroy*) Support for IPv6 addresses scopes in network.interfaces | refs: #25274 #25433 @ *2015-07-06T14:43:03Z*
- **PR** #25166: (*cachedout*) Lint #25149 @ *2015-07-06T14:40:29Z*
  - **ISSUE** #24979: (*mavenAtHouzz*) [Discussion] Support for more than 1 netapi.rest_tornado server process | refs: #25149
  - **PR** #25149: (*jacksontj*) Saltnado multiprocess support | refs: #25166
- **PR** #25149: (*jacksontj*) Saltnado multiprocess support | refs: #25166 @ *2015-07-06T14:38:43Z*

  - **ISSUE** #24979: (*mavenAtHouzz*) [Discussion] Support for more than 1 netapi.rest_tornado server process | refs: #25149

- **PR** #25120: (*d--j*) add missing continue for exception case @ *2015-07-02T19:38:45Z*
- **PR** #25117: (*basepi*) Fix fileclient.is_cached | refs: #25191 @ *2015-07-02T19:38:26Z*
- **PR** #25087: (*0xf10e*) Fix execution module for glance - now based on 2015.5! @ *2015-07-02T19:36:27Z*
- **PR** #25129: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-07-02T17:37:40Z*
  - **ISSUE** #18447: (*ryan-lane*) Can't install salt with raet using pip -e git
  - **PR** #25093: (*jaybocc2*) quick fix for issue #18447
  - **PR** #25069: (*puneetk*) Add a helper module function called list_enabled
- **PR** #25114: (*jfindlay*) Revert ``Revert ``adding states/postgres_database unit test case.'''' @ *2015-07-02T01:01:29Z*
  - **PR** #24798: (*jtand*) Revert ``adding states/postgres_database unit test case.'' | refs: #25114
  - **PR** #24329: (*jayeshka*) adding states/postgres_database unit test case. | refs: #24798
- **PR** #24362: (*jayeshka*) adding states/postgres_user unit test case. @ *2015-07-01T21:45:31Z*
- **PR** #24361: (*jayeshka*) adding states/postgres_schema unit test case. @ *2015-07-01T21:44:56Z*
- **PR** #24331: (*jayeshka*) adding states/postgres_extension unit test case. @ *2015-07-01T21:43:58Z*
- **PR** #26486: (*thusoy*) Git: Don't leak https user/pw to log @ *2015-08-20T16:04:52Z*
  - **ISSUE** #26484: (*thusoy*) Git state leaks HTTPS user/pw to log | refs: #26486
  - **ISSUE** #26482: (*thusoy*) Git states doesn't allow user-only auth | refs: #26483
  - **PR** #26483: (*thusoy*) Handle user-only http auth in git module | refs: #26486
- **PR** #26476: (*jacobhammons*) Minor doc bug fixes @ *2015-08-19T22:52:35Z*
  - **ISSUE** #26432: (*centromere*) Documentation incorrectly references salt-key on the minion | refs: #26476
  - **ISSUE** #26403: (*adelcast*) Grains documentation incorrectly states they are static | refs: #26476
  - **ISSUE** #26329: (*cro*) Add note to eauth docs indicating default PAM service. | refs: #26476
  - **ISSUE** #26264: (*grep4linux*) state trees cannot have `dots' in the name | refs: #26476
  - **ISSUE** #26233: (*dove-young*) pip install salt, then start master failed on Fedora 22 | refs: #26476
- **PR** #26443: (*cachedout*) Fix connect issue in event init @ *2015-08-19T22:50:22Z*
  - **ISSUE** #26366: (*GreatSnoopy*) The development tree produces hanging, 100%cpu salt-master processes | refs: #26443
  - **ISSUE** #26301: (*waynew*) CPU pegged out running salt-master (after running command) | refs: #26443
  - **ISSUE** #25998: (*driskell*) Event subsystem discarding required events during --batch breaking it for slow running commands | refs: #26000
  - **PR** #26000: (*driskell*) Implement full event caching for subscribed tags | refs: #26443
- **PR** #26445: (*cachedout*) Raise clean error when no minions targeted in batch mode @ *2015-08-19T22:50:07Z*
  - **ISSUE** #26343: (*jfindlay*) batch error when no minions match target | refs: #26445
- **PR** #26483: (*thusoy*) Handle user-only http auth in git module | refs: #26486 @ *2015-08-19T22:47:41Z*
  - **ISSUE** #26482: (*thusoy*) Git states doesn't allow user-only auth | refs: #26483

- **PR** #26496: (*jfindlay*) add dateutil dependency reporting @ *2015-08-19T22:46:31Z*
- **PR** #26494: (*cachedout*) Remove unnecessary debug statements @ *2015-08-19T20:46:00Z*
- **PR** #26465: (*rallytime*) Back-port #26457 to 2015.5 @ *2015-08-19T16:08:16Z*
  - **PR** #26457: (*arthurlogilab*) docstring improvement for network.ping module execution | refs: #26465
- **PR** #26434: (*s0undt3ch*) Fix missed typo @ *2015-08-18T18:14:29Z*
- **PR** #26430: (*rallytime*) List public and private ips under the correct label @ *2015-08-18T16:20:32Z*
  - **ISSUE** #26426: (*alxbse*) Private/public IPs are interchanged when listing nova driver cloud nodes | refs: #26430
- **PR** #26431: (*rallytime*) Back-port #26417 to 2015.5 @ *2015-08-18T15:41:58Z*
  - **PR** #26417: (*scottjpack*) Changed t1 -> t2 micro | refs: #26431
- **PR** #26378: (*stanislavb*) Fix EC2 credentials from IAM roles for s3fs and s3 ext_pillar in 2015.5 @ *2015-08-18T14:01:53Z*
- **PR** #26420: (*terminalmage*) Only use pygit2.errors if it exists (2015.5 branch) @ *2015-08-18T14:00:01Z*
  - **ISSUE** #26245: (*bradthurber*) salt v2015.5.3 gitfs.py using newer pygit2 feature than required minimum | refs: #26420
- **PR** #26409: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5 @ *2015-08-17T23:19:56Z*
  - **PR** #26242: (*cro*) Remove dead code
  - **PR** #26216: (*cro*) Fix LDAP configuration issue.
- **PR** #26406: (*jfindlay*) fix syntax error in lvm exec module @ *2015-08-17T21:18:25Z*
  - **ISSUE** #26404: (*ssgward*) Syntax error in lvm.vg_absent state causing failure | refs: #26406
- **PR** #26405: (*TheBigBear*) dependency zip files moved to new site @ *2015-08-17T21:17:24Z*
- **PR** #26298: (*vr-jack*) Keep $HOME from being interpretted by Master shell @ *2015-08-17T21:15:11Z*
- **PR** #26324: (*s0undt3ch*) Salt is now pip install'able in windows @ *2015-08-17T20:41:34Z*
- **PR** #26371: (*bastiaanb*) fix issue #26161: on RedHat family systems touch /var/lock/subsys/$SE... @ *2015-08-17T20:39:28Z*
  - **ISSUE** #26161: (*bastiaanb*) salt initscripts do not set lock file in /var/lock/subsys as required on RedHat family OSes
- **PR** #26402: (*twangboy*) Removed documentation no longer required @ *2015-08-17T20:35:37Z*
  - **ISSUE** #25801: (*themalkolm*) Update docs that salt.states.winrepo requires *roles:salt-master* in grains. | refs: #26328
  - **ISSUE** #25562: (*jefftucker*) winrepo state does not run on masterless minion | refs: #26328
  - **PR** #26328: (*twangboy*) Removed salt-master role requirement | refs: #26402
- **PR** #26392: (*rallytime*) Back-port #26376 to 2015.5 @ *2015-08-17T19:39:51Z*
  - **PR** #26376: (*TheBigBear*) minor edit spelling | refs: #26392
- **PR** #26342: (*rallytime*) Don't call boto_elb._attributes_present if no attributes were provided @ *2015-08-17T19:19:08Z*
  - **ISSUE** #16049: (*ryan-lane*) boto_elb.present state requires attributes argument | refs: #26342
- **PR** #26389: (*rallytime*) Back-port #26160 to 2015.5 @ *2015-08-17T19:09:16Z*

  - **ISSUE** #26155: (*silenius*) pip availability in states/pip_state | refs: #26160
  - **PR** #26160: (*silenius*) proposed fix for #26155 | refs: #26389
- **PR** #26300: (*jfindlay*) mock pwd function calls in pw_user exec module @ *2015-08-17T18:56:41Z*
  - **ISSUE** #26266: (*o-sleep*) limit pw_user.getent() from returning entire corporate list | refs: #26300
- **PR** #26386: (*jahamn*) Fixes autosign_timeout usage in check_autosign_dir @ *2015-08-17T18:34:40Z*
  - **ISSUE** #24334: (*afletch*) autosign_timeout not honoured | refs: #26386
- **PR** #26328: (*twangboy*) Removed salt-master role requirement | refs: #26402 @ *2015-08-17T18:30:17Z*
  - **ISSUE** #25801: (*themalkolm*) Update docs that salt.states.winrepo requires *roles:salt-master* in grains. | refs: #26328
  - **ISSUE** #25562: (*jefftucker*) winrepo state does not run on masterless minion | refs: #26328
- **PR** #26362: (*garethgreenaway*) Fixes to mount state. @ *2015-08-17T17:44:55Z*
  - **ISSUE** #26327: (*bradthurber*) mount.mounted opts incorrect ``forced unmount and mount because options (tcp) changed'' | refs: #26362
- **PR** #26379: (*s0undt3ch*) [2015.5] Backport #26353 @ *2015-08-17T17:19:29Z*
  - **PR** #26353: (*sixninetynine*) fixed a typo in setup.py | refs: #26379
- **PR** #26277: (*rallytime*) Handle exception when user is not found in keystone.user_get @ *2015-08-14T19:41:59Z*
  - **ISSUE** #26240: (*0xf10e*) keystone.user_get raises exception when user is not found | refs: #26277
- **PR** #26326: (*rallytime*) Make ec2.create_snapshot return less unweildly and more relevant @ *2015-08-14T19:40:47Z*
  - **ISSUE** #24484: (*codehotter*) clouds/ec2.py: create_snapshot throws exception | refs: #26326
- **PR** #26306: (*rallytime*) Move VM creation details dict to log.trace @ *2015-08-14T17:39:52Z*
  - **ISSUE** #16179: (*UtahDave*) Salt Cloud -l debug includes the entire bootstrap script twice in its output | refs: #26306

### 18.2.30 Salt 2015.5.6 Release Notes

Version 2015.5.6 is a bugfix release for *2015.5.0*.

#### Security Fixes

CVE-2015-6941 - `win_useradd` module and `salt-cloud` display passwords in debug log

Updated the `win_useradd` module return data to no longer include the password of the newly created user. The password is now replaced with the string `XXX-REDACTED-XXX`. Updated the Salt Cloud debug output to no longer display `win_password` and `sudo_password` authentication credentials.

CVE-2015-6918 - Git modules leaking HTTPS auth credentials to debug log

Updated the Git state and execution modules to no longer display HTTPS basic authentication credentials in loglevel debug output on the Salt master. These credentials are now replaced with `REDACTED` in the debug output. Thanks to Andreas Stieger <asteiger@suse.com> for bringing this to our attention.

### Changes for v2015.5.5..v2015.5.6

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2015-09-30T22:22:43Z*

Total Merges: **144**

Changes:

- **PR** #27557: (*jfindlay*) add doc motivating mine vs grains
- **PR** #27515: (*jfindlay*) save iptables rules on SuSE
- **PR** #27509: (*jfindlay*) tell the user why the gluster module does not work
- **PR** #27379: (*jfindlay*) document and check dict type for pip env_vars
- **PR** #27516: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5
- **PR** #27472: (*cachedout*) Change recommended schema for data field in mysql event table
- **PR** #27468: (*cachedout*) Fix 27351
- **PR** #27479: (*aboe76*) fix locale on opensuse and suse `#27438`_
- **PR** #27483: (*rallytime*) Outputters should sync to output, not outputters, on the minion.
- **PR** #27484: (*rallytime*) Back-port #27434 and #27470 to 2015.5
- **PR** #27469: (*twangboy*) Added quotes to version numbers example
- **PR** #27467: (*cachedout*) file.managed: check contents_{pillar|grain} result
- **PR** #27419: (*rallytime*) Amend error log to include multiple tips for troubleshooting.
- **PR** #27426: (*rallytime*) Don't stacktrace if there are conflicting id errors in highstate
- **PR** #27408: (*rallytime*) Fix avail_locations function for the softlayer_hw driver in 2015.5
- **PR** #27410: (*jacobhammons*) Fix css layout Refs `#27389`_
- **PR** #27336: (*rallytime*) [2015.5] Fixup salt-cloud logging
- **PR** #27358: (*lorengordon*) Escape search replacement text, fixes `#27356`_
- **PR** #27345: (*rallytime*) Allow use of rst header links by separating options out from yaml example
- **PR** #26903: (*bersace*) Review defaults.get
- **PR** #27317: (*efficks*) State unzip should use unzip command instead of unzip_cmd.
- **PR** #27309: (*rallytime*) Change a value list to a comma-separated string in boto_route53.present
- **PR** #27311: (*jfindlay*) discuss replacement occurrences in file doc
- **PR** #27310: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5
- **PR** #27308: (*terminalmage*) Fix refresh_db regression in yumpkg.py
- **PR** #27286: (*terminalmage*) Add a configurable timer for minion return retries
- **PR** #27278: (*rallytime*) Back-port #27256 to 2015.5
- **PR** #27277: (*rallytime*) Back-port #27230 to 2015.5
- **PR** #27253: (*jfindlay*) 2015.5 -> 2015.5.0
- **PR** #27244: (*garethgreenaway*) Exception in cloud.ec2.create_snapshot
- **PR** #27231: (*jfindlay*) only write cron file if it is changed

- **PR** #27233: (*basepi*) [2015.5] Add stub release notes for 2015.5.6
- **PR** #27208: (*basepi*) [2015.5] Add test.nop state
- **PR** #27201: (*jfindlay*) rename hash_hostname to hash_known_hosts
- **PR** #27214: (*jacksontj*) Correctly support https, port 443 is not a requirement
- **PR** #27172: (*rallytime*) Back-port #27150 to 2015.5
- **PR** #27194: (*rallytime*) Back-port #27180 to 2015.5
- **PR** #27176: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5
- **PR** #27170: (*rallytime*) Update Getting Started with GCE docs to use cloud.profiles or cloud.profiles.d examples
- **PR** #27167: (*rallytime*) Back-port #27148 to 2015.5
- **PR** #27168: (*techhat*) Add further gating of impacket library
- **PR** #27166: (*rallytime*) Allow a full-query for EC2, even if there are no profiles defined
- **PR** #27162: (*rallytime*) Be explicit in using ``SoftLayer'' for service queries in SoftLayer drivers
- **PR** #27149: (*twangboy*) Fixed problem with add/remove path
- **PR** #27147: (*rallytime*) Enforce bounds in the GCE Regex
- **PR** #27128: (*eguven*) don't show diff for test run if show_diff=False
- **PR** #27116: (*jacobhammons*) Update latest to 2015.8, 2015.5 is now previous
- **PR** #27033: (*jfindlay*) Merge #27019
- **PR** #26942: (*Arabus*) Fix docker.run
- **PR** #26977: (*abh*) Add support for PEERNTP network interface configuration
- **PR** #27023: (*jfindlay*) add test support for htpasswd state mod
- **PR** #27074: (*twangboy*) Replaced password with redacted when displayed
- **PR** #27073: (*rallytime*) Remove ``use develop branch'' warning from LXC tutorial
- **PR** #27054: (*rallytime*) Back-port #27029 to 2015.5
- **PR** #27053: (*rallytime*) Back-port #26992 to 2015.5
- **PR** #27052: (*rallytime*) Back-port #26930 to 2015.5
- **PR** #27049: (*johanek*) Run repoquery less
- **PR** #27070: (*stanislavb*) Deprecate salt.utils.iam in Carbon
- **PR** #27030: (*jfindlay*) Backport #26938
- **PR** #27025: (*cachedout*) Better try and error handling for prep_jid
- **PR** #27035: (*terminalmage*) useradd.py: Use contextmanager to prevent leaked filehandles
- **PR** #27034: (*rallytime*) Update softlayer docs for where to find apikey
- **PR** #27024: (*rallytime*) Back-port #27004 to 2015.5
- **PR** #27027: (*rallytime*) Back-port #27013 to 2015.5
- **PR** #27026: (*rallytime*) Back-port #27011 to 2015.5
- **PR** #26972: (*twangboy*) Catch the 404 error from fileclient
- **PR** #26951: (*terminalmage*) Fix timezone module for CentOS

- **PR** #26875: (*marccardinal*) LXC gateway provisioned only when IP is provided
- **PR** #26997: (*twangboy*) Fixed symlinks for windows (don't use user root)
- **PR** #27001: (*twangboy*) Added CLI Example for reg.delete_key_recursive
- **PR** #26996: (*jacobhammons*) Beacon doc updates
- **PR** #26868: (*joejulian*) Use the actual device name when checking vgdisplay
- **PR** #26955: (*dsumsky*) S3 ext_pillar module has broken caching mechanism (backport to 2015.5)
- **PR** #26987: (*rallytime*) Back-port #26966 to 2015.5
- **PR** #26915: (*rallytime*) Update Joyent Cloud Tests
- **PR** #26971: (*rallytime*) Fix a couple of typos in reactor docs
- **PR** #26976: (*thatch45*) Revert ``file.symlink gets windows account instead of root''
- **PR** #26975: (*whiteinge*) Remove mocks from rest_cherrypy integration tests; fix groups check bug
- **PR** #26899: (*twangboy*) file.symlink gets windows account instead of root
- **PR** #26960: (*rallytime*) Fix bash code block formatting in CherryPy netapi docs
- **PR** #26940: (*rallytime*) Fix minor doc typo in client api
- **PR** #26871: (*rallytime*) Back-port #26852 to 2015.5
- **PR** #26851: (*jacobhammons*) states/pkgrepo examples, suse installation updates
- **PR** #26817: (*jfindlay*) modify groupadd for rhel 5
- **PR** #26824: (*pravka*) [salt-cloud] Fix creating droplet from snapshot in digital_ocean provider
- **PR** #26823: (*joejulian*) use dbus instead of localectl
- **PR** #26820: (*jfindlay*) add default param in _parse_localectl in locale mod
- **PR** #26821: (*twangboy*) Fixed user.rename function in windows
- **PR** #26803: (*twangboy*) Added check for PyMySQL if MySQLdb import fails
- **PR** #26815: (*jfindlay*) stringify linode id before performing str actions
- **PR** #26800: (*jacobhammons*) Doc bug fixes
- **PR** #26793: (*rallytime*) Don't stacktrace if ``name'' is specified as a minion id in a map file
- **PR** #26790: (*rallytime*) Update Saltify docs to be more accurate and helpful
- **PR** #26787: (*jfindlay*) merge #26775
- **PR** #26759: (*terminalmage*) Backport PR #26726 to 2015.5 branch
- **PR** #26768: (*garethgreenaway*) Fixes to ipset in 2015.5 for **`#26628`_**
- **PR** #26753: (*jfindlay*) import elementree from _compat in ilo exec mod
- **PR** #26736: (*twangboy*) Changed import from smbconnection to smb3
- **PR** #26714: (*jfindlay*) add exception placeholder for older msgpacks
- **PR** #26710: (*rallytime*) Update GCE driver to return True, False or a new name in __virtual__()
- **PR** #26709: (*rallytime*) Ensure VM name is valid before trying to create Linode VM
- **PR** #26617: (*terminalmage*) Fix Windows failures in pip module due to raw string formatting
- **PR** #26700: (*kev009*) Ignore the first element of kern.disks split, which is the sysctl name

- **PR** #26695: (*terminalmage*) Better HTTPS basic auth redaction for 2015.5 branch
- **PR** #26694: (*terminalmage*) Backport #26693 to 2015.5
- **PR** #26681: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5
- **PR** #26676: (*rallytime*) Back-port #26648 to 2015.5
- **PR** #26677: (*rallytime*) Back-port #26653 to 2015.5
- **PR** #26675: (*rallytime*) Back-port #26631 to 2015.5
- **PR** #26655: (*cheng0919*) Update win_dns_client.py
- **PR** #26662: (*jacobhammons*) update version to 2015.5
- **PR** #26651: (*jfindlay*) add 2015.5.4 notes to 2015.5.5 notes
- **PR** #26525: (*jfindlay*) document check_file_meta args, remove unused arg
- **PR** #26561: (*stanislavb*) Leave salt.utils.s3 location fallback to salt.utils.aws
- **PR** #26573: (*rallytime*) Don't stacktrace if using private_ips and delete_sshkeys together
- **PR** #26563: (*rallytime*) Fix error detection when salt-cloud config is missing a master's address
- **PR** #26641: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5
- **PR** #26620: (*rallytime*) Also add -Z to script args for cloud tests
- **PR** #26618: (*rallytime*) Add script_args: `-P' to Ubuntu 14 profiles for nightly cloud tests
- **PR** #26612: (*rallytime*) Use an available image to test against
- **PR** #26576: (*rallytime*) Ensure GCE and EC2 configuration checks are correct
- **PR** #26580: (*rallytime*) Avoid race condition when assigning floating IPs to new VMs
- **PR** #26581: (*terminalmage*) Skip tests that don't work with older mock
- **PR** #26591: (*rallytime*) Back-port #26554 to 2015.5
- **PR** #26565: (*cachedout*) Fix many errors with __virtual__ in tests
- **PR** #26553: (*rallytime*) Back-port #26548 to 2015.5
- **PR** #26552: (*rallytime*) Back-port #26542 to 2015.5
- **PR** #26551: (*rallytime*) Back-port #26539 to 2015.5
- **PR** #26549: (*rallytime*) Back-port #26524 to 2015.5
- **PR** #26527: (*jfindlay*) check exists and values in boto_elb listeners
- **PR** #26446: (*stanislavb*) Fetch AWS region from EC2 instance metadata
- **PR** #26546: (*nmadhok*) Do not raise KeyError when calling avail_images if VM/template is in disconnected state
- **PR** #26537: (*jfindlay*) Merge #26481
- **PR** #26528: (*zmalone*) Fixing encrypt to instructions in the 2015.5 branch

### 18.2.31 Salt 2015.5.7 Release Notes

**Note:** A significant orchestrate issue #29110 was discovered during the release process of 2015.5.7, so it has not been officially released. Please use 2015.5.8 instead.

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2015-11-13T17:11:14Z*

Total Merges: **102**

Changes:

- **PR** #28731: (*garethgreenaway*) Fixes to salt scheduler in 2015.5, ensuring that return_job is only used on minion scheduler
- **PR** #28857: (*rallytime*) Back-port #28851 to 2015.5
- **PR** #28856: (*rallytime*) Back-port #28853 to 2015.5
- **PR** #28832: (*basepi*) [2015.5] Backport #28826
- **PR** #28833: (*basepi*) [2015.5] Increase the default gather_job_timeout
- **PR** #28829: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5
- **PR** #28756: (*MrCitron*) Fix `#25775`_
- **PR** #28786: (*chrigl*) closes `#28783`_
- **PR** #28776: (*rallytime*) Back-port #28740 to 2015.5
- **PR** #28760: (*dmyerscough*) Fixing CherryPy key bug
- **PR** #28746: (*rallytime*) Back-port #28718 to 2015.5
- **PR** #28705: (*cachedout*) Account for new headers class in tornado 4.3
- **PR** #28699: (*rallytime*) Back-port #28670 to 2015.5
- **PR** #28703: (*rallytime*) Back-port #28690 to 2015.5
- **PR** #28694: (*s0undt3ch*) [2015.5] Update to latest bootstrap script v2015.11.09
- **PR** #28669: (*rallytime*) Use the -q argument to strip extraneous messages from rabbitmq
- **PR** #28645: (*jacksontj*) Rework minion return_retry_timer
- **PR** #28668: (*twangboy*) Fixed join_domain and unjoin_domain for Windows
- **PR** #28666: (*jfindlay*) define r_data before using it in file module
- **PR** #28662: (*cachedout*) Add note about disabling master_alive_interval
- **PR** #28627: (*twangboy*) Backport win_useradd
- **PR** #28617: (*cachedout*) Set restrictive umask on module sync
- **PR** #28622: (*gravyboat*) Update puppet module wording
- **PR** #28563: (*s0undt3ch*) [2015.5] Update to latest bootstrap script v2015.11.04
- **PR** #28541: (*twangboy*) Fixed problem with system.set_computer_name
- **PR** #28537: (*jfindlay*) decode filename to utf-8 in file.recurse state

- **PR** #28529: (*rallytime*) Update contributing and documentation pages to recommend submitting against branches
- **PR** #28548: (*nmadhok*) [Backport] [2015.5] Tasks can be in queued state instead of running
- **PR** #28531: (*rallytime*) Add versionadded directives to virtualenv_mod state/module
- **PR** #28508: (*twangboy*) Fixed windows tests
- **PR** #28525: (*rallytime*) Fix spacing in doc examples for boto_route53 state and module
- **PR** #28517: (*rallytime*) Add state_auto_order defaults to True note to ordering docs
- **PR** #28512: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5
- **PR** #28448: (*gwaters*) added a note to the tutorial for redhat derivatives
- **PR** #28406: (*rallytime*) Back-port #28381 to 2015.5
- **PR** #28413: (*rallytime*) Back-port #28400 to 2015.5
- **PR** #28366: (*erchn*) mark repo not enabled when pkgrepo state passes in disable: True
- **PR** #28373: (*beverlcl*) Fixing bug **`#28372`**_ for use_carrier option on bonding network interfaces.
- **PR** #28359: (*rallytime*) Back-port #28358 to 2015.5
- **PR** #28346: (*twangboy*) Fix installer
- **PR** #28315: (*gwaters*) Adding a working example of setting pillar data on the cli
- **PR** #28211: (*terminalmage*) Fix for ext_pillar being compiled twice in legacy git_pillar code (2015.5 branch)
- **PR** #28263: (*cachedout*) New channel for event.send
- **PR** #28293: (*cachedout*) Minor grammar changes
- **PR** #28271: (*gwaters*) Update tutorial documentation
- **PR** #28280: (*0xf10e*) Correct Jinja function load_* to import_*
- **PR** #28255: (*cachedout*) Add __cli opt
- **PR** #28213: (*rallytime*) If record returned None, don't continue with the state. Something went wrong
- **PR** #28238: (*basepi*) [2015.5] Fix schedule.present always diffing
- **PR** #28174: (*lorengordon*) Add support for multiline regex in file.replace
- **PR** #28175: (*twangboy*) Fixes **`#19673`**_
- **PR** #28140: (*rallytime*) Add OpenBSD installation documentation to 2015.5 branch
- **PR** #28138: (*rallytime*) Back-port #28130 EC2 Sizes Only portion to 2015.5
- **PR** #28097: (*jacksontj*) For all multi-part messages, check the headers. If the header is not ...
- **PR** #28117: (*rallytime*) Clean up stacktrace when master can't be reached in lxc cloud driver
- **PR** #28110: (*terminalmage*) Add explanation of file_client: local setting masterless mode
- **PR** #28109: (*rallytime*) Add created reactor event to lxc cloud driver
- **PR** #27996: (*rallytime*) Don't fail if pip package is already present and pip1 is installed
- **PR** #28056: (*rallytime*) Back-port #28033 to 2015.5
- **PR** #28059: (*rallytime*) Back-port #28040 to 2015.5
- **PR** #28047: (*cachedout*) Restore FTP functionality to file client

- **PR** #28032: (*twangboy*) Fixed win_path.py
- **PR** #28037: (*rallytime*) Back-port #28003 to 2015.5
- **PR** #28031: (*jacobhammons*) Updated release notes with additional CVE information
- **PR** #28008: (*jfindlay*) platform independent line endings in hosts mod
- **PR** #28012: (*rallytime*) Clean up stack trace when something goes wrong with minion output
- **PR** #27995: (*jacobhammons*) added link to grains security FAQ to targeting and pillar topics.
- **PR** #27986: (*jacobhammons*) Changed current release to 5.6 and added CVE to release notes
- **PR** #27913: (*pass-by-value*) Set default
- **PR** #27876: (*terminalmage*) 2015.5 branch: Fix traceback when 2015.8 git ext_pillar config schema used
- **PR** #27726: (*jfindlay*) deprecate hash_hostname in favor of hash_known_hosts
- **PR** #27776: (*jfindlay*) return message when local jobs_cache not found
- **PR** #27766: (*jfindlay*) better check for debian userdel error
- **PR** #27758: (*iggy*) Remove redundant text from syslog returner
- **PR** #27841: (*terminalmage*) Detect Manjaro Linux as Arch derivative
- **PR** #27852: (*rallytime*) Back-port #27806 to 2015.5
- **PR** #27838: (*basepi*) [2015.5] Fix highstate outputter for jobs.lookup_jid
- **PR** #27791: (*eguven*) 2015.5 postgres_user groups backport
- **PR** #27759: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5
- **PR** #27732: (*jacobhammons*) update docs for __virtual__ and __virtualname__
- **PR** #27747: (*Sacro*) Chocolatey doesn't have a help command.
- **PR** #27733: (*jacobhammons*) hardening topic - updates to docs.saltstack.com theme
- **PR** #27706: (*jacobhammons*) Assorted doc bugs
- **PR** #27695: (*rallytime*) Back-port #27671 to 2015.5
- **PR** #27524: (*jfindlay*) parse pkgng output in quiet mode for >= 1.6.1
- **PR** #27686: (*rallytime*) Back-port #27476 to 2015.5
- **PR** #27684: (*rallytime*) Back-port #27656 to 2015.5
- **PR** #27683: (*rallytime*) Back-port #27659 to 2015.5
- **PR** #27682: (*rallytime*) Back-port #27566 to 2015.5
- **PR** #27681: (*rallytime*) Back-port #25928 to 2015.5
- **PR** #27680: (*rallytime*) Back-port #27535 to 2015.5
- **PR** #27442: (*JaseFace*) Ensure we pass on the enable setting if present, or use the default of True if not in build_schedule_item()
- **PR** #27641: (*rallytime*) Gate the psutil import and add depends doc for diskusage beacon
- **PR** #27644: (*rallytime*) Back-port #27640 to 2015.5
- **PR** #27612: (*rallytime*) Fix GCE external_ip stacktraces in 2015.5
- **PR** #27568: (*jacobhammons*) regenerated man pages

### 18.2.32 Salt 2015.5.8 Release Notes

#### Security Fix

CVE-2015-8034: Saving `state.sls` cache data to disk with insecure permissions

This affects users of the `state.sls` function. The state run cache on the minion was being created with incorrect permissions. This file could potentially contain sensitive data that was inserted via jinja into the state SLS files. The permissions for this file are now being set correctly. Thanks to @zmalone for bringing this issue to our attention.

#### Changes

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2015-11-23T23:16:23Z*

Total Merges: **118**

Changes:

- **PR** #29128: (*cachedout*) Set a safer default value for ret in saltmod
- **PR** #29122: (*cachedout*) Fix broken state orchestration
- **PR** #29096: (*rallytime*) Back-port #29093 to 2015.5
- **PR** #29084: (*rallytime*) Back-port #29055 to 2015.5
- **PR** #29083: (*rallytime*) Back-port #29053 to 2015.5
- **PR** #28932: (*twangboy*) Fixed user.present / user.absent in windows
- **PR** #29011: (*rallytime*) Back-port #28630 to 2015.5
- **PR** #28982: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5
- **PR** #28949: (*whiteinge*) Add sync_sdb execution function
- **PR** #28930: (*twangboy*) Added missing import mmap required by file.py
- **PR** #28908: (*rallytime*) A couple of spelling fixes for doc conventions page.
- **PR** #28902: (*whiteinge*) Fix missing JSON support for /keys endpoint
- **PR** #28897: (*rallytime*) Back-port #28873 to 2015.5
- **PR** #28871: (*basepi*) [2015.5] Fix command generation for mdadm.assemble
- **PR** #28864: (*jfindlay*) add 2015.5.7 release notes
- **PR** #28731: (*garethgreenaway*) Fixes to salt scheduler in 2015.5, ensuring that return_job is only used on minion scheduler
- **PR** #28857: (*rallytime*) Back-port #28851 to 2015.5
- **PR** #28856: (*rallytime*) Back-port #28853 to 2015.5
- **PR** #28832: (*basepi*) [2015.5] Backport #28826
- **PR** #28833: (*basepi*) [2015.5] Increase the default gather_job_timeout
- **PR** #28829: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5
- **PR** #28756: (*MrCitron*) Fix `#25775`_
- **PR** #28786: (*chrigl*) closes `#28783`_

- **PR** #28776: (*rallytime*) Back-port #28740 to 2015.5
- **PR** #28760: (*dmyerscough*) Fixing CherryPy key bug
- **PR** #28746: (*rallytime*) Back-port #28718 to 2015.5
- **PR** #28705: (*cachedout*) Account for new headers class in tornado 4.3
- **PR** #28699: (*rallytime*) Back-port #28670 to 2015.5
- **PR** #28703: (*rallytime*) Back-port #28690 to 2015.5
- **PR** #28694: (*s0undt3ch*) [2015.5] Update to latest bootstrap script v2015.11.09
- **PR** #28669: (*rallytime*) Use the -q argument to strip extraneous messages from rabbitmq
- **PR** #28645: (*jacksontj*) Rework minion return_retry_timer
- **PR** #28668: (*twangboy*) Fixed join_domain and unjoin_domain for Windows
- **PR** #28666: (*jfindlay*) define r_data before using it in file module
- **PR** #28662: (*cachedout*) Add note about disabling master_alive_interval
- **PR** #28627: (*twangboy*) Backport win_useradd
- **PR** #28617: (*cachedout*) Set restrictive umask on module sync
- **PR** #28622: (*gravyboat*) Update puppet module wording
- **PR** #28563: (*s0undt3ch*) [2015.5] Update to latest bootstrap script v2015.11.04
- **PR** #28541: (*twangboy*) Fixed problem with system.set_computer_name
- **PR** #28537: (*jfindlay*) decode filename to utf-8 in file.recurse state
- **PR** #28529: (*rallytime*) Update contributing and documentation pages to recommend submitting against branches
- **PR** #28548: (*nmadhok*) [Backport] [2015.5] Tasks can be in queued state instead of running
- **PR** #28531: (*rallytime*) Add versionadded directives to virtualenv_mod state/module
- **PR** #28508: (*twangboy*) Fixed windows tests
- **PR** #28525: (*rallytime*) Fix spacing in doc examples for boto_route53 state and module
- **PR** #28517: (*rallytime*) Add state_auto_order defaults to True note to ordering docs
- **PR** #28512: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5
- **PR** #28448: (*gwaters*) added a note to the tutorial for redhat derivatives
- **PR** #28406: (*rallytime*) Back-port #28381 to 2015.5
- **PR** #28413: (*rallytime*) Back-port #28400 to 2015.5
- **PR** #28366: (*erchn*) mark repo not enabled when pkgrepo state passes in disable: True
- **PR** #28373: (*beverlcl*) Fixing bug `#28372`_ for use_carrier option on bonding network interfaces.
- **PR** #28359: (*rallytime*) Back-port #28358 to 2015.5
- **PR** #28346: (*twangboy*) Fix installer
- **PR** #28315: (*gwaters*) Adding a working example of setting pillar data on the cli
- **PR** #28211: (*terminalmage*) Fix for ext_pillar being compiled twice in legacy git_pillar code (2015.5 branch)
- **PR** #28263: (*cachedout*) New channel for event.send

- **PR** #28293: (*cachedout*) Minor grammar changes
- **PR** #28271: (*gwaters*) Update tutorial documentation
- **PR** #28280: (*0xf10e*) Correct Jinja function load_* to import_*
- **PR** #28255: (*cachedout*) Add __cli opt
- **PR** #28213: (*rallytime*) If record returned None, don't continue with the state. Something went wrong
- **PR** #28238: (*basepi*) [2015.5] Fix schedule.present always diffing
- **PR** #28174: (*lorengordon*) Add support for multiline regex in file.replace
- **PR** #28175: (*twangboy*) Fixes **`#19673`**_
- **PR** #28140: (*rallytime*) Add OpenBSD installation documentation to 2015.5 branch
- **PR** #28138: (*rallytime*) Back-port #28130 EC2 Sizes Only portion to 2015.5
- **PR** #28097: (*jacksontj*) For all multi-part messages, check the headers. If the header is not ...
- **PR** #28117: (*rallytime*) Clean up stacktrace when master can't be reached in lxc cloud driver
- **PR** #28110: (*terminalmage*) Add explanation of file_client: local setting masterless mode
- **PR** #28109: (*rallytime*) Add created reactor event to lxc cloud driver
- **PR** #27996: (*rallytime*) Don't fail if pip package is already present and pip1 is installed
- **PR** #28056: (*rallytime*) Back-port #28033 to 2015.5
- **PR** #28059: (*rallytime*) Back-port #28040 to 2015.5
- **PR** #28047: (*cachedout*) Restore FTP functionality to file client
- **PR** #28032: (*twangboy*) Fixed win_path.py
- **PR** #28037: (*rallytime*) Back-port #28003 to 2015.5
- **PR** #28031: (*jacobhammons*) Updated release notes with additional CVE information
- **PR** #28008: (*jfindlay*) platform independent line endings in hosts mod
- **PR** #28012: (*rallytime*) Clean up stack trace when something goes wrong with minion output
- **PR** #27995: (*jacobhammons*) added link to grains security FAQ to targeting and pillar topics.
- **PR** #27986: (*jacobhammons*) Changed current release to 5.6 and added CVE to release notes
- **PR** #27913: (*pass-by-value*) Set default
- **PR** #27876: (*terminalmage*) 2015.5 branch: Fix traceback when 2015.8 git ext_pillar config schema used
- **PR** #27726: (*jfindlay*) deprecate hash_hostname in favor of hash_known_hosts
- **PR** #27776: (*jfindlay*) return message when local jobs_cache not found
- **PR** #27766: (*jfindlay*) better check for debian userdel error
- **PR** #27758: (*iggy*) Remove redundant text from syslog returner
- **PR** #27841: (*terminalmage*) Detect Manjaro Linux as Arch derivative
- **PR** #27852: (*rallytime*) Back-port #27806 to 2015.5
- **PR** #27838: (*basepi*) [2015.5] Fix highstate outputter for jobs.lookup_jid
- **PR** #27791: (*eguven*) 2015.5 postgres_user groups backport
- **PR** #27759: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5

- **PR** #27732: (*jacobhammons*) update docs for __virtual__ and __virtualname__
- **PR** #27747: (*Sacro*) Chocolatey doesn't have a help command.
- **PR** #27733: (*jacobhammons*) hardening topic - updates to docs.saltstack.com theme
- **PR** #27706: (*jacobhammons*) Assorted doc bugs
- **PR** #27695: (*rallytime*) Back-port #27671 to 2015.5
- **PR** #27524: (*jfindlay*) parse pkgng output in quiet mode for >= 1.6.1
- **PR** #27686: (*rallytime*) Back-port #27476 to 2015.5
- **PR** #27684: (*rallytime*) Back-port #27656 to 2015.5
- **PR** #27683: (*rallytime*) Back-port #27659 to 2015.5
- **PR** #27682: (*rallytime*) Back-port #27566 to 2015.5
- **PR** #27681: (*rallytime*) Back-port #25928 to 2015.5
- **PR** #27680: (*rallytime*) Back-port #27535 to 2015.5
- **PR** #27442: (*JaseFace*) Ensure we pass on the enable setting if present, or use the default of True if not in build_schedule_item()
- **PR** #27641: (*rallytime*) Gate the psutil import and add depends doc for diskusage beacon
- **PR** #27644: (*rallytime*) Back-port #27640 to 2015.5
- **PR** #27612: (*rallytime*) Fix GCE external_ip stacktraces in 2015.5
- **PR** #27568: (*jacobhammons*) regenerated man pages

### 18.2.33 Salt 2015.5.9 Release Notes

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2016-01-08T23:02:31Z*

Total Merges: **44**

Changes:

- **PR** #30237: (*jacobhammons*) Updated man pages and doc version for 2015.5.9
- **PR** #30207: (*rallytime*) Use correct spacing in rabbitmq state examples
- **PR** #30191: (*jacobhammons*) Updated doc site banners
- **PR** #30125: (*abednarik*) Update user home event when createhome is set to False
- **PR** #30127: (*jsutton*) Updating documentation and example minion config for random_master/master_shuffle.
- **PR** #30110: (*markckimball*) Fixed flag sent to salt.utils.http in order for verify_ssl to work correctly
- **PR** #30093: (*zmalone*) Noting that file_roots and ``state tree'' should both be avoided
- **PR** #30097: (*cachedout*) Note concern about cleartext password in docs for shadow.gen_password
- **PR** #30089: (*mpreziuso*) Fixes terminology and adds more accurate details about the algorithms
- **PR** #30086: (*cachedout*) Document that gitfs needs recent libs
- **PR** #30070: (*cachedout*) Add documentation on debugging salt-ssh
- **PR** #30059: (*mpreziuso*) Fixes wrong function scope

- **PR** #30025: (*jtand*) Skipping some Boto tests until resolved moto issue
- **PR** #29949: (*aletourneau*) Enhanced netscaler docstring
- **PR** #29941: (*cachedout*) Fix spelling error in boto_vpc
- **PR** #29908: (*cachedout*) Allow kwargs to be passed to pacman provide for update func
- **PR** #29909: (*abednarik*) FreeBSD pkgng fix for non-interactive install.
- **PR** #29730: (*rallytime*) Update docker-py version requirement to 0.6.0 for dockerio.py files
- **PR** #29715: (*rallytime*) Install correct package version, if provided, for npm state.
- **PR** #29721: (*terminalmage*) Fix display of multiline strings when iterating over a list
- **PR** #29646: (*rallytime*) Don't stacktrace on kwargs.get if kwargs=None
- **PR** #29673: (*rallytime*) Default value should be False and not `False'
- **PR** #29527: (*jfindlay*) 2015.5.7 notes: add note about not being released
- **PR** #29539: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5
- **PR** #29504: (*rallytime*) Document userdata_file option for EC2 driver
- **PR** #29507: (*rallytime*) Switch volumes and del_*_on_destroy example ordering
- **PR** #29469: (*abednarik*) Added Documentation note in salt cloud.
- **PR** #29461: (*dmyerscough*) Fix resource limits, systemd sets the default too small
- **PR** #29439: (*rallytime*) Back-port #28656 to 2015.5
- **PR** #29418: (*jacobhammons*) Added CVE 2015-8034 to 2015.5.8 release notes
- **PR** #29389: (*jacobhammons*) updated version numbers in documentation
- **PR** #28501: (*twangboy*) Requested fixes for 26898
- **PR** #29348: (*jtand*) Fixes an file.search on python2.6
- **PR** #29336: (*rallytime*) Back-port #29276 to 2015.5
- **PR** #29333: (*rallytime*) Back-port #29280 to 2015.5
- **PR** #29316: (*basepi*) [2015.5] Merge forward from 2014.7 to 2015.5
- **PR** #29216: (*clan*) size is 0 doesn't mean no data, e.g, /proc/version
- **PR** #29261: (*attiasr*) fix incorrect reinstallation of windows pkg
- **PR** #29214: (*cro*) Doc for salt.utils.http should say verify_ssl not ssl_verify.
- **PR** #29204: (*lorengordon*) Use os.path.join to return full path to ca bundle

### 18.2.34 Salt 2014.7.0 Release Notes - Codename Helium

This release is the largest Salt release ever, with more features and commits then any previous release of Salt. Everything from the new RAET transport to major updates in Salt Cloud and the merging of Salt API into the main project.

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**Important**: The Fedora/RHEL/CentOS **salt-master** package has been modified for this release. The following components of Salt have been broken out and placed into their own packages:

- salt-syndic

- salt-cloud
- salt-ssh

When the **salt-master** package is upgraded, these components will be removed, and they will need to be manually installed.

---

**Important**: Compound/pillar matching have been temporarily disabled for the `mine` and `publish` modules for this release due to the possibility of inferring pillar data using pillar glob matching. A proper fix is now in the 2014.7 branch and scheduled for the 2014.7.1 release, and compound matching and non-globbing pillar matching will be re-enabled at that point.

Compound and pillar matching for normal salt commands are unaffected.

---

### New Transport!

### RAET Transport Option

This has been a HUGE amount of work, but the beta release of Salt with RAET is ready to go. RAET is a reliable queuing transport system that has been developed in partnership with a number of large enterprises to give Salt an alternative to ZeroMQ and a way to get Salt to scale well beyond tens of thousands of servers. Unlike ZeroMQ, RAET is completely asynchronous in every aspect of its operation and has been developed using the flow programming paradigm. This allows for many new capabilities to be added to Salt in the upcoming releases.

Please keep in mind that this is a beta release of RAET and we hope for bugs to be worked out, performance to be better realized and more in the 2015.5.0 release.

Simply stated, users running Salt with RAET should expect some hiccups as we hammer out the update. This is a BETA release of Salt RAET.

For information about how to use Salt with RAET please see the *tutorial*.

### Salt SSH Enhancements

Salt SSH has just entered a new league, with substantial updates and improvements to make salt-ssh more reliable and easier then ever! From new features like the ansible roster and fileserver backends to the new pypi salt-ssh installer to lowered deps and a swath of bugfixes, salt-ssh is basically reborn!

### Install salt-ssh Using pip

Salt-ssh is now pip-installable!

https://pypi.python.org/pypi/salt-ssh/

Pip will bring in all of the required deps, and while some deps are compiled, they all include pure python implementations, meaning that any compile errors which may be seen can be safely ignored.

```
pip install salt-ssh
```

### Fileserver Backends

Salt-ssh can now use the salt fileserver backend system. This allows for the gitfs, hgfs, s3, and many more ways to centrally store states to be easily used with salt-ssh. This also allows for a distributed team to easily use a centralized source.

### Saltfile Support

The new saltfile system makes it easy to have a user specific custom extended configuration.

### Ext Pillar

Salt-ssh can now use the external pillar system. Making it easier then ever to use salt-ssh with teams.

### No More sshpass

Thanks to the enhancements in the salt vt system, salt-ssh no longer requires sshpass to send passwords to ssh. This also makes the manipulation of ssh calls substantially more flexible, allowing for intercepting ssh calls in a much more fluid way.

### Pure Python Shim

The salt-ssh call originally used a shell script to discover what version of python to execute with and determine the state of the ssh code deployment. This shell script has been replaced with a pure python version making it easy to increase the capability of the code deployment without causing platform inconsistency issues with different shell interpreters.

### Custom Module Delivery

Custom modules are now seamlessly delivered. This makes the deployment of custom grains, states, execution modules and returners a seamless process.

### CP Module Support

Salt-ssh now makes simple file transfers easier then ever! The *cp* module allows for files to be conveniently sent from the salt fileserver system down to systems.

### More Thin Directory Options

Salt ssh functions by copying a subset of the salt code, or *salt thin* down to the target system. In the past this was always transferred to /tmp/.salt and cached there for subsequent commands.

Now, salt thin can be sent to a random directory and removed when the call is complete with the *-W* option. The new *-W* option still uses a static location but will clean up that location when finished.

The default *salt thin* location is now user defined, allowing multiple users to cleanly access the same systems.

### State System Enhancements

#### New Imperative State Keyword ``Listen''

The new `listen` and `listen_in` keywords allow for completely imperative states by calling the `mod_watch()` routine after all states have run instead of re-ordering the states.

#### Mod Aggregate Runtime Manipulator

The new `mod_aggregate` system allows for the state system to rewrite the state data during execution. This allows for state definitions to be aggregated dynamically at runtime.

The best example is found in the *pkg* state. If `mod_aggregate` is turned on, then when the first pkg state is reached, the state system will scan all of the other running states for pkg states and take all other packages set for install and install them all at once in the first pkg state.

These runtime modifications make it easy to run groups of states together. In future versions, we hope to fill out the `mod_aggregate` system to build in more and more optimizations.

For more documentation on `mod_aggregate`, see *the documentation*.

#### New Requisites: onchanges and onfail

The new `onchanges` and `onchanges_in` requisites make a state apply only if there are changes in the required state. This is useful to execute post hooks after changes occur on a system.

The other new requisites, `onfail`, and `onfail_in`, allow for a state to run in reaction to the failure of another state.

For more information about these new requisites, see the *requisites documentation*.

#### Global onlyif and unless

The `onlyif` and `unless` options can now be used for any state declaration.

#### Use `names` to expand and override values

The *names declaration* in Salt's state system can now override or add values to the expanded data structure. For example:

```
my_users:
  user.present:
    - names:
      - larry
      - curly
      - moe:
        - shell: /bin/zsh
        - groups:
          - wheel
    - shell: /bin/bash
```

### Major Features

#### Scheduler Additions

The Salt scheduler system has received MAJOR enhancements, allowing for cron-like scheduling and much more granular timing routines. See *here* for more info.

#### Red Hat 7 Family Support

All the needed additions have been made to run Salt on RHEL 7 and derived OSes like CentOS and Scientific.

#### Fileserver Backends in salt-call

Fileserver backends like gitfs can now be used without a salt master! Just add the fileserver backend configuration to the minion config and execute salt-call. This has been a much-requested feature and we are happy to finally bring it to our users.

#### Amazon Execution Modules

An entire family of execution modules further enhancing Salt's Amazon Cloud support. They include the following:

- *Autoscale Groups* (includes *state support*) -- related: *Launch Control* states
- *Cloud Watch* (includes *state support*)
- *Elastic Cache* (includes *state support*)
- *Elastic Load Balancer* (includes *state support*)
- *IAM Identity and Access Management* (includes *state support*)
- *Route53 DNS* (includes *state support*)
- *Security Groups* (includes *state support*)
- *Simple Queue Service* (includes *state support*)

#### LXC Runner Enhancements

BETA The Salt LXC management system has received a number of enhancements which make running an LXC cloud entirely from Salt an easy proposition.

#### Next Gen Docker Management

The Docker support in Salt has been increased at least ten fold. The Docker API is now completely exposed and Salt ships with Docker data tracking systems which make automating Docker deployments very easy.

#### Peer System Performance Improvements

The peer system communication routines have been refined to make the peer system substantially faster.

### SDB

Encryption at rest for configs

### GPG Renderer

Encrypted pillar at rest

### OpenStack Expansion

Lots of new OpenStack stuff

### Queues System

Ran change external queue systems into Salt events

### Multi Master Failover Additions

Connecting to multiple masters is more dynamic then ever

### Chef Execution Module

Managing Chef with Salt just got even easier!

### salt-api Project Merge

The `salt-api` project has been merged into Salt core and is now available as part of the regular `salt-master` package install. No API changes were made, the **`salt-api`** script and init scripts remain intact.

`salt-api` has always provided Yet Another Pluggable Interface to Salt (TM) in the form of ``netapi'' modules. These are modules that bind to a port and start a service. Like many of Salt's other module types, netapi modules often have library and configuration dependencies. See the documentation for each module for instructions.

**See also:**

*The full list of netapi modules.*

### Synchronous and Asynchronous Execution of Runner and Wheel Modules

*`salt.runner.RunnerClient`* and *`salt.wheel.WheelClient`* have both gained complimentary `cmd_sync` and `cmd_async` methods allowing for synchronous and asynchronous execution of any Runner or Wheel module function, all protected using Salt's *external authentication* system. `salt-api` benefits from this addition as well.

### `rest_cherrypy` Additions

The *`rest_cherrypy`* netapi module provides the main REST API for Salt.

### Web Hooks

This release of course includes the Web Hook additions from the most recent `salt-api` release, which allows external services to signal actions within a Salt infrastructure. External services such as Amazon SNS, Travis-CI, or GitHub, as well as internal services that cannot or should not run a Salt minion daemon can be used as first-class components in Salt's rich orchestration capabilities.

The raw HTTP request body is now available in the event data. This is sometimes required information for checking an HMAC signature in order to verify a HTTP request. As an example, Amazon or GitHub requests are signed this way.

### Generating and Accepting Minion Keys

The *`/key`* convenience URL generates a public and private key for a minion, automatically pre-accepts the public key on the Salt Master, and returns both keys as a tarball for download.

This allows for easily bootstrapping the key on a new minion with a single HTTP call, such as with a Kickstart script, all using regular shell tools.

```
curl -sS http://salt-api.example.com:8000/keys \
        -d mid=jerry \
        -d username=kickstart \
        -d password=kickstart \
        -d eauth=pam \
        -o jerry-salt-keys.tar
```

### Fileserver Backend Enhancements

All of the fileserver backends have been overhauled to be faster, lighter, and more reliable. The VCS backends (*`gitfs`*, *`hgfs`*, and *`svnfs`*) have also received a **lot** of new features.

Additionally, most config parameters for the VCS backends can now be configured on a per-remote basis, allowing for global config parameters to be overridden for a specific gitfs/hgfs/svnfs remote.

### New `gitfs` Features

### Pygit2 and Dulwich

In addition to supporting GitPython, support for pygit2 (0.20.3 and newer) and dulwich have been added. Provided a compatible version of pygit2 is installed, it will now be the default provider. The config parameter *`gitfs_provider`* has been added to allow one to choose a specific provider for gitfs.

### Mountpoints

Prior to this release, to serve a file from gitfs at a salt fileserver URL of `salt://foo/bar/baz.txt`, it was necessary to ensure that the parent directories existed in the repository. A new config parameter *`gitfs_mountpoint`* allows gitfs remotes to be exposed starting at a user-defined `salt://` URL.

#### Environment Whitelisting/Blacklisting

By default, gitfs will expose all branches and tags as Salt fileserver environments. Two new config parameters, `gitfs_env_whitelist`, and `gitfs_env_blacklist`, allow more control over which branches and tags are exposed. More detailed information on how these two options work can be found in the *Gitfs Walkthrough*.

#### Expanded Authentication Support

As of pygit2 0.20.3, both http(s) and SSH key authentication are supported, and Salt now also supports both authentication methods when using pygit2. Keep in mind that pygit2 0.20.3 is not yet available on many platforms, so those who had been using authenticated git repositories with a passphraseless key should stick to GitPython if a new enough pygit2 is not yet available for the platform on which the master is running.

A full explanation of how to use authentication can be found in the *Gitfs Walkthrough*.

### New `hgfs` Features

#### Mountpoints

This feature works exactly like its *gitfs counterpart*. The new config parameter is called `hgfs_mountpoint`.

#### Environment Whitelisting/Blacklisting

This feature works exactly like its *gitfs counterpart*. The new config parameters are called `hgfs_env_whitelist` and `hgfs_env_blacklist`.

### New `svnfs` Features

#### Mountpoints

This feature works exactly like its *gitfs counterpart*. The new config parameter is called `svnfs_mountpoint`.

#### Environment Whitelisting/Blacklisting

This feature works exactly like its *gitfs counterpart*. The new config parameters are called `svnfs_env_whitelist` and `svnfs_env_blacklist`.

#### Configurable Trunk/Branches/Tags Paths

Prior to this release, the paths where trunk, branches, and tags were located could only be in directories named ``trunk'', ``branches'', and ``tags'' directly under the root of the repository. Three new config parameters (`svnfs_trunk`, `svnfs_branches`, and `svnfs_tags`) allow SVN repositories which are laid out differently to be used with svnfs.

### New `minionfs` Features

#### Mountpoint

This feature works exactly like its *gitfs counterpart*. The new config parameter is called *`minionfs_mountpoint`*. The one major difference is that, as minionfs doesn't use multiple remotes (it just serves up files pushed to the master using *`cp.push`*) there is no such thing as a per-remote configuration for *`minionfs_mountpoint`*.

#### Changing the Saltenv from Which Files are Served

A new config parameter (*`minionfs_env`*) allows minionfs files to be served from a Salt fileserver environment other than `base`.

#### Minion Whitelisting/Blacklisting

By default, minionfs will expose the pushed files from all minions. Two new config parameters, *`minionfs_whitelist`*, and *`minionfs_blacklist`*, allow minionfs to be restricted to serve files from only the desired minions.

#### Pyobjects Renderer

Salt now ships with with the *`Pyobjects Renderer`* that allows for construction of States using pure Python with an idiomatic object interface.

#### New Modules

In addition to the Amazon modules mentioned above, there are also several other new execution modules:

- *`Oracle`*
- *`Random`*
- *`Redis`*
- *`Amazon Simple Queue Service`*
- *`Block Device Management`*
- *`CoreOS etcd`*
- *`Genesis`*
- *`InfluxDB`*
- *`Server Density`*
- *`Twilio Notifications`*
- *`Varnish`*
- *`ZNC IRC Bouncer`*
- *`SMTP`*

#### New Runners

- *Map/Reduce Style*
- *Queue*

#### New External Pillars

- *CoreOS etcd*

#### New Salt-Cloud Providers

- `Aliyun ECS Cloud`
- `LXC Containers`
- `Proxmox (OpenVZ containers & KVM)`

#### Salt Call Change

When used with a returner, salt-call now contacts a master if `--local` is not specicified.

#### Deprecations

##### `salt.modules.virtualenv_mod`

- Removed deprecated `memoize` function from `salt/utils/__init__.py` (deprecated)
- Removed deprecated `no_site_packages` argument from `create` function (deprecated)
- Removed deprecated `check_dns` argument from `minion_config` and `apply_minion_config` functions (deprecated)
- Removed deprecated `OutputOptionsWithTextMixIn` class from `salt/utils/parsers.py` (deprecated)
- Removed the following deprecated functions from `salt/modules/ps.py`: - `physical_memory_usage` (deprecated) - `virtual_memory_usage` (deprecated) - `cached_physical_memory` (deprecated) - `physical_memory_buffers` (deprecated)
- Removed deprecated cloud arguments from `cloud_config` function in `salt/config.py`: - `vm_config` (deprecated) - `vm_config_path` (deprecated)
- Removed deprecated `libcloud_version` function from `salt/cloud/libcloudfuncs.py` (deprecated)
- Removed deprecated `CloudConfigMixIn` class from `salt/utils/parsers.py` (deprecated)

### 18.2.35 Salt 2014.7.1 Release Notes

**release** 2015-01-12

Version 2014.7.1 is a bugfix release for *2014.7.0*.

The changes include:

- Fixed gitfs serving symlinks in *file.recurse* states (issue 17700)
- Fixed holding of multiple packages (YUM) when combined with version pinning (issue 18468)
- Fixed use of Jinja templates in masterless mode with non-roots fileserver backend (issue 17963)
- Re-enabled pillar and compound matching for mine and publish calls. Note that pillar globbing is still disabled for those modes, for security reasons. (issue 17194)
- Fix for `tty: True` in salt-ssh (issue 16847)
- Fix for supervisord states when supervisor not installed to system python (issue 18044)
- Fix for logging when `log_level='quiet'` for *cmd.run* (issue 19479)

### 18.2.36 Salt 2014.7.2 Release Notes

**release** 2015-02-09

Version 2014.7.2 is a bugfix release for *2014.7.0*.

The changes include:

- Fix erroneous warnings for systemd service enabled check (issue 19606)
- Fix FreeBSD kernel module loading, listing, and persistence *kmod* (issue 197151, issue 19682)
- Allow case-sensitive npm package names in the *npm state*. This may break behavior for people expecting the state to lowercase their npm package names for them. The *npm module* was never affected by mandatory lowercasing. (issue 20329)
- Deprecate the `activate` parameter for pip.install for both the *module* and the `state`. If `bin_env` is given and points to a virtualenv, there is no need to activate that virtualenv in a shell for pip to install to the virtualenv.
- Fix a file-locking bug in gitfs (issue 18839)
- Deprecated `archive_user` in favor of standardized `user` parameter in `state` and added `group` parameter.

### 18.2.37 Salt 2014.7.3 Release Notes

**release** TBA

Version 2014.7.3 is a bugfix release for *2014.7.0*.

Changes:

- Multi-master minions mode no longer route fileclient operations asymetrically. This fixes the source of many multi-master bugs where the minion would become unrepsonsive from one or more masters.
- Fix bug wherein network.iface could produce stack traces.
- net.arp will no longer be made available unless arp is installed on the system.
- Major performance improvements to Saltnado
- Allow KVM module to operate under KVM itself or VMWare Fusion
- Various fixes to the Windows installation scripts
- Fix issue where the syndic would not correctly propagate loads to the master job cache.
- Improve error handling on invalid /etc/network/interfaces file in salt networking modules

- Fix bug where a response status was not checked for in fileclient.get_url
- Enable eauth when running salt in batch mode
- Increase timeout in Boto Route53 module
- Fix bugs with Salt's `tar' module option parsing
- Fix parsing of NTP servers on Windows
- Fix issue with blockdev tuning not reporting changes correctly
- Update to the latest Salt bootstrap script
- Update Linode salt-cloud driver to use either linode-python or apache-libcloud
- Fix for s3.query function to return correct headers
- Fix for s3.head returning None for files that exist
- Fix the disable function in win_service module so that the service is disabled correctly
- Fix race condition between master and minion when making a directory when both daemons are on the same host
- Fix an issue where file.recurse would fail at the root of an svn repo when the repo has a mountpoint
- Fix an issue where file.recurse would fail at the root of an hgfs repo when the repo has a mountpoint
- Fix an issue where file.recurse would fail at the root of an gitfs repo when the repo has a mountpoint
- Add status.master capability for Windows.
- Various fixes to ssh_known_hosts
- Various fixes to states.network bonding for Debian
- The debian_ip.get_interfaces module no longer removes nameservers.
- Better integration between grains.virtual and systemd-detect-virt and virt-what
- Fix traceback in sysctl.present state output
- Fix for issue where mount.mounted would fail when superopts were not a part of mount.active (extended=True). Also mount.mounted various fixes for Solaris and FreeBSD.
- Fix error where datetimes were not correctly safeguarded before being passed into msgpack.
- Fix file.replace regressions. If the pattern is not found, and if dry run is False, and if *backup* is False, and if a pre-existing file exists with extension *.bak*, then that backup file will be overwritten. This backup behavior is a result of how *fileinput* works. Fixing it requires either passing through the file twice (the first time only to search for content and set a flag), or rewriting *file.replace* so it doesn't use *fileinput*
- VCS filreserver fixes/optimizations
- Catch fileserver configuration errors on master start
- Raise errors on invalid gitfs configurations
- set_locale when locale file does not exist (Redhat family)
- Fix to correctly count active devices when created mdadm array with spares
- Fix to correctly target minions in batch mode
- Support ssh:// urls using the gitfs dulwhich backend
- New fileserver runner
- Fix various bugs with argument parsing to the publish module.

- Fix disk.usage for Synology OS
- Fix issue with tags occurring twice with docker.pulled
- Fix incorrect key error in SMTP returner
- Fix condition which would remount loopback filesystems on every state run
- Remove requsites from listens after they are called in the state system
- Make system implementation of service.running aware of legacy service calls
- Fix issue where publish.publish would not handle duplicate responses gracefully.
- Accept Kali Linux for aptpkg salt execution module
- Fix bug where cmd.which could not handle a dirname as an argument
- Fix issue in ps.pgrep where exceptions were thrown on Windows.

Known issues:

- In multimaster mode, a minion may become temporarily unresponsive if modules or pillars are refreshed at the same time that one or more masters are down. This can be worked around by setting `auth_timeout' and `auth_tries' down to shorter periods.

### 18.2.38 Salt 2014.7.4 Release Notes

**release** 2015-03-30

Version 2014.7.4 is a bugfix release for *2014.7.0*.

This is a security release. The security issues fixed have only been present since 2014.7.0, and only users of the two listed modules are vulnerable. The following CVEs have been resolved:

- CVE-2015-1838 SaltStack: insecure /tmp file handling in salt/modules/serverdensity_device.py
- CVE-2015-1839 SaltStack: insecure /tmp file handling in salt/modules/chef.py

Changes:

- Multi-master minions mode no longer route fileclient operations asymetrically. This fixes the source of many multi-master bugs where the minion would become unrepsonsive from one or more masters.
- Fix bug wherein network.iface could produce stack traces.
- net.arp will no longer be made available unless arp is installed on the system.
- Major performance improvements to Saltnado
- Allow KVM module to operate under KVM itself or VMWare Fusion
- Various fixes to the Windows installation scripts
- Fix issue where the syndic would not correctly propagate loads to the master job cache.
- Improve error handling on invalid /etc/network/interfaces file in salt networking modules
- Fix bug where a response status was not checked for in fileclient.get_url
- Enable eauth when running salt in batch mode
- Increase timeout in Boto Route53 module
- Fix bugs with Salt's `tar' module option parsing
- Fix parsing of NTP servers on Windows

- Fix issue with blockdev tuning not reporting changes correctly
- Update to the latest Salt bootstrap script
- Update Linode salt-cloud driver to use either linode-python or apache-libcloud
- Fix for s3.query function to return correct headers
- Fix for s3.head returning None for files that exist
- Fix the disable function in win_service module so that the service is disabled correctly
- Fix race condition between master and minion when making a directory when both daemons are on the same host
- Fix an issue where file.recurse would fail at the root of an svn repo when the repo has a mountpoint
- Fix an issue where file.recurse would fail at the root of an hgfs repo when the repo has a mountpoint
- Fix an issue where file.recurse would fail at the root of an gitfs repo when the repo has a mountpoint
- Add status.master capability for Windows.
- Various fixes to ssh_known_hosts
- Various fixes to states.network bonding for Debian
- The debian_ip.get_interfaces module no longer removes nameservers.
- Better integration between grains.virtual and systemd-detect-virt and virt-what
- Fix traceback in sysctl.present state output
- Fix for issue where mount.mounted would fail when superopts were not a part of mount.active (extended=True). Also mount.mounted various fixes for Solaris and FreeBSD.
- Fix error where datetimes were not correctly safeguarded before being passed into msgpack.
- Fix file.replace regressions. If the pattern is not found, and if dry run is False, and if *backup* is False, and if a pre-existing file exists with extension *.bak*, then that backup file will be overwritten. This backup behavior is a result of how *fileinput* works. Fixing it requires either passing through the file twice (the first time only to search for content and set a flag), or rewriting *file.replace* so it doesn't use *fileinput*
- VCS filreserver fixes/optimizations
- Catch fileserver configuration errors on master start
- Raise errors on invalid gitfs configurations
- set_locale when locale file does not exist (Redhat family)
- Fix to correctly count active devices when created mdadm array with spares
- Fix to correctly target minions in batch mode
- Support ssh:// urls using the gitfs dulwhich backend
- New fileserver runner
- Fix various bugs with argument parsing to the publish module.
- Fix disk.usage for Synology OS
- Fix issue with tags occurring twice with docker.pulled
- Fix incorrect key error in SMTP returner
- Fix condition which would remount loopback filesystems on every state run
- Remove requsites from listens after they are called in the state system

- Make system implementation of service.running aware of legacy service calls
- Fix issue where publish.publish would not handle duplicate responses gracefully.
- Accept Kali Linux for aptpkg salt execution module
- Fix bug where cmd.which could not handle a dirname as an argument
- Fix issue in ps.pgrep where exceptions were thrown on Windows.

Known issues:

- In multimaster mode, a minion may become temporarily unresponsive if modules or pillars are refreshed at the same time that one or more masters are down. This can be worked around by setting `auth_timeout' and `auth_tries' down to shorter periods.
- There are known issues with batch mode operating on the incorrect number of minions. This bug can be patched with the change in Pull Request #22464.
- The *fun*, *state*, and *unless* keywords are missing from the state internals, which can cause problems running some states. This bug can be patched with the change in Pull Request #22365.

### 18.2.39 Salt 2014.7.5 Release Notes

**release** 2015-04-16

Version 2014.7.5 is a bugfix release for *2014.7.0*.

Changes:

- Fixed a key error bug in salt-cloud
- Updated man pages to better match documentation
- Fixed bug concerning high CPU usage with salt-ssh
- Fixed bugs with remounting cvfs and fuse filesystems
- Fixed bug with alowing requisite tracking of entire sls files
- Fixed bug with aptpkg.mod_repo returning OK even if apt-add-repository fails
- Increased frequency of ssh terminal output checking
- Fixed malformed locale string in localmod module
- Fixed checking of available version of package when accept_keywords were changed
- Fixed bug to make git.latest work with empty repositories
- Added **kwargs to service.mod_watch which removes warnings about *enable* and *__reqs__* not being supported by the function
- Improved state comments to not grow so quickly on failed requisites
- Added force argument to service to trigger force_reload
- Fixed bug to andle pkgrepo keyids that have been converted to int
- Fixed module.portage_config bug with appending accept_keywords
- Fixed bug to correctly report disk usage on windows minion
- Added the ability to specify key prefix for S3 ext_pillar
- Fixed issues with batch mode operating on the incorrect number of minions
- Fixed a bug with the proxmox cloud provider stacktracing on disk definition

- Fixed a bug with the changes dictionary in the file state
- Fixed the TCP keep alive settings to work better with SREQ caching
- Fixed many bugs within the iptables state and module
- Fixed bug with states by adding *fun*, *state*, and *unless* to the state runtime internal keywords listing
- Added ability to eAuth against Active Directory
- Fixed some salt-ssh issues when running on Fedora 21
- Fixed grains.get_or_set_hash to work with multiple entries under same key
- Added better explanations and more examples of how the Reactor calls functions to docs
- Fixed bug to not pass *ex_config_drive* to libcloud unless it's explicitly enabled
- Fixed bug with pip.install on windows
- Fixed bug where puppet.run always returns a 0 retcode
- Fixed race condition bug with minion scheduling via pillar
- Made efficiency improvements and bug fixes to the windows installer
- Updated environment variables to fix bug with pygit2 when running salt as non-root user
- Fixed cas behavior on data module -- data.cas was not saving changes
- Fixed GPG rendering error
- Fixed strace error in virt.query
- Fixed stacktrace when running chef-solo command
- Fixed possible bug wherein uncaught exceptions seem to make zmq3 tip over when threading is involved
- Fixed argument passing to the reactor
- Fixed glibc caching to prevent bug where salt-minion getaddrinfo in dns_check() never got updated nameservers

Known issues:

- In multimaster mode, a minion may become temporarily unresponsive if modules or pillars are refreshed at the same time that one or more masters are down. This can be worked around by setting `auth_timeout' and `auth_tries' down to shorter periods.

### 18.2.40 Salt 2014.7.6 Release Notes

**release** 2015-05-18

Version 2014.7.6 is a bugfix release for *2014.7.0*.

This release is a security release. A minor issue was found, as cited below:

- CVE-2015-4017 -- Certificates are not verified when connecting to server in the Aliyun and Proxmox modules

Only users of the Aliyun or Proxmox cloud modules are at risk. The vulnerability does not exist in the latest 2015.5.0 release of Salt.

Changes:

- salt.runners.cloud.action() has changed the *fun* keyword argument to *func*. Please update any calls to this function in the cloud runner.

Extended Changelog Courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

- **PR** #23810: (*rallytime*) Backport #23757 to 2014.7 @ *2015-05-18T15:30:21Z*
  - **PR** #23757: (*clan*) use abspath, do not eliminating symlinks | refs: #23810
  - aee00c8 Merge pull request #23810 from rallytime/bp-23757
  - fb32c32 use abspath, do not eliminating symlinks
- **PR** #23809: (*rallytime*) Fix virtualport section of virt.get_nics loop @ *2015-05-18T15:30:09Z*
  - **ISSUE** #20198: (*jcftang*) virt.get_graphics, virt.get_nics are broken, in turn breaking other things | refs: #23809
  - **PR** #21487: (*rallytime*) Backport #21469 to 2014.7 | refs: #23809
  - **PR** #21469: (*vdesjardins*) fixes #20198: virt.get_graphics and virt.get_nics calls in module virt | refs: #21487
  - 6b3352b Merge pull request #23809 from rallytime/virt_get_nics_fix
  - 0616fb7 Fix virtualport section of virt.get_nics loop
- **PR** #23823: (*gtmanfred*) add link local for ipv6 @ *2015-05-17T12:48:25Z*
  - 188f03f Merge pull request #23823 from gtmanfred/2014.7
  - 5ef006d add link local for ipv6
- **PR** #23802: (*gtmanfred*) if it is ipv6 ip_to_int will fail @ *2015-05-16T04:06:59Z*
  - **PR** #23573: (*techhat*) Scan all available networks for public and private IPs | refs: #23802
  - f3ca682 Merge pull request #23802 from gtmanfred/2014.7
  - 2da98b5 if it is ipv6 ip_to_int will fail
- **PR** #23488: (*cellscape*) LXC cloud fixes @ *2015-05-15T18:09:35Z*
  - **ISSUE** #16424: (*stanvit*) salt-run cloud.create fails with saltify
  - d9af0c3 Merge pull request #23488 from cellscape/lxc-cloud-fixes
  - 64250a6 Remove profile from opts after creating LXC container
  - c4047d2 Set destroy=True in opts when destroying cloud instance
  - 9e1311a Store instance names in opts when performing cloud action
  - 934bc57 Correctly pass custom env to lxc-attach
  - 7fb85f7 Preserve test=True option in cloud states
  - 9771b5a Fix detection of absent LXC container in cloud state
  - fb24f0c Report failure when failed to create/clone LXC container
  - 2d9aa2b Avoid shadowing variables in lxc module
  - 792e102 Allow overriding profile options in lxc.cloud_init_interface
  - 42bd64b Return changes on successful lxc.create from salt-cloud
  - 4409eab Return correct result when creating cloud LXC container
  - 377015c Issue #16424: List all providers when creating salt-cloud instance without profile
- **PR** #23748: (*basepi*) [2014.7] Log salt-ssh roster render errors more assertively and verbosely @ *2015-05-14T22:38:10Z*
  - **ISSUE** #22332: (*rallytime*) [salt-ssh] Add a check for host in /etc/salt/roster | refs: #23748

  - 808bbe1 Merge pull request #23748 from basepi/salt-ssh.roster.host.check
  - bc53e04 Log entire exception for render errors in roster
  - 753de6a Log render errors in roster to error level
  - e01a7a9 Always let the real YAML error through

- **PR** #23731: (*twangboy*) Fixes #22959: Trying to add a directory to an unmapped drive in windows @ *2015-05-14T21:59:14Z*
  - **ISSUE** #22959: (*highlyunavailable*) Windows Salt hangs if file.directory is trying to write to a drive that doesn't exist
  - 72cf360 Merge pull request #23731 from twangboy/fix_22959
  - 88e5495 Fixes #22959: Trying to add a directory to an unmapped drive in windows
- **PR** #23730: (*rallytime*) Backport #23729 to 2014.7 @ *2015-05-14T21:58:34Z*
  - **PR** #23729: (*rallytime*) Partially merge #23437 (grains fix) | refs: #23730
  - **PR** #23437: (*cedwards*) Grains item patch | refs: #23729
  - 2610195 Merge pull request #23730 from rallytime/bp-23729
  - 1877cae adding support for nested grains to grains.item
- **PR** #23688: (*twangboy*) Added inet_pton to utils/validate/net.py for ip.set_static_ip in windows @ *2015-05-14T16:15:56Z*
  - 3e9df88 Merge pull request #23688 from twangboy/fix_23415
  - 6a91169 Fixed unused-import pylint error
  - 5e25b3f fixed pylint errors
  - 1a96766 Added inet_pton to utils/validate/net.py for ip.set_static_ip in windows
- **PR** #23680: (*cachedout*) Rename kwarg in cloud runner @ *2015-05-13T19:44:02Z*
  - **ISSUE** #23403: (*iamfil*) salt.runners.cloud.action fun parameter is replaced | refs: #23680
  - 1b86460 Merge pull request #23680 from cachedout/issue_23403
  - d5986c2 Rename kwarg in cloud runner
- **PR** #23674: (*cachedout*) Handle lists correctly in grains.list_prsesent @ *2015-05-13T18:34:58Z*
  - **ISSUE** #23548: (*kkaig*) grains.list_present produces incorrect (?) output | refs: #23674
  - cd64af0 Merge pull request #23674 from cachedout/issue_23548
  - da8a2f5 Handle lists correctly in grains.list_prsesent
- **PR** #23672: (*twangboy*) Fix user present @ *2015-05-13T18:30:09Z*
  - d322a19 Merge pull request #23672 from twangboy/fix_user_present
  - 731e7af Merge branch `2014.7' of https://github.com/saltstack/salt into fix_user_present
  - d6f70a4 Fixed user.present to create password in windows
- **PR** #23670: (*rallytime*) Backport #23607 to 2014.7 @ *2015-05-13T18:27:17Z*
  - **ISSUE** #23604: (*Azidburn*) service.dead on systemd Minion create an Error Message | refs: #23607
  - **PR** #23607: (*Azidburn*) Fix for #23604. No error reporting. Exitcode !=0 are ok | refs: #23670
  - 43f7025 Merge pull request #23670 from rallytime/bp-23607

  - ed30dc4 Fix for #23604. No error reporting. Exitcode !=0 are ok

- **PR** #23661: (*rallytime*) Merge #23640 with whitespace fix @ *2015-05-13T15:47:30Z*
  - **ISSUE** #22141: (*Deshke*) grains.get_or_set_hash render error if hash begins with ``%'' | refs: #23640
  - **PR** #23640: (*cachedout*) Add warning to get_or_set_hash about reserved chars | refs: #23661
  - 0f006ac Merge pull request #23661 from rallytime/merge-23640
  - 4427f42 Whitespace fix
  - dd91154 Add warning to get_or_set_hash about reserved chars
- **PR** #23639: (*cachedout*) Handle exceptions raised by __virtual__ @ *2015-05-13T15:11:12Z*
  - **ISSUE** #23452: (*michaelforge*) minion crashed with empty grain | refs: #23639
  - 84e2ef8 Merge pull request #23639 from cachedout/issue_23452
  - d418b49 Syntax error!
  - 45b4015 Handle exceptions raised by __virtual__
- **PR** #23637: (*cachedout*) Convert str master to list @ *2015-05-13T15:08:19Z*
  - **ISSUE** #23611: (*hubez*) master_type set to `failover' but `master' is not of type list but of type <type `str'> | refs: #23637
  - bd9b94b Merge pull request #23637 from cachedout/issue_23611
  - 56cb1f5 Fix typo
  - f6fcf19 Convert str master to list
- **PR** #23595: (*rallytime*) Backport #23549 to 2014.7 @ *2015-05-12T21:19:40Z*
  - **PR** #23549: (*vr-jack*) Update __init__.py | refs: #23595
  - f20c0e4 Merge pull request #23595 from rallytime/bp-23549
  - 6efcac0 Update __init__.py
- **PR** #23594: (*rallytime*) Backport #23496 to 2014.7 @ *2015-05-12T21:19:34Z*
  - **ISSUE** #23110: (*martinhoefling*) Copying files from gitfs in file.recurse state fails
  - **PR** #23496: (*martinhoefling*) Fix for issue #23110 | refs: #23594
  - 1acaf86 Merge pull request #23594 from rallytime/bp-23496
  - d5ae1d2 Fix for issue #23110 This resolves issues when the freshly created directory is removed by fileserver.update.
- **PR** #23593: (*rallytime*) Backport #23442 to 2014.7 @ *2015-05-12T21:19:26Z*
  - **PR** #23442: (*clan*) add directory itself to keep list | refs: #23593
  - 2c221c7 Merge pull request #23593 from rallytime/bp-23442
  - 39869a1 check w/ low['name'] only
  - 304cc49 another fix for file defined w/ id, but require name
  - 8814d41 add directory itself to keep list
- **PR** #23606: (*twangboy*) Fixed checkbox for starting service and actually starting it @ *2015-05-12T21:18:50Z*
  - fadd1ef Merge pull request #23606 from twangboy/fix_installer
  - 038331e Fixed checkbox for starting service and actually starting it

- **PR** #23592: (*rallytime*) Backport #23389 to 2014.7 @ *2015-05-12T16:44:42Z*
  - **ISSUE** #22908: (*karanjad*) Add failhard option to salt orchestration | refs: #23389
  - **PR** #23389: (*cachedout*) Correct fail_hard typo | refs: #23592
  - 10b3f0f Merge pull request #23592 from rallytime/bp-23389
  - 734cc43 Correct fail_hard typo
- **PR** #23573: (*techhat*) Scan all available networks for public and private IPs | refs: #23802 @ *2015-05-12T15:22:22Z*
  - cd34b9b Merge pull request #23573 from techhat/novaquery
  - f92db5e Linting
  - 26e00d3 Scan all available networks for public and private IPs
- **PR** #23558: (*jfindlay*) reorder emerge command line @ *2015-05-12T15:17:46Z*
  - **ISSUE** #23479: (*danielmorlock*) Typo in pkg.removed for Gentoo? | refs: #23558
  - 2a72cd7 Merge pull request #23558 from jfindlay/fix_ebuild
  - 45404fb reorder emerge command line
- **PR** #23530: (*dr4Ke*) salt-ssh state: fix including all salt:// references @ *2015-05-12T15:13:43Z*
  - **ISSUE** #23355: (*dr4Ke*) salt-ssh: `sources: salt://' files from `pkg' state are not included in salt_state.tgz | refs: #23530
  - a664a3c Merge pull request #23530 from dr4Ke/fix_salt-ssh_to_include_pkg_sources
  - 5df6a80 fix pylint warning
  - d0549e5 salt-ssh state: fix including all salt:// references
- **PR** #23433: (*twangboy*) Obtain all software from the registry @ *2015-05-11T22:47:52Z*
  - **ISSUE** #23004: (*b18*) 2014.7.5 - Windows - pkg.list_pkgs - ``nxlog'' never shows up in output. | refs: #23433
  - 55c3869 Merge pull request #23433 from twangboy/list_pkgs_fix
  - 8ab5b1b Fix pylint error
  - 2d11d65 Obtain all software from the registry
- **PR** #23554: (*jleroy*) Debian: Hostname always updated @ *2015-05-11T21:57:00Z*
  - 755bed0 Merge pull request #23554 from jleroy/debian-hostname-fix
  - 5ff749e Debian: Hostname always updated
- **PR** #23551: (*dr4Ke*) grains.append unit tests, related to #23474 @ *2015-05-11T21:54:25Z*
  - 6ec87ce Merge pull request #23551 from dr4Ke/grains.append_unit_tests
  - ebff9df fix pylint errors
  - c495404 unit tests for grains.append module function
  - 0c9a323 use MagickMock
  - c838a22 unit tests for grains.append module function
- **PR** #23474: (*dr4Ke*) Fix grains.append in nested dictionary grains #23411 @ *2015-05-11T18:00:21Z*
  - **ISSUE** #23411: (*dr4Ke*) grains.append should work at any level of a grain | refs: #23440

  - **PR** #23440: (*dr4Ke*) fix grains.append in nested dictionary grains #23411 | refs: #23474
  - e96c5c5 Merge pull request #23474 from dr4Ke/fix_grains.append_nested
  - a01a5bb grains.get, parameter delimititer, versionadded: 2014.7.6
  - b39f504 remove debugging output
  - b6e15e2 fix grains.append in nested dictionary grains #23411
- **PR** #23537: (*t0rrant*) Update changelog @ *2015-05-11T17:02:16Z*
  - ab7e1ae Merge pull request #23537 from t0rrant/patch-1
  - 8e03cc9 Update changelog
- **PR** #23538: (*cro*) Update date in LICENSE file @ *2015-05-11T15:19:25Z*
  - b79fed3 Merge pull request #23538 from cro/licupdate
  - 345efe2 Update date in LICENSE file
- **PR** #23505: (*aneeshusa*) Remove unused ssh config validator. Fixes #23159. @ *2015-05-09T13:24:15Z*
  - **ISSUE** #23159: (*aneeshusa*) Unused validator
  - a123a36 Merge pull request #23505 from aneeshusa/remove-unused-ssh-config-validator
  - 90af167 Remove unused ssh config validator. Fixes #23159.
- **PR** #23467: (*slinu3d*) Added AWS v4 signature support @ *2015-05-08T14:36:19Z*
  - **ISSUE** #20518: (*ekle*) module s3.get does not support eu-central-1 | refs: #23467
  - ca2c21a Merge pull request #23467 from slinu3d/2014.7
  - 0b4081d Fixed pylint error at line 363
  - 5be5eb5 Fixed pylink errors
  - e64f374 Fixed lint errors
  - b9d1ac4 Added AWS v4 signature support
- **PR** #23444: (*techhat*) Add create_attach_volume to nova driver @ *2015-05-07T19:51:32Z*
  - e6f9eec Merge pull request #23444 from techhat/novacreateattach
  - ebdb7ea Add create_attach_volume to nova driver
- **PR** #23460: (*s0undt3ch*) [2014.7] Update to latest stable bootstrap script v2015.05.07 @ *2015-05-07T19:10:54Z*
  - **ISSUE** #563: (*chutz*) pidfile support for minion and master daemons | refs: #23460
  - e331463 Merge pull request #23460 from s0undt3ch/hotfix/bootstrap-script-2014.7
  - edcd0c4 Update to latest stable bootstrap script v2015.05.07
- **PR** #23439: (*techhat*) Add wait_for_passwd_maxtries variable @ *2015-05-07T07:28:56Z*
  - 7a8ce1a Merge pull request #23439 from techhat/maxtries
  - 0ad3ff2 Add wait_for_passwd_maxtries variable
- **PR** #23422: (*cro*) $HOME should not be used, some shells don't set it. @ *2015-05-06T21:02:36Z*
  - 644eb75 Merge pull request #23422 from cro/gce_sh_home
  - 4ef9e6b Don't use $HOME to find user's directory, some shells don't set it
- **PR** #23425: (*basepi*) [2014.7] Fix typo in FunctionWrapper @ *2015-05-06T20:38:03Z*

  - ef17ab4 Merge pull request #23425 from basepi/functionwrapper_typo
  - c390737 Fix typo in FunctionWrapper
- **PR** #23385: (*rallytime*) Backport #23346 to 2014.7 @ *2015-05-06T20:12:29Z*
  - **PR** #23346: (*ericfode*) Allow file_map in salt-cloud to handle folders. | refs: #23385
  - 1b13ec0 Merge pull request #23385 from rallytime/bp-23346
  - 9efc13c more linting fixes
  - cf131c9 cleaned up some pylint errors
  - f981699 added logic to sftp_file and file_map to allow folder uploads using file_map
- **PR** #23414: (*jfindlay*) 2015.2 -> 2015.5 @ *2015-05-06T20:04:02Z*
  - f8c7a62 Merge pull request #23414 from jfindlay/update_branch
  - 8074d16 2015.2 -> 2015.5
- **PR** #23404: (*hvnsweeting*) saltapi cherrypy: initialize var when POST body is empty @ *2015-05-06T17:35:56Z*
  - 54b3bd4 Merge pull request #23404 from hvnsweeting/cherrypy-post-emptybody-fix
  - f85f8f9 initialize var when POST body is empty
- **PR** #23409: (*terminalmage*) Update Lithium docstrings in 2014.7 branch @ *2015-05-06T16:20:46Z*
  - 160f703 Merge pull request #23409 from terminalmage/update-lithium-docstrings-2014.7
  - bc97d01 Fix sphinx typo
  - 20006b0 Update Lithium docstrings in 2014.7 branch
- **PR** #23397: (*jfindlay*) add more flexible whitespace to locale_gen search @ *2015-05-06T03:44:11Z*
  - **ISSUE** #17245: (*tomashavlas*) localemod does not generate locale for Arch | refs: #23307 #23397
  - aa5fb0a Merge pull request #23397 from jfindlay/fix_locale_gen
  - 0941fef add more flexible whitespace to locale_gen search
- **PR** #23368: (*kaithar*) Backport #23367 to 2014.7 @ *2015-05-05T21:42:26Z*
  - **PR** #23367: (*kaithar*) Put the sed insert statement back in to the output. | refs: #23368
  - **PR** #18368: (*basepi*) Merge forward from 2014.7 to develop | refs: #23367 #23368
  - 0c76dd4 Merge pull request #23368 from kaithar/bp-23367
  - 577f419 Pylint fix
  - 8d9acd1 Put the sed insert statement back in to the output.
- **PR** #23350: (*lorengordon*) Append/prepend: search for full line @ *2015-05-05T21:42:11Z*
  - **ISSUE** #23294: (*variia*) file.replace fails to append if repl string partially available | refs: #23350
  - 3493cc1 Merge pull request #23350 from lorengordon/file.replace_assume_line
  - b60e224 Append/prepend: search for full line
- **PR** #23341: (*cachedout*) Fix syndic pid and logfile path @ *2015-05-05T21:29:10Z*
  - **ISSUE** #23026: (*adelcast*) Incorrect salt-syndic logfile and pidfile locations | refs: #23341
  - 7be5c48 Merge pull request #23341 from cachedout/issue_23026
  - e98e65e Fix tests

  - 6011b43 Fix syndic pid and logfile path

- **PR** #23272: (*basepi*) [2014.7] Allow salt-ssh minion config overrides via master config and roster | refs: #23347 @ **
  - **ISSUE** #19114: (*pykler*) salt-ssh and gpg pillar renderer | refs: #23188 #23272 #23347
  - **PR** #23188: (*basepi*) [2014.7] Work around bug in salt-ssh in config.get for gpg renderer | refs: #23272
  - ea61abf Merge pull request #23272 from basepi/salt-ssh.minion.config.19114
  - c223309 Add versionadded
  - be7407f Lint
  - c2c3375 Missing comma
  - 8e3e8e0 Pass the minion_opts through the FunctionWrapper
  - cb69cd0 Match the master config template in the master config reference
  - 87fc316 Add Salt-SSH section to master config template
  - 91dd9dc Add ssh_minion_opts to master config ref
  - c273ea1 Add minion config to salt-ssh doc
  - a0b6b76 Add minion_opts to roster docs
  - 5212c35 Accept minion_opts from the target information
  - e2099b6 Process *ssh_minion_opts* from master config
  - 3b64214 Revert ``Work around bug in salt-ssh in config.get for gpg renderer''
  - 494953a Remove the strip (embracing multi-line YAML dump)
  - fe87f0f Dump multi-line yaml into the SHIM
  - b751a72 Inject local minion config into shim if available
- **PR** #23347: (*basepi*) [2014.7] Salt-SSH Backport FunctionWrapper.__contains__ @ *2015-05-05T14:13:21Z*
  - **ISSUE** #19114: (*pykler*) salt-ssh and gpg pillar renderer | refs: #23188 #23272 #23347
  - **PR** #23272: (*basepi*) [2014.7] Allow salt-ssh minion config overrides via master config and roster | refs: #23347
  - **PR** #23188: (*basepi*) [2014.7] Work around bug in salt-ssh in config.get for gpg renderer | refs: #23272
  - 4f760dd Merge pull request #23347 from basepi/salt-ssh.functionwrapper.contains.19114
  - 30595e3 Backport FunctionWrapper.__contains__
- **PR** #23344: (*cachedout*) Explicitly set file_client on master @ *2015-05-04T23:21:48Z*
  - **ISSUE** #22742: (*hvnsweeting*) salt-master says: ``This master address: `salt' was previously resolvable but now fails to resolve!'' | refs: #23344
  - 02658b1 Merge pull request #23344 from cachedout/issue_22742
  - 5adc96c Explicitly set file_client on master
- **PR** #23318: (*cellscape*) Honor seed argument in LXC container initializaton @ *2015-05-04T20:58:12Z*
  - **PR** #23311: (*cellscape*) Fix new container initialization in LXC runner | refs: #23318
  - ba7605d Merge pull request #23318 from cellscape/honor-seed-argument
  - 228b1be Honor seed argument in LXC container initializaton

- **PR** #23307: (*jfindlay*) check for /etc/locale.gen @ *2015-05-04T20:56:32Z*
  - **ISSUE** #17245: (*tomashavlas*) localemod does not generate locale for Arch | refs: #23307 #23397
  - 4ac4509 Merge pull request #23307 from jfindlay/fix_locale_gen
  - 101199a check for /etc/locale.gen
- **PR** #23324: (*s0undt3ch*) [2014.7] Update to the latest stable release of the bootstrap script v2015.05.04 @ *2015-05-04T16:28:30Z*
  - **ISSUE** #580: (*thatch45*) recursive watch not being caught | refs: #23324
  - **ISSUE** #552: (*jhutchins*) Support require and watch under the same state dec | refs: #23324
  - **PR** #589: (*epoelke*) add --quiet and --outfile options to saltkey | refs: #23324
  - **PR** #567: (*bastichelaar*) Added upstart module | refs: #23324
  - **PR** #560: (*UtahDave*) The runas feature that was added in 93423aa2e5e4b7de6452090b0039560d2b13… | refs: #23324
  - **PR** #504: (*SEJeff*) File state goodies | refs: #23324
  - f790f42 Merge pull request #23324 from s0undt3ch/hotfix/bootstrap-script-2014.7
  - 6643e47 Update to the latest stable release of the bootstrap script v2015.05.04
- **PR** #23329: (*cro*) Require requests to verify cert when talking to aliyun and proxmox cloud providers @ *2015-05-04T16:18:17Z*
  - 5487367 Merge pull request #23329 from cro/cloud_verify_cert
  - 860d4b7 Turn on ssl verify for requests.
- **PR** #23311: (*cellscape*) Fix new container initialization in LXC runner | refs: #23318 @ *2015-05-04T09:55:29Z*
  - ea20176 Merge pull request #23311 from cellscape/fix-salt-cloud-lxc-init
  - 76fbb34 Fix new container initialization in LXC runner
- **PR** #23298: (*chris-prince*) Fixed issue #18880 in 2014.7 branch @ *2015-05-03T15:49:41Z*
  - **ISSUE** #18880: (*johtso*) npm installed breaks when a module is missing
  - c399b8f Merge pull request #23298 from chris-prince/2014.7
  - 0fa25db Fixed issue #18880 in 2014.7 branch
- **PR** #23292: (*rallytime*) Merge #23151 with pylint fixes @ *2015-05-02T03:54:12Z*
  - **ISSUE** #23148: (*cr1st1p*) virt - error handling bogus if machine image location is wrong
  - **PR** #23151: (*cr1st1p*) Fixes #23148 | refs: #23292
  - 16ecefd Merge pull request #23292 from rallytime/merge-23151
  - 8ff852a Merge #23151 with pylint fixes
  - 8ffa12e Fixes #23148
- **PR** #23274: (*basepi*) [2014.7] Reduce salt-ssh debug log verbosity @ *2015-05-01T20:19:23Z*
  - ce24315 Merge pull request #23274 from basepi/salt-ssh.debug.verbosity
  - ecee6c6 Log stdout and stderr to trace
  - 08f54d7 Log stdout and stderr to trace as well
  - 9b9c30f Reduce salt-ssh debug log verbosity

- **PR** #23261: (*rallytime*) Fix tornado websocket event handler registration @ *2015-05-01T18:20:31Z*
  - **ISSUE** #22605: (*mavenAtHouzz*) Tornado websockets event Handlers registration are incorrect | refs: #23261
  - 7b55e43 Merge pull request #23261 from rallytime/fix-22605
  - 4950fbf Fix tornado websocket event handler registration
- **PR** #23258: (*teizz*) TCP keepalives on the ret side, Revisited. @ *2015-05-01T16:13:49Z*
  - 83ef7cb Merge pull request #23258 from teizz/ï»¿ret_keepalive_2014_7_5
  - 0b9fb6f The fixes by ï»¿cachedout which were backported into 2015_2 were missing a single parameter thus not setting up the TCP keepalive for the ZeroMQ Channel by default.
- **PR** #23241: (*techhat*) Move iptables log options after the jump @ *2015-05-01T01:31:59Z*
  - **ISSUE** #23224: (*twellspring*) iptables.append --log parameters must be after --jump LOG | refs: #23241
  - 8de3c83 Merge pull request #23241 from techhat/issue23224
  - 87f7948 Move iptables log options after the jump
- **PR** #23228: (*rallytime*) Backport #23171 to 2014.7 @ *2015-04-30T21:09:45Z*
  - **PR** #23171: (*skizunov*) Bugfix: `clean_proc_dir' is broken | refs: #23228
  - f20210e Merge pull request #23228 from rallytime/bp-23171
  - e670e99 Bugfix: `clean_proc_dir' is broken
- **PR** #23227: (*rallytime*) Backport #22808 to 2014.7 @ *2015-04-30T21:09:14Z*
  - **ISSUE** #22703: (*Xiol*) salt-ssh does not work with list matcher | refs: #22808
  - **PR** #22808: (*basepi*) [2015.2] Add list targeting to salt-ssh flat roster | refs: #23227
  - 721cc28 Merge pull request #23227 from rallytime/bp-22808
  - d208a00 Dict, not list
  - a3f529e It's already been converted to a list
  - dd57f2d Add list targeting to salt-ssh flat roster
- **PR** #22823: (*hvnsweeting*) 22822 file directory clean @ *2015-04-30T15:25:51Z*
  - 82c22af Merge pull request #22823 from hvnsweeting/22822-file-directory-clean
  - c749c27 fix lint - remove unnecessary parenthesis
  - cb3dfee refactor
  - 8924b5a refactor: use relpath instead of do it manually
  - d3060a5 refactor
  - 5759a0e bugfix: fix file.directory clean=True when it require parent dir
- **PR** #22977: (*bersace*) Fix fileserver backends __opts__ overwritten by _pillar @ *2015-04-30T15:24:56Z*
  - **ISSUE** #22941: (*bersace*) *_pillar* func breaks fileserver globals | refs: #22977 #22942
  - **PR** #22942: (*bersace*) Fix fileserver backends global overwritten by _pillar | refs: #22977
  - f6c0728 Merge pull request #22977 from bersace/fix-fileserver-backends-pillar-side-effect
  - 5f451f6 Fix fileserver backends __opts__ overwritten by _pillar
- **PR** #23180: (*jfindlay*) fix typos from 36841bdd in masterapi.py @ *2015-04-30T15:22:41Z*

  - **ISSUE** #23166: (*claudiupopescu*) ``Error in function _minion_event'' resulting in modules not loaded | refs: #23180
  - 34206f7 Merge pull request #23180 from jfindlay/remote_event
  - 72066e1 fix typos from 36841bdd in masterapi.py
- **PR** #23176: (*jfindlay*) copy standard cmd.run* kwargs into cmd.run_chroot @ *2015-04-30T15:22:12Z*
  - **ISSUE** #23153: (*cr1st1p*) cmdmod : run_chroot - broken in 2014.7.5 - missing kwargs | refs: #23176
  - b6b8216 Merge pull request #23176 from jfindlay/run_chroot
  - 7dc3417 copy standard cmd.run* kwargs into cmd.run_chroot
- **PR** #23193: (*joejulian*) supervisord.mod_watch should accept sfun @ *2015-04-30T04:34:21Z*
  - **ISSUE** #23192: (*joejulian*) supervisord mod_watch does not accept sfun | refs: #23193
  - effacbe Merge pull request #23193 from joejulian/2014.7_supervisord_accept_sfun
  - efb59f9 supervisord.mod_watch should accept sfun
- **PR** #23188: (*basepi*) [2014.7] Work around bug in salt-ssh in config.get for gpg renderer | refs: #23272 @ *2015-04-30T04:34:10Z*
  - **ISSUE** #19114: (*pykler*) salt-ssh and gpg pillar renderer | refs: #23188 #23272 #23347
  - 72fe88e Merge pull request #23188 from basepi/salt-ssh.function.wrapper.gpg.19114
  - d73979e Work around bug in salt-ssh in config.get for gpg renderer
- **PR** #23154: (*cachedout*) Re-establish channel on interruption in fileclient @ *2015-04-29T16:18:59Z*
  - **ISSUE** #21480: (*msciciel*) TypeError: string indices must be integers, not str | refs: #23154
  - 168508e Merge pull request #23154 from cachedout/refresh_channel
  - 9f8dd80 Re-establish channel on interruption in fileclient
- **PR** #23146: (*rallytime*) Backport #20779 to 2014.7 @ *2015-04-28T20:45:06Z*
  - **ISSUE** #20647: (*ryan-lane*) file.serialize fails to serialize due to ordered dicts | refs: #20779
  - **PR** #20779: (*cachedout*) Use declared yaml options | refs: #23146
  - 3b53e04 Merge pull request #23146 from rallytime/bp-20779
  - ffd1849 compare OrderedDicts in serializer unit test
  - a221706 Just change serialize
  - a111798 Use declared yaml options
- **PR** #23145: (*rallytime*) Backport #23089 to 2014.7 @ *2015-04-28T20:44:56Z*
  - **PR** #23089: (*cachedout*) Stringify version number before lstrip | refs: #23145
  - 8bb4664 Merge pull request #23145 from rallytime/bp-23089
  - 93c41af Stringify version number before lstrip
- **PR** #23144: (*rallytime*) Backport #23124 to 2014.7 @ *2015-04-28T20:44:46Z*
  - **ISSUE** #16188: (*drawks*) salt.modules.parted has various functions with bogus input validation. | refs: #23124
  - **PR** #23124: (*ether42*) fix parsing the output of parted in parted.list_() | refs: #23144
  - c85d36f Merge pull request #23144 from rallytime/bp-23124-2014-7

  - 6b64da7 fix parsing the output of parted

- **PR** #23120: (*terminalmage*) Don't run os.path.relpath() if repo doesn't have a ``root'' param set @ *2015-04-28T15:46:54Z*
  - a27b158 Merge pull request #23120 from terminalmage/fix-gitfs-relpath
  - 1860fff Don't run os.path.relpath() if repo doesn't have a ``root'' param set
- **PR** #23132: (*clinta*) Backport b27c176 @ *2015-04-28T15:00:30Z*
  - fcba607 Merge pull request #23132 from clinta/patch-2
  - a824d72 Backport b27c176
- **PR** #23114: (*rallytime*) Adjust ZeroMQ 4 docs to reflect changes to Ubuntu 12 packages @ *2015-04-28T03:59:24Z*
  - **ISSUE** #18476: (*Auha*) Upgrading salt on my master caused dependency issues | refs: #23114 #18610
  - **PR** #18610: (*rallytime*) Make ZMQ 4 installation docs for ubuntu more clear | refs: #23114
  - b0f4b28 Merge pull request #23114 from rallytime/remove_ubuntu_zmq4_docs
  - f6cc7c8 Adjust ZeroMQ 4 docs to reflect changes to Ubuntu 12 packages
- **PR** #23108: (*rallytime*) Backport #23097 to 2014.7 @ *2015-04-28T03:58:05Z*
  - **ISSUE** #23085: (*xenophonf*) Use ``s3fs'' (not ``s3'') in fileserver_roots | refs: #23097
  - **PR** #23097: (*rallytime*) Change s3 to s3fs in fileserver_roots docs example | refs: #23108
  - 399857f Merge pull request #23108 from rallytime/bp-23097
  - fa88984 Change s3 to s3fs in fileserver_roots docs example
- **PR** #23112: (*basepi*) [2014.7] Backport #22199 to fix mysql returner save_load errors @ *2015-04-28T03:55:44Z*
  - **ISSUE** #22171: (*basepi*) We should only call returner.save_load once per jid | refs: #22199
  - **PR** #22199: (*basepi*) [2015.2] Put a bandaid on the save_load duplicate issue (mysql returner) | refs: #23112
  - 5541537 Merge pull request #23112 from basepi/mysql_returner_save_load
  - 0127012 Put a bandaid on the save_load duplicate issue
- **PR** #23113: (*rallytime*) Revert ``Backport #22895 to 2014.7'' @ *2015-04-28T03:27:29Z*
  - **PR** #22925: (*rallytime*) Backport #22895 to 2014.7 | refs: #23113
  - **PR** #22895: (*aletourneau*) pam_tally counter was not reset to 0 after a succesfull login | refs: #22925
  - dfe2066 Merge pull request #23113 from saltstack/revert-22925-bp-22895
  - b957ea8 Revert ``Backport #22895 to 2014.7''
- **PR** #23094: (*terminalmage*) pygit2: disable cleaning of stale refs for authenticated remotes @ *2015-04-27T20:51:28Z*
  - **ISSUE** #23013: (*markusr815*) gitfs regression with authenticated repos | refs: #23094
  - 21515f3 Merge pull request #23094 from terminalmage/issue23013
  - aaf7b04 pygit2: disable cleaning of stale refs for authenticated remotes
- **PR** #23048: (*jfindlay*) py-2.6 compat for utils/boto.py ElementTree exception @ *2015-04-25T16:56:45Z*
  - d45aa21 Merge pull request #23048 from jfindlay/ET_error
  - 64c42cc py-2.6 compat for utils/boto.py ElementTree exception
- **PR** #23025: (*jfindlay*) catch exceptions on bad system locales/encodings @ *2015-04-25T16:56:30Z*

  - **ISSUE** #22981: (*syphernl*) Locale state throwing traceback when generating not (yet) existing locale | refs: #23025
  - d25a5c1 Merge pull request #23025 from jfindlay/fix_sys_locale
  - 9c4d62b catch exceptions on bad system locales/encodings
- **PR** #22932: (*hvnsweeting*) bugfix: also manipulate dir_mode when source not defined @ *2015-04-25T16:54:58Z*
  - 5e44b59 Merge pull request #22932 from hvnsweeting/file-append-bugfix
  - 3f368de do not use assert in execution module
  - 9d4fd4a bugfix: also manipulate dir_mode when source not defined
- **PR** #23055: (*jfindlay*) prevent ps module errors on accessing dead procs @ *2015-04-24T22:39:49Z*
  - **ISSUE** #23021: (*ether42*) ps.pgrep raises NoSuchProcess | refs: #23055
  - c2416a4 Merge pull request #23055 from jfindlay/fix_ps
  - c2dc7ad prevent ps module errors on accessing dead procs
- **PR** #23031: (*jfindlay*) convert exception e.message to just e @ *2015-04-24T18:38:13Z*
  - bfd9158 Merge pull request #23031 from jfindlay/exception
  - 856bad1 convert exception e.message to just e
- **PR** #23015: (*hvnsweeting*) if status of service is stop, there is not an error with it @ *2015-04-24T14:35:10Z*
  - 7747f33 Merge pull request #23015 from hvnsweeting/set-non-error-lvl-for-service-status-log
  - 92ea163 if status of service is stop, there is not an error with it
- **PR** #23000: (*jfindlay*) set systemd service killMode to process for minion @ *2015-04-24T03:42:39Z*
  - **ISSUE** #22993: (*jetpak*) salt-minion restart causes all spawned daemons to die on centos7 (systemd) | refs: #23000
  - 2e09789 Merge pull request #23000 from jfindlay/systemd_kill
  - 3d575e2 set systemd service killMode to process for minion
- **PR** #22999: (*jtand*) Added retry_dns to minion doc. @ *2015-04-24T03:30:24Z*
  - **ISSUE** #22707: (*arthurlogilab*) retry_dns of master configuration is missing from the documentation | refs: #22999
  - b5c059a Merge pull request #22999 from jtand/fix_22707
  - 8486e17 Added retry_dns to minion doc.
- **PR** #22990: (*techhat*) Use the proper cloud conf variable @ *2015-04-23T17:48:07Z*
  - 27dc877 Merge pull request #22990 from techhat/2014.7
  - d33bcbc Use the proper cloud conf variable
- **PR** #22976: (*multani*) Improve state_output documentation @ *2015-04-23T12:24:22Z*
  - 13dff65 Merge pull request #22976 from multani/fix/state-output-doc
  - 19efd41 Improve state_output documentation
- **PR** #22955: (*terminalmage*) Fix regression introduced yesterday in dockerio module @ *2015-04-22T18:56:39Z*
  - 89fa185 Merge pull request #22955 from terminalmage/dockerio-run-fix
  - b4472ad Fix regression introduced yesterday in dockerio module

- **PR** #22954: (*rallytime*) Backport #22909 to 2014.7 @ *2015-04-22T18:56:20Z*
  - **PR** #22909: (*mguegan*) Fix compatibility with pkgin > 0.7 | refs: #22954
  - 46ef227 Merge pull request #22954 from rallytime/bp-22909
  - 70c1cd3 Fix compatibility with pkgin > 0.7
- **PR** #22856: (*jfindlay*) increase timeout and decrease tries for route53 records @ *2015-04-22T16:47:01Z*
  - **ISSUE** #18720: (*Reiner030*) timeouts when setting Route53 records | refs: #22856
  - c9ae593 Merge pull request #22856 from jfindlay/route53_timeout
  - ba4a786 add route53 record sync wait, default=False
  - ea2fd50 increase timeout and tries for route53 records
- **PR** #22946: (*s0undt3ch*) Test with a more recent pip version to avoid a traceback @ *2015-04-22T16:25:17Z*
  - a178d44 Merge pull request #22946 from s0undt3ch/2014.7
  - bc87749 Test with a more recent pip version to avoid a traceback
- **PR** #22945: (*garethgreenaway*) Fixes to scheduler @ *2015-04-22T16:25:00Z*
  - **ISSUE** #22571: (*BoomerB*) same error message as on issue #18504 | refs: #22945
  - de339be Merge pull request #22945 from garethgreenaway/22571_2014_7_schedule_pillar_refresh_seconds_exceptions
  - bfa6d25 Fixing a reported issue when using a scheduled job from pillar with splay. _seconds element that acted as a backup of the actual seconds was being removed when pillar was refreshed and causing exceptions. This fix moves some splay related code out of the if else condition so it's checked whether the job is in the job queue or not.
- **PR** #22887: (*hvnsweeting*) fix #18843 @ *2015-04-22T15:47:05Z*
  - **ISSUE** #18843: (*calvinhp*) State user.present will fail to create home if user exists and homedir doesn't
  - 12d2b91 Merge pull request #22887 from hvnsweeting/18843-fix-user-present-home
  - 7fe7b08 run user.chhome once to avoid any side-effect when run it twice
  - 19de995 clarify the usage of home arg
  - d6dc09a enhance doc, as usermod on ubuntu 12.04 will not CREATE home
  - 0ce4d7f refactor: force to use boolean
  - 849d19e log debug the creating dir process
  - c4e95b9 fix #18843: usermod won't create a dir if old home does not exist
- **PR** #22930: (*jfindlay*) localemod.gen_locale now always returns a boolean @ *2015-04-22T15:37:39Z*
  - **ISSUE** #21140: (*holms*) locale.present state executed successfully, although originally fails | refs: #22930 #22829
  - **ISSUE** #2417: (*ffa*) Module standards | refs: #22829
  - **PR** #22829: (*F30*) Always return a boolean in gen_locale() | refs: #22930
  - b7de7bd Merge pull request #22930 from jfindlay/localegen_bool
  - 399399f localemod.gen_locale now always returns a boolean
- **PR** #22933: (*hvnsweeting*) add test for #18843 @ *2015-04-22T15:27:18Z*
  - **ISSUE** #18843: (*calvinhp*) State user.present will fail to create home if user exists and homedir doesn't

  - 11bcf14 Merge pull request #22933 from hvnsweeting/18843-test
  - b13db32 add test for #18843
- **PR** #22925: (*rallytime*) Backport #22895 to 2014.7 | refs: #23113 @ *2015-04-22T02:30:26Z*
  - **PR** #22895: (*aletourneau*) pam_tally counter was not reset to 0 after a succesfull login | refs: #22925
  - 6890752 Merge pull request #22925 from rallytime/bp-22895
  - 3852d96 Pylint fix
  - 90f7829 Fixed pylint issues
  - 5ebf159 Cleaned up pull request
  - a08ac47 pam_tally counter was not reset to 0 after a succesfull login
- **PR** #22914: (*cachedout*) Call proper returner function in jobs.list_jobs @ *2015-04-22T00:49:01Z*
  - **ISSUE** #22790: (*whiteinge*) jobs.list_jobs runner tracebacks on `missing' argument | refs: #22914
  - eca37eb Merge pull request #22914 from cachedout/issue_22790
  - d828d6f Call proper returner function in jobs.list_jobs
- **PR** #22918: (*JaseFace*) Add a note to the git_pillar docs stating that GitPython is the only currently supported provider @ *2015-04-22T00:48:26Z*
  - 44f3409 Merge pull request #22918 from JaseFace/git-pillar-provider-doc-note
  - 0aee5c2 Add a note to the git_pillar docs stating that GitPython is the only currently supported provider
- **PR** #22907: (*techhat*) Properly merge cloud configs to create profiles @ *2015-04-21T22:02:44Z*
  - 31c461f Merge pull request #22907 from techhat/cloudconfig
  - 3bf4e66 Properly merge cloud configs to create profiles
- **PR** #22894: (*0xf10e*) Fix issue #22782 @ *2015-04-21T18:55:18Z*
  - f093975 Merge pull request #22894 from 0xf10e/2014.7
  - 58fa24c Clarify doc on kwarg `roles' for user_present().
  - f0ae2eb Improve readability by renaming tenant_role
- **PR** #22902: (*rallytime*) Change state example to use proper kwarg @ *2015-04-21T18:50:47Z*
  - **ISSUE** #12003: (*MarkusMuellerAU*) [state.dockerio] docker.run TypeError: run() argument after ** must be a mapping, not str | refs: #22902
  - c802ba7 Merge pull request #22902 from rallytime/docker_doc_fix
  - 8f70346 Change state example to use proper kwarg
- **PR** #22898: (*terminalmage*) dockerio: better error message for native exec driver @ *2015-04-21T18:02:58Z*
  - 81771a7 Merge pull request #22898 from terminalmage/issue12003
  - c375309 dockerio: better error message for native exec driver
- **PR** #22897: (*rallytime*) Add param documentation for file.replace state @ *2015-04-21T17:31:04Z*
  - **ISSUE** #22825: (*paolodina*) Issue using file.replace in state file | refs: #22897
  - e2ec4ec Merge pull request #22897 from rallytime/fix-22825
  - 9c51630 Add param documentation for file.replace state
- **PR** #22850: (*bersace*) Fix pillar and salt fileserver mixed @ *2015-04-21T17:04:33Z*

  - **ISSUE** #22844: (*bersace*) LocalClient file cache confuse pillar and state files | refs: #22850
  - fd53889 Merge pull request #22850 from bersace/fix-pillar-salt-mixed
  - 31b98e7 Initialize state file client after pillar loading
  - f6bebb7 Use saltenv
- **PR** #22818: (*twangboy*) Added documentation regarding pip in windows @ *2015-04-21T03:58:59Z*
  - 1380fec Merge pull request #22818 from twangboy/upd_pip_docs
  - cb999c7 Update pip.py
  - 3cc5c97 Added documentation regarding pip in windows
- **PR** #22872: (*rallytime*) Prevent stacktrace on os.path.exists in hosts module @ *2015-04-21T02:54:40Z*
  - b2bf17f Merge pull request #22872 from rallytime/fix_hosts_stacktrace
  - c88a1ea Prevent stacktrace on os.path.exists in hosts module
- **PR** #22853: (*s0undt3ch*) Don't assume package installation order. @ *2015-04-21T02:42:41Z*
  - 03af523 Merge pull request #22853 from s0undt3ch/2014.7
  - b62df62 Don't assume package installation order.
- **PR** #22877: (*s0undt3ch*) Don't fail on *make clean* just because the directory does not exist @ *2015-04-21T02:40:47Z*
  - 9211e36 Merge pull request #22877 from s0undt3ch/hotfix/clean-docs-fix
  - 95d6887 Don't fail on *make clean* just because the directory does not exist
- **PR** #22873: (*thatch45*) Type check the version since it will often be numeric @ *2015-04-21T02:38:11Z*
  - 5bdbd08 Merge pull request #22873 from thatch45/type_check
  - 53b8376 Type check the version since it will often be numeric
- **PR** #22870: (*twangboy*) Added ability to send a version with a space in it @ *2015-04-20T23:18:28Z*
  - c965b0a Merge pull request #22870 from twangboy/fix_installer_again
  - 3f180cf Added ability to send a version with a space in it
- **PR** #22863: (*rallytime*) Backport #20974 to 2014.7 @ *2015-04-20T19:29:37Z*
  - **PR** #20974: (*JohannesEbke*) Fix expr_match usage in salt.utils.check_whitelist_blacklist | refs: #22863
  - 2973eb1 Merge pull request #22863 from rallytime/bp-20974
  - 14913a4 Fix expr_match usage in salt.utils.check_whitelist_blacklist
- **PR** #22578: (*hvnsweeting*) gracefully handle when salt-minion cannot decrypt key @ *2015-04-20T15:24:45Z*
  - c45b92b Merge pull request #22578 from hvnsweeting/2014-7-fix-compile-pillar
  - f75b24a gracefully handle when salt-minion cannot decrypt key
- **PR** #22800: (*terminalmage*) Improve error logging for pygit2 SSH-based remotes @ *2015-04-18T17:18:55Z*
  - **ISSUE** #21979: (*yrdevops*) gitfs: error message not descriptive enough when libgit2 was compiled without libssh2 | refs: #22800
  - 900c7a5 Merge pull request #22800 from terminalmage/issue21979
  - 8f1c008 Clarify that for pygit2, receiving 0 objects means repo is up-to-date
  - 98885f7 Add information about libssh2 requirement for pygit2 ssh auth

  - 09468d2 Fix incorrect log message
  - 2093bf8 Adjust loglevels for gitfs errors
  - 9d394df Improve error logging for pygit2 SSH-based remotes
- **PR** #22813: (*twangboy*) Updated instructions for building salt @ *2015-04-18T04:10:07Z*
  - e99f2fd Merge pull request #22813 from twangboy/win_doc_fix
  - adc421a Fixed some formatting issues
  - 8901b3b Updated instructions for building salt
- **PR** #22810: (*basepi*) [2014.7] More msgpack gating for salt-ssh @ *2015-04-17T22:28:24Z*
  - **ISSUE** #22708: (*Bilge*) salt-ssh file.accumulated error: NameError: global name `msgpack' is not defined | refs: #22810
  - fe1de89 Merge pull request #22810 from basepi/salt-ssh.more.msgpack.gating
  - d4da8e6 Gate msgpack in salt/modules/saltutil.py
  - 02303b2 Gate msgpack in salt/modules/data.py
  - d7e8741 Gate salt.states.file.py msgpack
- **PR** #22803: (*rallytime*) Allow map file to work with softlayer @ *2015-04-17T20:34:42Z*
  - **ISSUE** #17144: (*xpender*) salt-cloud -m fails with softlayer | refs: #22803
  - 11df71e Merge pull request #22803 from rallytime/fix-17144
  - ce88b6a Allow map file to work with softlayer
- **PR** #22807: (*rallytime*) Add 2014.7.5 links to windows installation docs @ *2015-04-17T20:32:13Z*
  - cd43a95 Merge pull request #22807 from rallytime/windows_docs_update
  - 5931a58 Replace all 4s with 5s
  - eadaead Add 2014.7.5 links to windows installation docs
- **PR** #22795: (*rallytime*) Added release note for 2014.7.5 release @ *2015-04-17T18:05:36Z*
  - 0b295e2 Merge pull request #22795 from rallytime/release_notes
  - fde1fee Remove extra line
  - b19b95d Added release note for 2014.7.5 release
- **PR** #22759: (*twangboy*) Final edits to the batch files for running salt @ *2015-04-17T04:31:15Z*
  - **ISSUE** #22740: (*lorengordon*) New Windows installer assumes salt is installed to the current directory | refs: #22759
  - **PR** #22754: (*twangboy*) Removed redundant \ and " | refs: #22759
  - 3c91459 Merge pull request #22759 from twangboy/fix_bat_one_last_time
  - 075f82e Final edits to the batch files for running salt
- **PR** #22760: (*thatch45*) Fix issues with the syndic @ *2015-04-17T04:30:48Z*
  - 20d3f2b Merge pull request #22760 from thatch45/syndic_fix
  - e2db624 Fix issues with the syndic not resolving the master when the interface is set
- **PR** #22762: (*twangboy*) Fixed version not showing in Add/Remove Programs @ *2015-04-17T04:29:46Z*
  - 54c4584 Merge pull request #22762 from twangboy/fix_installer

  - 4d25af8 Fixed version not showing in Add/Remove Programs

### 18.2.41 Salt 2014.7.8 Release Notes

#### Changes for v2014.7.7..v2014.7.8

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2016-03-11T21:18:48Z*

Statistics:

- Total Merges: **7**
- Total Issue references: **3**
- Total PR references: **10**

Changes:

- **PR** #28839: (*cachedout*) Revert #28740 @ *2015-11-12T22:54:28Z*
  - **PR** #28740: (*MasterNayru*) Add missing S3 module import | refs: #28777
  - 4b8bdd0 Merge pull request #28839 from cachedout/revert_28740
  - 215b26c Revert #28740
- **PR** #28777: (*rallytime*) Back-port #28740 to 2014.7 @ *2015-11-11T18:00:00Z*
  - **PR** #28740: (*MasterNayru*) Add missing S3 module import | refs: #28777
  - 76e69b4 Merge pull request #28777 from rallytime/bp-28740-2014.7
  - da5fac2 Back-port #28740 to 2014.7
- **PR** #28716: (*rallytime*) Back-port #28705 to 2014.7 @ *2015-11-10T16:15:03Z*
  - **PR** #28705: (*cachedout*) Account for new headers class in tornado 4.3 | refs: #28716
  - 45c73eb Merge pull request #28716 from rallytime/bp-28705
  - 32e7bd3 Account for new headers class in tornado 4.3
- **PR** #28717: (*cachedout*) Add note about recommended umask @ *2015-11-09T23:26:20Z*
  - **ISSUE** #28199: (*felskrone*) Non-standard umasks might break the master | refs: #28717
  - f4fe921 Merge pull request #28717 from cachedout/umask_note
  - 1874300 Add note about recommended umask
- **PR** #28461: (*cachedout*) Wrap all cache calls in state.sls in correct umask @ *2015-11-02T17:11:02Z*
  - **ISSUE** #28455: (*zmalone*) highstate.cache is world readable, and contains secrets | refs: #28461
  - 4bf56ca Merge pull request #28461 from cachedout/issue_28455
  - 097838e Wrap all cache calls in state.sls in correct umask
- **PR** #28407: (*DmitryKuzmenko*) Don't request creds if auth with key. @ *2015-10-29T16:12:30Z*
  - **ISSUE** #24910: (*bocig*) -T, --make-token flag does NOT work- LDAP Groups | refs: #28407
  - f3e61db Merge pull request #28407 from DSRCompany/issues/24910_token_auth_fix_2014
  - b7b5bec Don't request creds if auth with key.

- **PR** #27390: (*JaseFace*) Ensure we pass on the enable setting if present, or use the default of True if not in build_schedule_item() @ *2015-10-05T18:09:33Z*
  - d284eb1 Merge pull request #27390 from JaseFace/schedule-missing-enabled
  - 563db71 Ensure we pass on the enable setting if present, or use the default of True if not in build_schedule_item() Prior to this, when schedule.present compares the existing schedule to the one crafted by this function, enabled will actually be removed at each run. schedule.present sees a modification needs to be made, and invokes schedule.modify, which does so with enabled: True, creating and endless loop of an `enabled' removal and addition.

### 18.2.42 Salt 2014.7.9 Release Notes

#### Changes for v2014.7.8..v2014.7.9

Extended changelog courtesy of Todd Stansell (https://github.com/tjstansell/salt-changelogs):

*Generated at: 2016-03-11T20:58:58Z*

Statistics:

- Total Merges: **3**
- Total Issue references: **1**
- Total PR references: **3**

Changes:

- **PR** #31826: (*gtmanfred*) Remove ability of authenticating user to specify pam service @ *2016-03-11T20:41:01Z*
  - c5e7c03 Merge pull request #31826 from gtmanfred/2014.7
  - d73f70e Remove ability of authenticating user to specify pam service
- **PR** #29392: (*jacobhammons*) updated version number to not reference a specific build from the lat... @ *2015-12-03T15:54:31Z*
  - 85aa70a Merge pull request #29392 from jacobhammons/2014.7
  - d7f0db1 updated version number to not reference a specific build from the latest branch
- **PR** #29296: (*douardda*) Use process KillMode on Debian systems also @ *2015-12-01T16:00:16Z*
  - **ISSUE** #29295: (*douardda*) systemd's service file should use the `process' KillMode option on Debian also | refs: #29296
  - d2fb210 Merge pull request #29296 from douardda/patch-3
  - d288539 Use process KillMode on Debian systems also

### 18.2.43 Salt 2014.1.0 Release Notes - Codename Hydrogen

**Note**: Due to a change in master to minion communication, 2014.1.0 minions are not compatible with older-version masters. Please upgrade masters first. More info on backwards-compatibility policy here <installation, under the ``Upgrading Salt'' subheading.

**Note**: A change in the grammar in the state compiler makes `module.run` in requisites illegal syntax. Its use is replaced simply with the word `module`. In other words you will need to change requisites like this:

```
require:
    module.run: some_module_name
```

to:

```
require:
    module: some_module_name
```

This is a breaking change. We apologize for the inconvenience, we needed to do this to remove some ambiguity in parsing requisites.

---

**release** 2014-02-24

The 2014.1.0 release of Salt is a major release which not only increases stability but also brings new capabilities in virtualization, cloud integration, and more. This release brings a great focus on the expansion of testing making roughly double the coverage in the Salt tests, and comes with many new features.

2014.1.0 is the first release to follow the new date-based release naming system. See the version numbers page for more details.

### Major Features

#### Salt Cloud Merged into Salt

Salt Cloud is a tool for provisioning salted minions across various cloud providers. Prior to this release, Salt Cloud was a separate project but this marks its full integration with the Salt distribution. A Getting Started guide and additional documentation for Salt Cloud can be found *here*:

#### Google Compute Engine

Alongside Salt Cloud comes new support for the Google Compute Engine. Salt Stack can now deploy and control GCE virtual machines and the application stacks that they run.

For more information on Salt Stack and GCE, please see this blog post.

Documentation for Salt and GCE can be found *here*.

#### Salt Virt

Salt Virt is a cloud controller that supports virtual machine deployment, inspection, migration, and integration with many aspects of Salt.

Salt Virt has undergone a major overhaul with this release and now supports many more features and includes a number of critical improvements.

#### Docker Integration

Salt now ships with *states* and an *execution module* to manage Docker containers.

### Substantial Testing Expansion

Salt continues to increase its unit/regression test coverage. This release includes over 300 new tests.

### BSD Package Management

BSD package management has been entirely rewritten. FreeBSD 9 and older now default to using pkg_add, while FreeBSD 10 and newer will use pkgng. FreeBSD 9 can be forced to use pkgng, however, by specifying the following option in the minion config file:

```
providers:
  pkg: pkgng
```

In addition, support for installing software from the ports tree has been added. See the documentation for the ports *state* and *execution module* for more information.

### Network Management for Debian/Ubuntu

Initial support for management of network interfaces on Debian-based distros has been added. See the documentation for the *network state* and the *debian_ip* for more information.

### IPv6 Support for iptables State/Module

The iptables *state* and *module* now have IPv6 support. A new parameter `family` has been added to the states and execution functions, to distinguish between IPv4 and IPv6. The default value for this parameter is `ipv4`, specifying `ipv6` will use ip6tables to manage firewall rules.

### GitFS Improvements

Several performance improvements have been made to the *Git fileserver backend*. Additionally, file states can now use any any SHA1 commit hash as a fileserver environment:

```
/etc/httpd/httpd.conf:
  file.managed:
    - source: salt://webserver/files/httpd.conf
    - saltenv: 45af879
```

This applies to the functions in the *cp module* as well:

```
salt '*' cp.get_file salt://readme.txt /tmp/readme.txt saltenv=45af879
```

### MinionFS

This new fileserver backend allows files which have been pushed from the minion to the master (using *cp.push*) to be served up from the salt fileserver. The path for these files takes the following format:

```
salt://minion-id/path/to/file
```

`minion-id` is the id of the ``source'' minion, the one from which the files were pushed to the master. `/path/to/file` is the full path of the file.

The *MinionFS Walkthrough* contains a more thorough example of how to use this backend.

### saltenv

To distinguish between fileserver environments and execution functions which deal with environment variables, fileserver environments are now specified using the `saltenv` parameter. `env` will continue to work, but is deprecated and will be removed in a future release.

### Grains Caching

A caching layer has been added to the Grains system, which can help speed up minion startup. Disabled by default, it can be enabled by setting the minion config option `grains_cache`:

```
grains_cache: True

# Seconds before grains cache is considered to be stale.
grains_cache_expiration: 300
```

If set to `True`, the grains loader will read from/write to a msgpack-serialized file containing the grains data.

Additional command-line parameters have been added to salt-call, mainly for testing purposes:

- `--skip-grains` will completely bypass the grains loader when salt-call is invoked.
- `--refresh-grains-cache` will force the grains loader to bypass the grains cache and refresh the grains, writing a new grains cache file.

### Improved Command Logging Control

When using the *cmd module*, either on the CLI or when developing Salt execution modules, a new keyword argument `output_loglevel` allows for greater control over how (or even if) the command and its output are logged. For example:

```
salt '*' cmd.run 'tail /var/log/messages' output_loglevel=debug
```

The package management modules (`apt`, `yumpkg`, etc.) have been updated to log the copious output generated from these commands at loglevel `debug`.

---

**Note**: To keep a command from being logged, `output_loglevel=quiet` can be used.

Prior to this release, this could be done using `quiet=True`. This argument is still supported, but will be removed in a future Salt release.

---

### PagerDuty Support

Initial support for firing events via PagerDuty has been added. See the documentation for the *pagerduty* module.

### Virtual Terminal

Sometimes the subprocess module is not good enough, and, in fact, not even `askpass` is. This virtual terminal is still in it's infant childhood, needs quite some love, and was originally created to replace `askpass`, but, while developing it, it immediately proved that it could do so much more. It's currently used by salt-cloud when bootstrapping salt on clouds which require the use of a password.

### Proxy Minions

Initial basic support for Proxy Minions is in this release. Documentation can be found here.

Proxy minions are a developing feature in Salt that enables control of devices that cannot run a minion. Examples include network gear like switches and routers that run a proprietary OS but offer an API, or ``dumb'' devices that just don't have the horsepower or ability to handle a Python VM.

Proxy minions can be difficult to write, so a simple REST-based example proxy is included. A Python bottle-based webserver can be found at https://github.com/cro/salt-proxy-rest as an endpoint for this proxy.

This is an ALPHA-quality feature. There are a number of issues with it currently, mostly centering around process control, logging, and inability to work in a masterless configuration.

### Additional Bugfixes (Release Candidate Period)

Below are many of the fixes that were implemented in salt during the release candidate phase.

- Fix mount.mounted leaving conflicting entries in fstab (issue 7079)
- Fix mysql returner serialization to use json (issue 9590)
- Fix `ZMQError: Operation cannot be accomplished in current state` errors (issue 6306)
- Rbenv and ruby improvements
- Fix quoting issues with mysql port (issue 9568)
- Update mount module/state to support multiple swap partitions (issue 9520)
- Fix `archive` state to work with `bsdtar`
- Clarify logs for minion ID caching
- Add numeric revision support to git state (issue 9718)
- Update `master_uri` with `master_ip` (issue 9694)
- Add comment to Debian `mod_repo` (issue 9923)
- Fix potential undefined loop variable in rabbitmq state (issue 8703)
- Fix for salt-virt runner to delete key on VM deletion
- Fix for `salt-run -d` to limit results to specific runner or function (issue 9975)
- Add tracebacks to jinja renderer when applicable (issue 10010)
- Fix parsing in monit module (issue 10041)
- Fix highstate output from syndic minions (issue 9732)
- Quiet logging when dealing with passwords/hashes (issue 10000)
- Fix for multiple remotes in git_pillar (issue 9932)

- Fix npm installed command (issue 10109)
- Add safeguards for utf8 errors in zcbuildout module
- Fix compound commands (issue 9746)
- Add systemd notification when master is started
- Many doc improvements

### 18.2.44 Salt 2014.1.1 Release Notes

**release** 2014-03-18

Version 2014.1.1 is a bugfix release for *2014.1.0*. The changes include:

- Various doc fixes, including up-to-date Salt Cloud installation documentation.
- Renamed state.sls runner to state.orchestrate, to reduce confusion with the *state.sls* execution function
- Fix various bugs in the `dig` module (issue 10367)
- Add retry for query on certain EC2 status codes (issue 10154)
- Fix various bugs in mongodb_user state module (issue 10430)
- Fix permissions on `~/.salt_token` (issue 10422)
- Add PyObjects support
- Fix launchctl module crash with missing files
- Fix *saltutil.find_job* for Windows (issue 10581)
- Fix OS detection for OpenSolaris (issue 10601)
- Fix broken salt-ssh key_deploy
- Add support for multiline cron comments (issue 10721)
- Fix timezone module for Arch (issue 10789)
- Fix symlink support for `file.recurse` (issue 10809)
- Fix multi-master bugs (issue 10732 and issue 10969)
- Fix file.patch to error when source file is unavailable (issue 10380)
- Fix pkg to handle packages set as `purge` in `pkg.installed` (issue 10719)
- Add `zmqversion` grain
- Fix highstate summary for masterless minions (issue 10945)
- Fix *saltutil.find_job* for 2014.1 masters talking to 0.17 minions (issue 11020)
- Fix *file.recurse* states with trailing slashes in source (issue 11002)
- Fix *pkg states* to allow `pkgname.x86_64` (issue 7306)
- Make *iptables states* set a default table for flush (issue 11037)
- Added iptables `--reject-with` after final iptables call in *iptables states* (issue:*10757*)
- Fix improper passing of "family" in *iptables states* (issue 10774)
- Fix traceback in *iptables.insert* states (issue 10988)
- Fix zombie processes (issue 10867 and others)

- Fix batch mode to obey `--return` settings (issue 9146)
- Fix localclient issue that was causing batch mode breakage (issue 11094, issue 10470, and others)
- Multiple salt-ssh fixes
- FreeBSD: look in /usr/local/etc/salt for configuration by default, if installed using `pip --editable`.
- Add a `skip_suggestions` parameter to pkg.installed states which allows pre-flight check to be skipped (issue 11106)
- Fixed tag-based gitfs fileserver environments regression (issue 10956)
- Yum: fix cache of available pkgs not cleared when repos are changed (issue 11001)
- Yum: fix for plugin-provided repositories (i.e. RHN/Spacewalk) (issue 11145)
- Fix regression in *`chocolatey.bootstrap`* (issue 10541)
- Fix fail on unknown target in *`jobs runner`* (issue 11151)
- Don't log errors for commands which are expected to sometimes exit with non-zero exit status (issue 11154, issue 11090)
- Fix `test=True` CLI override of config option (issue 10877)
- Log sysctl key listing at loglevel TRACE (issue 10931)

### 18.2.45 Salt 2014.1.10 Release Notes

**release** 2014-08-01

---

**Note:** Version 2014.1.9 contained a regression which caused inaccurate Salt version detection, and thus was never packaged for general release. This version contains the version detection fix, but is otherwise identical to 2014.1.9.

---

Version 2014.1.10 is another bugfix release for *2014.1.0*. Changes include:

- Ensure salt-ssh will not continue if permissions on a temporary directory are not correct.
- Use the bootstrap script distributed with Salt instead of relying on an external resource
- Remove unused testing code
- Ensure salt states are placed into the `.salt` directory in salt-ssh
- Use a randomized path for temporary files in a salt-cloud deployment
- Clean any stale directories to ensure a fresh copy of salt-ssh during a deployment

Salt 2014.1.10 fixes security issues documented by CVE-2014-3563: ``Insecure tmp-file creation in seed.py, salt-ssh, and salt-cloud.'' Upgrading is recommended.

### 18.2.46 Salt 2014.1.11 Release Notes

**release** 2014-08-29

Version 2014.1.11 is another bugfix release for *2014.1.0*. Changes include:

- Fix for minion_id with byte-order mark (BOM) (issue 12296)
- Fix `runas` deprecation in `at` module
- Fix trailing slash befhavior for `file.makedirs_` (issue 14019)

- Fix chocolatey path (issue 13870)
- Fix git_pillar infinite loop issues (issue 14671)
- Fix json outputter `null` case
- Fix for minion error if one of multiple masters are down (issue 14099)

### 18.2.47 Salt 2014.1.12 Release Notes

**release** 2014-10-08

Version 2014.1.12 is another bugfix release for *2014.1.0*. Changes include:

- Fix `scp_file` always failing (which broke salt-cloud) (issue 16437)
- Fix regression in pillar in masterless (issue 16210, issue 16416, issue 16428)

### 18.2.48 Salt 2014.1.13 Release Notes

**release** 2014-10-14

Version 2014.1.13 is another bugfix release for *2014.1.0*. Changes include:

- Fix `sftp_file` by checking the exit status code of scp (which broke salt-cloud) (issue 16599)

### 18.2.49 Salt 2014.1.2 Release Notes

**release** 2014-04-15

Version 2014.1.2 is another bugfix release for *2014.1.0*. The changes include:

- Fix username detection when su'ed to root on FreeBSD (issue 11628)
- Fix minionfs backend for file.recurse states
- Fix 32-bit packages of different arches than the CPU arch, on 32-bit RHEL/CentOS (issue 11822)
- Fix bug with specifying alternate home dir on user creation (FreeBSD) (issue 11790)
- Don't reload `site` module on module refresh for MacOS
- Fix regression with running execution functions in Pillar SLS (issue 11453)
- Fix some modules missing from Windows installer
- Don't log an error for yum commands that return nonzero exit status on non-failure (issue 11645)
- Fix bug in rabbitmq state (issue 8703)
- Fix missing ssh config options (issue 10604)
- Fix top.sls ordering (issue 10810 and issue 11691)
- Fix `salt-key --list all` (issue 10982)
- Fix win_servermanager install/remove function (issue 11038)
- Fix interaction with tokens when running commands as root (issue 11223)
- Fix overstate bug with `find_job` and `**kwargs` (issue 10503)
- Fix `saltenv` for `aptpkg.mod_repo` from `pkgrepo` state

- Fix environment issue causing file caching problems (issue 11189)
- Fix bug in `__parse_key` in registry state (issue 11408)
- Add minion auth retry on rejection (issue 10763)
- Fix publish_session updating the encryption key (issue 11493)
- Fix for bad `AssertionError` raised by GitPython (issue 11473)
- Fix `debian_ip` to allow disabling and enabling networking on Ubuntu (issue 11164)
- Fix potential memory leak caused by saved (and unused) events (issue 11582)
- Fix exception handling in the MySQL module (issue 11616)
- Fix environment-related error (issue 11534)
- Include `psutil` on Windows
- Add `file.replace` and `file.search` to Windows (issue 11471)
- Add additional `file` module helpers to Windows (issue 11235)
- Add `pid` to netstat output on Windows (issue 10782)
- Fix Windows not caching new versions of installers in winrepo (issue 10597)
- Fix hardcoded md5 hashing
- Fix kwargs in salt-ssh (issue 11609)
- Fix file backup timestamps (issue 11745)
- Fix stacktrace on `sys.doc` with invalid eauth (issue 11293)
- Fix `git.latest` with `test=True` (issue 11595)
- Fix `file.check_perms` hardcoded `follow_symlinks` (issue 11387)
- Fix certain `pkg` states for RHEL5/Cent5 machines (issue 11719)

### 18.2.50 Salt 2014.1.3 Release Notes

**release** 2014-04-15

Version 2014.1.3 is another bugfix release for *2014.1.0*. It was created as a hotfix for a regression found in 2014.1.2, which was not distributed. The only change made was as follows:

- Fix regression that caused `saltutil.find_job` to fail, causing premature terminations of salt CLI commands.

Changes in the not-distributed 2014.1.2, also included in 2014.1.3:

- Fix username detection when su'ed to root on FreeBSD (issue 11628)
- Fix minionfs backend for file.recurse states
- Fix 32-bit packages of different arches than the CPU arch, on 32-bit RHEL/CentOS (issue 11822)
- Fix bug with specifying alternate home dir on user creation (FreeBSD) (issue 11790)
- Don't reload `site` module on module refresh for MacOS
- Fix regression with running execution functions in Pillar SLS (issue 11453)
- Fix some modules missing from Windows installer
- Don't log an error for yum commands that return nonzero exit status on non-failure (issue 11645)

- Fix bug in rabbitmq state (issue 8703)
- Fix missing ssh config options (issue 10604)
- Fix top.sls ordering (issue 10810 and issue 11691)
- Fix `salt-key --list all` (issue 10982)
- Fix win_servermanager install/remove function (issue 11038)
- Fix interaction with tokens when running commands as root (issue 11223)
- Fix overstate bug with `find_job` and `**kwargs` (issue 10503)
- Fix `saltenv` for `aptpkg.mod_repo` from `pkgrepo` state
- Fix environment issue causing file caching problems (issue 11189)
- Fix bug in `__parse_key` in registry state (issue 11408)
- Add minion auth retry on rejection (issue 10763)
- Fix publish_session updating the encryption key (issue 11493)
- Fix for bad `AssertionError` raised by GitPython (issue 11473)
- Fix `debian_ip` to allow disabling and enabling networking on Ubuntu (issue 11164)
- Fix potential memory leak caused by saved (and unused) events (issue 11582)
- Fix exception handling in the MySQL module (issue 11616)
- Fix environment-related error (issue 11534)
- Include `psutil` on Windows
- Add `file.replace` and `file.search` to Windows (issue 11471)
- Add additional `file` module helpers to Windows (issue 11235)
- Add `pid` to netstat output on Windows (issue 10782)
- Fix Windows not caching new versions of installers in winrepo (issue 10597)
- Fix hardcoded md5 hashing
- Fix kwargs in salt-ssh (issue 11609)
- Fix file backup timestamps (issue 11745)
- Fix stacktrace on `sys.doc` with invalid eauth (issue 11293)
- Fix `git.latest` with `test=True` (issue 11595)
- Fix `file.check_perms` hardcoded `follow_symlinks` (issue 11387)
- Fix certain `pkg` states for RHEL5/Cent5 machines (issue 11719)

### 18.2.51 Salt 2014.1.4 Release Notes

**release** 2014-05-05

Version 2014.1.4 is another bugfix release for *2014.1.0*. Changes include:

- Fix setup.py dependency issue (issue 12031)
- Fix handling for IOErrors under certain circumstances (issue 11783 and issue 11853)
- Fix fatal exception when `/proc/1/cgroup` is not readable (issue 11619)

- Fix os grains for OpenSolaris (issue 11907)
- Fix `lvs.zero` module argument pass-through (issue 9001)
- Fix bug in `debian_ip` interaction with *`network.system`* state (issue 11164)
- Remove bad binary package verification code (issue 12177)
- Fix traceback in solaris package installation (issue 12237)
- Fix *`file.directory`* state symlink handling (issue 12209)
- Remove `external_ip` grain
- Fix *`file.managed`* makedirs issues (issue 10446)
- Fix hang on non-existent Windows drive letter for *`file`* module (issue 9880)
- Fix salt minion caching all users on the server (issue 9743)
- Add strftime formatting for *`ps.boot_time`* (issue 12428)

### 18.2.52 Salt 2014.1.5 Release Notes

**release** 2014-06-11

Version 2014.1.5 is another bugfix release for *2014.1.0*. Changes include:

- Add function for finding cached job on the minion
- Fix iptables save file location for Debian (issue 11730)
- Fix for minion caching jobs when master is down
- Bump default `syndic_wait` to 5 to fix syndic-related problems (issue 12262)
- Add OpenBSD, FreeBSD, and NetBSD support for `network.netstat` (issue 12121)
- Fix false positive error in logs for `makeconf` state (issue 9762)
- Fix for yum `fromrepo` package installs when repo is disabled by default (issue 12466)
- Fix for extra blank lines in `file.blockreplace` (issue 12422)
- Fix grain detection for OpenVZ guests (issue 11877)
- Fix `get_dns_servers` function for Windows `win_dns_client`
- Use system locale for ports package installations
- Use correct stop/restart procedure for Debian networking in `debian_ip` (issue 12614)
- Fix for `cmd_iter`/`cmd_iter_no_block` blocking issues (issue 12617)
- Fix traceback when syncing custom types (issue 12883)
- Fix cleaning directory symlinks in `file.directory`
- Add performance optimizations for `saltutil.sync_all` and `state.highstate`
- Fix possible error in `saltutil.running`
- Fix for kmod modules with dashes (issue 13239)
- Fix possible race condition for Windows minions in state module reloading (issue 12370)
- Fix bug with roster for `passwd` option that is loaded as a non-string object (issue 13249)
- Keep duplicate version numbers from showing up in `pkg.list_pkgs` output

- Fixes for Jinja renderer, timezone `module`/`state` (issue 12724)
- Fix timedatectl parsing for systemd>=210 (issue 12728)
- Fix `saltenv` being written to YUM repo config files (issue 12887)
- Removed the deprecated external nodes classifier (originally accessible by setting a value for external_nodes in the master configuration file). Note that this functionality has been marked deprecated for some time and was replaced by the more general *master tops* system.
- More robust escaping of ldap filter strings.
- Fix trailing slash in `gitfs_root` causing files not to be available (issue 13185)

### 18.2.53 Salt 2014.1.6 Release Notes

**release** 2014-07-08

Version 2014.1.6 is another bugfix release for *2014.1.0*. Changes include:

- Fix extra `iptables --help` output (Sorry!) (issue 13648, issue 13507, issue 13527, issue 13607)
- Fix `mount.active` for Solaris
- Fix support for `allow-hotplug` statement in debian_ip network module
- Add sqlite3 to esky builds
- Fix `jobs.active` output (issue 9526)
- Fix the `virtual` grain for Xen (issue 13534)
- Fix _ext_nodes unavailable on master (issue 13535)
- Fix eauth for batch mode (issue 9605)
- Fix force-related issues with `tomcat` support (issue 12889)
- Fix KeyError when cloud mapping
- Fix salt-minion restart loop in Windows (issue 12086)
- Fix detection of `service` virtual module on Fedora minions
- Fix traceback with missing ipv4 grain (issue 13838)
- Fix issue in roots backend with invalid data in mtime_map (issue 13836)
- Fix traceback in `jobs.active` (issue 11151)
- Fix `master_tops` and `_ext_nodes` issue (issue 13535, issue 13673)

### 18.2.54 Salt 2014.1.7 Release Notes

**release** 2014-07-09

Version 2014.1.7 is another bugfix release for *2014.1.0*. Changes include:

- Fix batch mode regression (issue 14046)

This release was a hotfix release for the regression listed above which was present in the 2014.1.6 release. The changes included in 2014.1.6 are listed below:

- Fix extra `iptables --help` output (Sorry!) (issue 13648, issue 13507, issue 13527, issue 13607)
- Fix `mount.active` for Solaris

- Fix support for `allow-hotplug` statement in debian_ip network module
- Add sqlite3 to esky builds
- Fix `jobs.active` output (issue 9526)
- Fix the `virtual` grain for Xen (issue 13534)
- Fix eauth for batch mode (issue 9605)
- Fix force-related issues with `tomcat` support (issue 12889)
- Fix KeyError when cloud mapping
- Fix salt-minion restart loop in Windows (issue 12086)
- Fix detection of `service` virtual module on Fedora minions
- Fix traceback with missing ipv4 grain (issue 13838)
- Fix issue in roots backend with invalid data in mtime_map (issue 13836)
- Fix traceback in `jobs.active` (issue 11151)
- Fix `master_tops` and `_ext_nodes` issue (issue 13535, issue 13673)

### 18.2.55 Salt 2014.1.8 Release Notes

**release** 2014-07-30

**Note:** This release contained a regression which caused inaccurate Salt version detection, and thus was never packaged for general release. Please use version 2014.1.10 instead.

Version 2014.1.8 is another bugfix release for *2014.1.0*. Changes include:

- Ensure salt-ssh will not continue if permissions on a temporary directory are not correct.
- Use the bootstrap script distributed with Salt instead of relying on an external resource
- Remove unused testing code
- Ensure salt states are placed into the `.salt` directory in salt-ssh
- Use a randomized path for temporary files in a salt-cloud deployment
- Clean any stale directories to ensure a fresh copy of salt-ssh during a deployment

### 18.2.56 Salt 2014.1.9 Release Notes

**release** 2014-07-31

**Note:** This release contained a regression which caused inaccurate Salt version detection, and thus was never packaged for general release. Please use version 2014.1.10 instead.

**Note:** Version 2014.1.8 contained a regression which caused inaccurate Salt version detection, and thus was never packaged for general release. This version contains the version detection fix, but is otherwise identical to 2014.1.8.

Version 2014.1.9 is another bugfix release for *2014.1.0*. Changes include:

- Ensure salt-ssh will not continue if permissions on a temporary directory are not correct.
- Use the bootstrap script distributed with Salt instead of relying on an external resource
- Remove unused testing code
- Ensure salt states are placed into the `.salt` directory in salt-ssh
- Use a randomized path for temporary files in a salt-cloud deployment
- Clean any stale directories to ensure a fresh copy of salt-ssh during a deployment

### 18.2.57 Salt 0.10.0 Release Notes

**release** 2012-06-16

0.10.0 has arrived! This release comes with MANY bug fixes, and new capabilities which greatly enhance performance and reliability. This release is primarily a bug fix release with many new tests and many repaired bugs. This release also introduces a few new key features which were brought in primarily to repair bugs and some limitations found in some of the components of the original architecture.

#### Major Features

#### Event System

The Salt Master now comes equipped with a new event system. This event system has replaced some of the back end of the Salt client and offers the beginning of a system which will make plugging external applications into Salt. The event system relies on a local ZeroMQ publish socket and other processes can connect to this socket and listen for events. The new events can be easily managed via Salt's event library.

#### Unprivileged User Updates

Some enhancements have been added to Salt for running as a user other than root. These new additions should make switching the user that the Salt Master is running as very painless, simply change the `user` option in the master configuration and restart the master, Salt will take care of all of the particulars for you.

#### Peer Runner Execution

Salt has long had the peer communication system used to allow minions to send commands via the salt master. 0.10.0 adds a new capability here, now the master can be configured to allow for minions to execute Salt runners via the `peer_run` option in the salt master configuration.

#### YAML Parsing Updates

In the past the YAML parser for sls files would return the incorrect numbers when the file mode was set with a preceding 0. The YAML parser used in Salt has been modified to no longer convert these number into octal but to keep them as the correct value so that sls files can be a little cleaner to write.

#### State Call Data Files

It was requested that the minion keep a local cache of the most recent executed state run. This has been added and now with state runs the data is stored in a msgpack file in the minion's cachedir.

#### Turning Off the Job Cache

A new option has been added to the master configuration file. In previous releases the Salt client would look over the Salt job cache to read in the minion return data. With the addition of the event system the Salt client can now watch for events directly from the master worker processes.

This means that the job cache is no longer a hard requirement. Keep in mind though, that turning off the job cache means that historic job execution data cannot be retrieved.

#### Test Updates

#### Minion Swarms Are Faster

To continue our efforts with testing Salt's ability to scale the minionswarm script has been updated. The minion-swarm can now start up minions much faster than it could before and comes with a new feature allowing modules to be disabled, thus lowering the minion's footprint when making a swarm. These new updates have allows us to test

```
# python minionswarm.py -m 20 --master salt-master
```

#### Many Fixes

To get a good idea for the number of bugfixes this release offers take a look at the closed tickets for 0.10.0, this is a very substantial update:

https://github.com/saltstack/salt/issues?milestone=12&state=closed

#### Master and Minion Stability Fixes

As Salt deployments grow new ways to break Salt are discovered. 0.10.0 comes with a number of fixes for the minions and master greatly improving Salt stability.

### 18.2.58 Salt 0.10.1 Release Notes

**release** 2012-06-19

### 18.2.59 Salt 0.10.2 Release Notes

**release** 2012-07-30

0.10.2 is out! This release comes with enhancements to the pillar interface, cleaner ways to access the salt-call capabilities in the API, minion data caching and the event system has been added to salt minions.

There have also been updates to the ZeroMQ functions, many more tests (thanks to sponsors, the code sprint and many contributors) and a swath of bug fixes.

### Major Features

#### Ext Pillar Modules

The ranks of available Salt modules directories sees a new member in 0.10.2. With the popularity of pillar a higher demand has arisen for `ext_pillar` interfaces to be more like regular Salt module additions. Now ext_pillar interfaces can be added in the same way as other modules, just drop it into the pillar directory in the salt source.

#### Minion Events

In 0.10.0 an event system was added to the Salt master. 0.10.2 adds the event system to the minions as well. Now event can be published on a local minion as well.

The minions can also send events back up to the master. This means that Salt is able to communicate individual events from the minions back up to the Master which are not associated with command.

#### Minion Data Caching

When pillar was introduced the landscape for available data was greatly enhanced. The minion's began sending grain data back to the master on a regular basis.

The new config option on the master called `minion_data_cache` instructs the Salt master to maintain a cache of the minion's grains and pillar data in the cachedir. This option is turned off by default to avoid hitting the disk more, but when enabled the cache is used to make grain matching from the salt command more powerful, since the minions that will match can be predetermined.

#### Backup Files

By default all files replaced by the file.managed and file.recurse states we simply deleted. 0.10.2 adds a new option. By setting the backup option to `minion` the files are backed up before they are replaced.

The backed up files are located in the cachedir under the file_backup directory. On a default system this will be at: `/var/cache/salt/file_backup`

#### Configuration files

`salt-master` and `salt-minion` automatically load additional configuration files from `master.d/*.conf` respective `minion.d/*.conf` where `master.d`/`minion.d` is a directory in the same directory as the main configuration file.

#### Salt Key Verification

A number of users complained that they had inadvertently deleted the wrong salt authentication keys. 0.10.2 now displays what keys are going to be deleted and verifies that they are the keys that are intended for deletion.

#### Key auto-signing

If `autosign_file` is specified in the configuration file incoming keys will be compared to the list of keynames in `autosign_file`. Regular expressions as well as globbing is supported.

The file must only be writable by the user otherwise the file will be ignored. To relax the permission and allow group write access set the `permissive_pki_access` option.

### Module changes

#### Improved OpenBSD support

New modules for managing services and packages were provided by Joshua Elsasser to further improve the support for OpenBSD.

Existing modules like the *disk* module were also improved to support OpenBSD.

#### SQL Modules

The MySQL and PostgreSQL modules have both received a number of additions thanks to the work of Avi Marcus and Roman Imankulov.

#### ZFS Support on FreeBSD

A new ZFS module has been added by Kurtis Velarde for FreeBSD supporting various ZFS operations like creating, extending or removing zpools.

#### Augeas

A new Augeas module by Ulrich Dangel for editing and verifying config files.

#### Native Debian Service module

The support for the Debian was further improved with an new service module for Debian by Ahmad Khayyat supporting *disable* and *enable*.

#### Cassandra

Cassandra support has been added by Adam Garside. Currently only status and diagnostic information are supported.

#### Networking

The networking support for *RHEL* has been improved and supports bonding support as well as zeroconf configuration.

#### Monit

Basic monit support by Kurtis Velarde to control services via monit.

#### nzbget

Basic support for controlling nzbget by Joseph Hall

#### Bluetooth

Baisc `bluez` support for managing and controlling Bluetooth devices. Supports scanning as well as pairing/unpairing by Joseph Hall.

#### Test Updates

#### Consistency Testing

Another testing script has been added. A bug was found in pillar when many minions generated pillar data at the same time. The new `consist.py` script is the tests directory was created to reproduce bugs where data should always be consistent.

#### Many Fixes

To get a good idea for the number of bugfixes this release offers take a look at the closed tickets for 0.10.2, this is a very substantial update:

https://github.com/saltstack/salt/issues?milestone=24&page=1&state=closed

#### Master and Minion Stability Fixes

As Salt deployments grow new ways to break Salt are discovered. 0.10.2 comes with a number of fixes for the minions and master greatly improving Salt stability.

### 18.2.60 Salt 0.10.3 Release Notes

**release** 2012-09-30

The latest taste of Salt has come, this release has many fixes and feature additions. Modifications have been made to make ZeroMQ connections more reliable, the beginning of the ACL system is in place, a new command line parsing system has been added, dynamic module distribution has become more environment aware, the new *master_finger* option and many more!

#### Major Features

#### ACL System

The new ACL system has been introduced. The ACL system allows for system users other than root to execute salt commands. Users can be allowed to execute specific commands in the same way that minions are opened up to the peer system.

The configuration value to open up the ACL system is called `client_acl` and is configured like so:

```
client_acl:
  fred:
    - test..*
    - pkg.list_pkgs
```

Where *fred* is allowed access to functions in the test module and to the `pkg.list_pkgs` function.

### Master Finger Option

The *master_finger* option has been added to improve the security of minion provisioning. The *master_finger* option allows for the fingerprint of the master public key to be set in the configuration file to double verify that the master is valid. This option was added in response to a motivation to pre-authenticate the master when provisioning new minions to help prevent man in the middle attacks in some situations.

### Salt Key Fingerprint Generation

The ability to generate fingerprints of keys used by Salt has been added to `salt-key`. The new option *finger* accepts the name of the key to generate and display a fingerprint for.

```
salt-key -F master
```

Will display the fingerprints for the master public and private keys.

### Parsing System

Pedro Algavio, aka s0undt3ch, has added a substantial update to the command line parsing system that makes the help message output much cleaner and easier to search through. Salt parsers now have *--versions-report* besides usual *--version* info which you can provide when reporting any issues found.

### Key Generation

We have reduced the requirements needed for *salt-key* to generate minion keys. You're no longer required to have salt configured and it's common directories created just to generate keys. This might prove useful if you're batch creating keys to pre-load on minions.

### Startup States

A few configuration options have been added which allow for states to be run when the minion daemon starts. This can be a great advantage when deploying with Salt because the minion can apply states right when it first runs. To use startup states set the `startup_states` configuration option on the minion to *highstate*.

### New Exclude Declaration

Some users have asked about adding the ability to ensure that other sls files or ids are excluded from a state run. The exclude statement will delete all of the data loaded from the specified sls file or will delete the specified id:

```
exclude:
  - sls: http
  - id: /etc/vimrc
```

### Max Open Files

While we're currently unable to properly handle ZeroMQ's abort signals when the max open files is reached, due to the way that's handled on ZeroMQ's, we have minimized the chances of this happening without at least warning the user.

### More State Output Options

Some major changes have been made to the state output system. In the past state return data was printed in a very verbose fashion and only states that failed or made changes were printed by default. Now two options can be passed to the master and minion configuration files to change the behavior of the state output. State output can be set to verbose (default) or non-verbose with the `state_verbose` option:

```
state_verbose: False
```

It is noteworthy that the state_verbose option used to be set to *False* by default but has been changed to *True* by default in 0.10.3 due to many requests for the change.

Te next option to be aware of new and called `state_output`. This option allows for the state output to be set to *full* (default) or *terse*.

The *full* output is the standard state output, but the new *terse* output will print only one line per state making the output much easier to follow when executing a large state system.

```
state_output: terse
```

### *state.file.append* Improvements

The salt state *file.append()* tries *not* to append existing text. Previously the matching check was being made line by line. While this kind of check might be enough for most cases, if the text being appended was multi-line, the check would not work properly. This issue is now properly handled, the match is done as a whole ignoring any white space addition or removal except inside commas. For those thinking that, in order to properly match over multiple lines, salt will load the whole file into memory, that's not true. For most cases this is not important but an erroneous order to read a 4GB file, if not properly handled, like salt does, could make salt chew that amount of memory. Salt has a buffered file reader which will keep in memory a maximum of 256KB and iterates over the file in chunks of 32KB to test for the match, more than enough, if not, explain your usage on a ticket. With this change, also *salt.modules.file.contains()*, *salt.modules.file.contains_regex()*, *salt.modules.file.contains_glob()* and *salt.utils.find* now do the searching and/or matching using the buffered chunks approach explained above.

Two new keyword arguments were also added, *makedirs*, and *source*. The first, *makedirs* will create the necessary directories in order to append to the specified file, of course, it only applies if we're trying to append to a non-existing file on a non-existing directory:

```
/tmp/salttest/file-append-makedirs:
    file.append:
        text: foo
        makedirs: True
```

The second, *source*, allows one to append the contents of a file instead of specifying the text.

```
/tmp/salttest/file-append-source:

file.append:
    - source: salt://testfile
```

#### Security Fix

A timing vulnerability was uncovered in the code which decrypts the AES messages sent over the network. This has been fixed and upgrading is strongly recommended.

### 18.2.61 Salt 0.10.4 Release Notes

**release** 2012-10-23

Salt 0.10.4 is a monumental release for the Salt team, with two new module systems, many additions to allow granular access to Salt, improved platform support and much more.

This release is also exciting because we have been able to shorten the release cycle back to under a month. We are working hard to keep up the aggressive pace and look forward to having releases happen more frequently!

This release also includes a serious security fix and all users are very strongly recommended to upgrade. As usual, upgrade the master first, and then the minion to ensure that the process is smooth.

#### Major Features

##### External Authentication System

The new external authentication system allows for Salt to pass through authentication to any authentication system to determine if a user has permission to execute a Salt command. The Unix PAM system is the first supported system with more to come!

The external authentication system allows for specific users to be granted access to execute specific functions on specific minions. Access is configured in the master configuration file, and uses the new access control system:

```
external_auth:
  pam:
    thatch:
      - 'web*':
        - test.*
        - network.*
```

The configuration above allows the user *thatch* to execute functions in the test and network modules on minions that match the web* target.

##### Access Control System

All Salt systems can now be configured to grant access to non-administrative users in a granular way. The old configuration continues to work. Specific functions can be opened up to specific minions from specific users in the case of external auth and client ACLs, and for specific minions in the case of the peer system.

Access controls are configured like this:

```
client_acl:
  fred:
    - web\*:
      - pkg.list_pkgs
      - test.*
      - apache.*
```

### Target by Network

A new matcher has been added to the system which allows for minions to be targeted by network. This new matcher can be called with the *-S* flag on the command line and is available in all places that the matcher system is available. Using it is simple:

```
$ salt -S '192.168.1.0/24' test.ping
$ salt -S '192.168.1.100' test.ping
```

### Nodegroup Nesting

Previously a nodegroup was limited by not being able to include another nodegroup, this restraint has been lifted and now nodegroups will be expanded within other nodegroups with the *N@* classifier.

### Salt Key Delete by Glob

The ability to delete minion keys by glob has been added to `salt-key`. To delete all minion keys whose minion name starts with `web':

```
$ salt-key -d 'web*'
```

### Master Tops System

The *external_nodes* system has been upgraded to allow for modular subsystems to be used to generate the top file data for a highstate run.

The *external_nodes* option still works but will be deprecated in the future in favor of the new *master_tops* option.

Example of using *master_tops*:

```
master_tops:
  ext_nodes: cobbler-external-nodes
```

### Next Level Solaris Support

A lot of work has been put into improved Solaris support by Romeo Theriault. Packaging modules (pkgadd/pkgrm and pkgutil) and states, cron support and user and group management have all been added and improved upon. These additions along with SMF (Service Management Facility) service support and improved Solaris grain detection in 0.10.3 add up to Salt becoming a great tool to manage Solaris servers with.

#### Security

A vulnerability in the security handshake was found and has been repaired, old minions should be able to connect to a new master, so as usual, the master should be updated first and then the minions.

#### Pillar Updates

The pillar communication has been updated to add some extra levels of verification so that the intended minion is the only one allowed to gather the data. Once all minions and the master are updated to salt 0.10.4 please activate pillar *2* by changing the *pillar_version* in the master config to *2*. This will be set to *2* by default in a future release.

### 18.2.62 Salt 0.10.5 Release Notes

**release** 2012-11-15

Salt 0.10.5 is ready, and comes with some great new features. A few more interfaces have been modularized, like the outputter system. The job cache system has been made more powerful and can now store and retrieve jobs archived in external databases. The returner system has been extended to allow minions to easily retrieve data from a returner interface.

As usual, this is an exciting release, with many noteworthy additions!

#### Major Features

#### External Job Cache

The external job cache is a system which allows for a returner interface to also act as a job cache. This system is intended to allow users to store job information in a central location for longer periods of time and to make the act of looking up information from jobs executed on other minions easier.

Currently the external job cache is supported via the mongo and redis returners:

```
ext_job_cache: redis
redis.host: salt
```

Once the external job cache is turned on the new *ret* module can be used on the minions to retrieve return information from the job cache. This can be a great way for minions to respond and react to other minions.

#### OpenStack Additions

OpenStack integration with Salt has been moving forward at a blistering pace. The new *nova*, *glance*, and *keystone* modules represent the beginning of ongoing OpenStack integration.

The Salt team has had many conversations with core OpenStack developers and is working on linking to OpenStack in powerful new ways.

#### Wheel System

A new API was added to the Salt Master which allows the master to be managed via an external API. This new system allows Salt API to easily hook into the Salt Master and manage configs, modify the state tree, manage the pillar and

more. The main motivation for the wheel system is to enable features needed in the upcoming web UI so users can manage the master just as easily as they manage minions.

The wheel system has also been hooked into the external auth system. This allows specific users to have granular access to manage components of the Salt Master.

### Render Pipes

Jack Kuan has added a substantial new feature. The render pipes system allows Salt to treat the render system like unix pipes. This new system enables sls files to be passed through specific render engines. While the default renderer is still recommended, different engines can now be more easily merged. So to pipe the output of Mako used in YAML use this shebang line:

#!mako|yaml

### Salt Key Overhaul

The Salt Key system was originally developed as only a CLI interface, but as time went on it was pressed into becoming a clumsy API. This release marks a complete overhaul of Salt Key. Salt Key has been rewritten to function purely from an API and to use the outputter system. The benefit here is that the outputter system works much more cleanly with Salt Key now, and the internals of Salt Key can be used much more cleanly.

### Modular Outputters

The outputter system is now loaded in a modular way. This means that output systems can be more easily added by dropping a python file down on the master that contains the function *output*.

### Gzip from Fileserver

Gzip compression has been added as an option to the cp.get_file and cp.get_dir commands. This will make file transfers more efficient and faster, especially over slower network links.

### Unified Module Configuration

In past releases of Salt, the minions needed to be configured for certain modules to function. This was difficult because it required pre-configuring the minions. 0.10.5 changes this by making all module configs on minions search the master config file for values.

Now if a single database server is needed, then it can be defined in the master config and all minions will become aware of the configuration value.

### Salt Call Enhancements

The `salt-call` command has been updated in a few ways. Now, `salt-call` can take the --return option to send the data to a returner. Also, `salt-call` now reports executions in the minion proc system, this allows the master to be aware of the operation salt-call is running.

#### Death to pub_refresh and sub_timeout

The old configuration values *pub_refresh* and *sub_timeout* have been removed. These options were in place to alleviate problems found in earlier versions of ZeroMQ which have since been fixed. The continued use of these options has proven to cause problems with message passing and have been completely removed.

#### Git Revision Versions

When running Salt directly from git (for testing or development, of course) it has been difficult to know exactly what code is being executed. The new versioning system will detect the git revision when building and how many commits have been made since the last release. A release from git will look like this:

0.10.4-736-gec74d69

#### Svn Module Addition

Anthony Cornehl (twinshadow) contributed a module that adds Subversion support to Salt. This great addition helps round out Salt's VCS support.

#### Noteworthy Changes

#### Arch Linux Defaults to Systemd

Arch Linux recently changed to use systemd by default and discontinued support for init scripts. Salt has followed suit and defaults to systemd now for managing services in Arch.

#### Salt, Salt Cloud and Openstack

With the releases of Salt 0.10.5 and Salt Cloud 0.8.2, OpenStack becomes the first (non-OS) piece of software to include support both on the user level (with Salt Cloud) and the admin level (with Salt). We are excited to continue to extend support of other platforms at this level.

### 18.2.63 Salt 0.11.0 Release Notes

**release** 2012-12-14

Salt 0.11.0 is here, with some highly sought after and exciting features. These features include the new overstate system, the reactor system, a new state run scope component called __context__, the beginning of the search system (still needs a great deal of work), multiple package states, the MySQL returner and a better system to arbitrarily reference outputters.

It is also noteworthy that we are changing how we mark release numbers. For the life of the project we have been pushing every release with features and fixes as point releases. We will now be releasing point releases for only bug fixes on a more regular basis and major feature releases on a slightly less regular basis. This means that the next release will be a bugfix only release with a version number of 0.11.1. The next feature release will be named 0.12.0 and will mark the end of life for the 0.11 series.

### Major Features

#### OverState

The overstate system is a simple way to manage rolling state executions across many minions. The overstate allows for a state to depend on the successful completion of another state.

#### Reactor System

The new reactor system allows for a reactive logic engine to be created which can respond to events within a salted environment. The reactor system uses sls files to match events fired on the master with actions, enabling Salt to react to problems in an infrastructure.

Your load-balanced group of webservers is under extra load? Spin up a new VM and add it to the group. Your fileserver is filling up? Send a notification to your sysadmin on call. The possibilities are endless!

#### Module Context

A new component has been added to the module loader system. The module context is a data structure that can hold objects for a given scope within the module.

This allows for components that are initialized to be stored in a persistent context which can greatly speed up ongoing connections. Right now the best example can be found in the *cp* execution module.

#### Multiple Package Management

A long desired feature has been added to package management. By definition Salt States have always installed packages one at a time. On most platforms this is not the fastest way to install packages. Erik Johnson, aka terminalmage, has modified the package modules for many providers and added new capabilities to install groups of packages. These package groups can be defined as a list of packages available in repository servers:

```
python_pkgs:
  pkg.installed:
    - pkgs:
      - python-mako
      - whoosh
      - python-git
```

or specify based on the location of specific packages:

```
python_pkgs:
  pkg.installed:
    - sources:
      - python-mako: http://some-rpms.org/python-mako.rpm
      - whoosh: salt://whoosh/whoosh.rpm
      - python-git: ftp://companyserver.net/python-git.rpm
```

#### Search System

The bones to the search system have been added. This is a very basic interface that allows for search backends to be added as search modules. The first supported search module is the whoosh search backend. Right now only the

basic paths for the search system are in place, making this very experimental. Further development will involve improving the search routines and index routines for whoosh and other search backends.

The search system has been made to allow for searching through all of the state and pillar files, configuration files and all return data from minion executions.

### Notable Changes

All previous versions of Salt have shared many directories between the master and minion. The default locations for keys, cached data and sockets has been shared by master and minion. This has created serious problems with running a master and a minion on the same systems. 0.11.0 changes the defaults to be separate directories. Salt will also attempt to migrate all of the old key data into the correct new directories, but if it is not successful it may need to be done manually. If your keys exhibit issues after updating make sure that they have been moved from `/etc/salt/pki` to `/etc/salt/pki/{master,minion}`.

The old setup will look like this:

```
/etc/salt/pki
|-- master.pem
|-- master.pub
|-- minions
|   `-- ragnarok.saltstack.net
|-- minions_pre
|-- minion.pem
|-- minion.pub
|-- minion_master.pub
|-- minions_pre
`-- minions_rejected
```

With the accepted minion keys in `/etc/salt/pki/minions`, the new setup places the accepted minion keys in `/etc/salt/pki/master/minions`.

```
/etc/salt/pki
|-- master
|   |-- master.pem
|   |-- master.pub
|   |-- minions
|   |   `-- ragnarok.saltstack.net
|   |-- minions_pre
|   `-- minions_rejected
|-- minion
|   |-- minion.pem
|   |-- minion.pub
|   `-- minion_master.pub
```

## 18.2.64 Salt 0.11.1 Release Notes

**release** 2012-12-19

## 18.2.65 Salt 0.12.0 Release Notes

**release** 2013-01-15

Another feature release of Salt is here! Some exciting additions are included with more ways to make salt modular and even easier management of the salt file server.

### Major Features

#### Modular Fileserver Backend

The new modular fileserver backend allows for any external system to be used as a salt file server. The main benefit here is that it is now possible to tell the master to directly use a git remote location, or many git remote locations, automatically mapping git branches and tags to salt environments.

#### Windows is First Class!

A new Salt Windows installer is now available! Much work has been put in to improve Windows support. With this much easier method of getting Salt on your Windows machines, we hope even more development and progress will occur. Please file bug reports on the Salt GitHub repo issue tracker so we can continue improving.

One thing that is missing on Windows that Salt uses extensively is a software package manager and a software package repository. The Salt pkg state allows sys admins to install software across their infrastructure and across operating systems. Software on Windows can now be managed in the same way. The SaltStack team built a package manager that interfaces with the standard Salt pkg module to allow for installing and removing software on Windows. In addition, a software package repository has been built on top of the Salt fileserver. A small YAML file provides the information necessary for the package manager to install and remove software.

An interesting feature of the new Salt Windows software package repository is that one or more remote git repositories can supplement the master's local repository. The repository can point to software on the master's fileserver or on an HTTP, HTTPS, or ftp server.

#### New Default Outputter

Salt displays data to the terminal via the outputter system. For a long time the default outputter for Salt has been the python pretty print library. While this has been a generally reasonable outputter, it did have many failings. The new default outputter is called ``nested'', it recursively scans return data structures and prints them out cleanly.

If the result of the new nested outputter is not desired any other outputter can be used via the --out option, or the output option can be set in the master and minion configs to change the default outputter.

#### Internal Scheduler

The internal Salt scheduler is a new capability which allows for functions to be executed at given intervals on the minion, and for runners to be executed at given intervals on the master. The scheduler allows for sequences such as executing state runs (locally on the minion or remotely via an overstate) or continually gathering system data to be run at given intervals.

The configuration is simple, add the schedule option to the master or minion config and specify jobs to run, this in the master config will execute the state.over runner every 60 minutes:

```
schedule:
  overstate:
    function: state.over
    minutes: 60
```

This example for the minion configuration will execute a highstate every 30 minutes:

```
schedule:
  highstate:
    function: state.highstate
    minutes: 30
```

#### Optional DSL for SLS Formulas

Jack Kuan, our renderer expert, has created something that is astonishing. Salt, now comes with an optional Python based DSL, this is a very powerful interface that makes writing SLS files in pure python easier than it was with the raw py renderer. As usual this can be used with the renderer shebang line, so a single sls can be written with the DSL if pure python power is needed while keeping other sls files simple with YAML.

#### Set Grains Remotely

A new execution function and state module have been added that allows for grains to be set on the minion. Now grains can be set via a remote execution or via states. Use the *grains.present* state or the *grains.setval* execution functions.

#### Gentoo Additions

Major additions to Gentoo specific components have been made. The encompasses executions modules and states ranging from supporting the make.conf file to tools like layman.

### 18.2.66 Salt 0.12.1 Release Notes

**release** 2013-01-21

### 18.2.67 Salt 0.13.0 Release Notes

**release** 2013-02-12

The lucky number 13 has turned the corner! From CLI notifications when quitting a salt command, to substantial improvements on Windows, Salt 0.13.0 has arrived!

#### Major Features

#### Improved file.recurse Performance

The file.recurse system has been deployed and used in a vast array of situations. Fixes to the file state and module have led towards opening up new ways of running file.recurse to make it faster. Now the file.recurse state will download fewer files and will run substantially faster.

### Windows Improvements

Minion stability on Windows has improved. Many file operations, including file.recurse, have been fixed and improved. The network module works better, to include network.interfaces. Both 32bit and 64bit installers are now available.

### Nodegroup Targeting in Peer System

In the past, nodegroups were not available for targeting via the peer system. This has been fixed, allowing the new nodegroup expr_form argument for the publish.publish function:

salt-call publish.publish group1 test.ping expr_form=nodegroup

### Blacklist Additions

Additions allowing more granular blacklisting are available in 0.13.0. The ability to blacklist users and functions in client_acl have been added, as well as the ability to exclude state formulas from the command line.

### Command Line Pillar Embedding

Pillar data can now be embedded on the command line when calling `state.sls` and `state.highstate`. This allows for on the fly changes or settings to pillar and makes parameterizing state formulas even easier. This is done via the keyword argument:

```
salt '*' state.highstate pillar='{"cheese": "spam"}'
```

The above example will extend the existing pillar to hold the `cheese` key with a value of `spam`. If the `cheese` key is already specified in the minion's pillar then it will be overwritten.

### CLI Notifications

In the past hitting ctrl-C and quitting from the `salt` command would just drop to a shell prompt, this caused confusion with users who expected the remote executions to also quit. Now a message is displayed showing what command can be used to track the execution and what the job id is for the execution.

### Version Specification in Multiple-Package States

Versions can now be specified within multiple-package *pkg.installed* states. An example can be found below:

```
mypkgs:
  pkg.installed:
    - pkgs:
      - foo
      - bar: 1.2.3-4
      - baz
```

#### Noteworthy Changes

The configuration subsystem in Salt has been overhauled to make the `opts` dict used by Salt applications more portable, the problem is that this is an incompatible change with salt-cloud, and salt-cloud will need to be updated to the latest git to work with Salt 0.13.0. Salt Cloud 0.8.5 will also require Salt 0.13.0 or later to function.

The SaltStack team is sorry for the inconvenience here, we work hard to make sure these sorts of things do not happen, but sometimes hard changes get in.

### 18.2.68 Salt 0.13.1 Release Notes

**release** 2013-02-15

### 18.2.69 Salt 0.13.2 Release Notes

**release** 2013-03-13

### 18.2.70 Salt 0.13.3 Release Notes

**release** 2013-03-18

### 18.2.71 Salt 0.14.0 Release Notes

**release** 2013-03-23

Salt 0.14.0 is here! This release was held up primarily by PyCon, Scale, and illness, but has arrived! 0.14.0 comes with many new features and is breaking ground for Salt in the area of cloud management with the introduction of Salt providing basic cloud controller functionality.

#### Major Features

##### Salt - As a Cloud Controller

This is the first primitive inroad to using Salt as a cloud controller is available in 0.14.0. Be advised that this is alpha, only tested in a few very small environments.

The cloud controller is built using kvm and libvirt for the hypervisors. Hypervisors are autodetected as minions and only need to have libvirt running and kvm installed to function. The features of the Salt cloud controller are as follows:

- Basic vm discovery and reporting
- Creation of new virtual machines
- Seeding virtual machines with Salt via qemu-nbd or libguestfs
- Live migration (shared and non shared storage)
- Delete existing VMs

It is noteworthy that this feature is still Alpha, meaning that all rights are reserved to change the interface if needs be in future releases!

#### Libvirt State

One of the problems with libvirt is management of certificates needed for live migration and cross communication between hypervisors. The new `libvirt` state makes the Salt Master hold a CA and manage the signing and distribution of keys onto hypervisors, just add a call to the libvirt state in the sls formulas used to set up a hypervisor:

```
libvirt_keys:
  libvirt.keys
```

#### New get Functions

An easier way to manage data has been introduced. The pillar, grains, and config execution modules have been extended with the new `get` function. This function works much in the same way as the get method in a python dict, but with an enhancement, nested dict components can be extracted using a `:` delimiter.

If a structure like this is in pillar:

```
foo:
  bar:
    baz: quo
```

Extracting it from the raw pillar in an sls formula or file template is done this way:

```
{{ pillar['foo']['bar']['baz'] }}
```

Now with the new get function the data can be safely gathered and a default can be set allowing the template to fall back if the value is not available:

```
{{ salt['pillar.get']('foo:bar:baz', 'qux') }}
```

This makes handling nested structures much easier, and defaults can be cleanly set. This new function is being used extensively in the new formulae repository of salt sls formulas.

### 18.2.72 Salt 0.14.1 Release Notes

**release** 2013-04-13

### 18.2.73 Salt 0.15.0 Release Notes

**release** 2013-05-03

The many new features of Salt 0.15.0 have arrived! Salt 0.15.0 comes with many smaller features and a few larger ones.

These features range from better debugging tools to the new Salt Mine system.

#### Major Features

#### The Salt Mine

First there was the peer system, allowing for commands to be executed from a minion to other minions to gather data live. Then there was the external job cache for storing and accessing long term data. Now the middle ground is

being filled in with the Salt Mine. The Salt Mine is a system used to execute functions on a regular basis on minions and then store only the most recent data from the functions on the master, then the data is looked up via targets.

The mine caches data that is public to all minions, so when a minion posts data to the mine all other minions can see it.

### IPV6 Support

0.13.0 saw the addition of initial IPV6 support but errors were encountered and it needed to be stripped out. This time the code covers more cases and must be explicitly enabled. But the support is much more extensive than before.

### Copy Files From Minions to the Master

Minions have long been able to copy files down from the master file server, but until now files could not be easily copied from the minion up to the master.

A new function called `cp.push` can push files from the minions up to the master server. The uploaded files are then cached on the master in the master cachedir for each minion.

### Better Template Debugging

Template errors have long been a burden when writing states and pillar. 0.15.0 will now send the compiled template data to the debug log, this makes tracking down the intermittent stage templates much easier. So running state.sls or state.highstate with *-l debug* will now print out the rendered templates in the debug information.

### State Event Firing

The state system is now more closely tied to the master's event bus. Now when a state fails the failure will be fired on the master event bus so that the reactor can respond to it.

### Major Syndic Updates

The Syndic system has been basically re-written. Now it runs in a completely asynchronous way and functions primarily as an event broker. This means that the events fired on the syndic are now pushed up to the higher level master instead of the old method used which waited for the client libraries to return.

This makes the syndic much more accurate and powerful, it also means that all events fired on the syndic master make it up the pipe as well making a reactor on the higher level master able to react to minions further downstream.

### Peer System Updates

The Peer System has been updated to run using the client libraries instead of firing directly over the publish bus. This makes the peer system much more consistent and reliable.

### Minion Key Revocation

In the past when a minion was decommissioned the key needed to be manually deleted on the master, but now a function on the minion can be used to revoke the calling minion's key:

```
$ salt-call saltutil.revoke_auth
```

#### Function Return Codes

Functions can now be assigned numeric return codes to determine if the function executed successfully. While not all functions have been given return codes, many have and it is an ongoing effort to fill out all functions that might return a non-zero return code.

#### Functions in Overstate

The overstate system was originally created to just manage the execution of states, but with the addition of return codes to functions, requisite logic can now be used with respect to the overstate. This means that an overstate stage can now run single functions instead of just state executions.

#### Pillar Error Reporting

Previously if errors surfaced in pillar, then the pillar would consist of only an empty dict. Now all data that was successfully rendered stays in pillar and the render error is also made available. If errors are found in the pillar, states will refuse to run.

#### Using Cached State Data

Sometimes states are executed purely to maintain a specific state rather than to update states with new configs. This is grounds for the new cached state system. By adding *cache=True* to a state call the state will not be generated fresh from the master but the last state data to be generated will be used. If no previous state data is available then fresh data will be generated.

#### Monitoring States

The new monitoring states system has been started. This is very young but allows for states to be used to configure monitoring routines. So far only one monitoring state is available, the `disk.status` state. As more capabilities are added to Salt UI the monitoring capabilities of Salt will continue to be expanded.

### 18.2.74 Salt 0.15.1 Release Notes

**release** 2013-05-08

The 0.15.1 release has been posted, this release includes fixes to a number of bugs in 0.15.1 and a three security patches.

#### Security Updates

A number of security issues have been resolved via the 0.15.1 release.

### Path Injection in Minion IDs

Salt masters did not properly validate the id of a connecting minion. This can lead to an attacker uploading files to the master in arbitrary locations. In particular this can be used to bypass the manual validation of new unknown minions. Exploiting this vulnerability does not require authentication.

This issue affects all known versions of Salt.

This issue was reported by Ronald Volgers.

### Patch

The issue is fixed in Salt 0.15.1. Updated packages are available in the usual locations.

Specific commits:

https://github.com/saltstack/salt/commit/5427b9438e452a5a8910d9128c6aafb45d8fd5d3

https://github.com/saltstack/salt/commit/7560908ee62351769c3cd43b03d74c1ca772cc52

https://github.com/saltstack/salt/commit/e200b8a7ff53780124e08d2bdefde7587e52bfca

### RSA Key Generation Fault

RSA key generation was done incorrectly, leading to very insecure keys. It is recommended to regenerate all RSA keys.

This issue can be used to impersonate Salt masters or minions, or decrypt any transferred data.

This issue can only be exploited by attackers who are able to observe or modify traffic between Salt minions and the legitimate Salt master.

A tool was included in 0.15.1 to assist in mass key regeneration, the manage.regen_keys runner.

This issue affects all known versions of Salt.

This issue was reported by Ronald Volgers.

### Patch

The issue is fixed in Salt 0.15.1. Updated packages are available in the usual locations.

Specific commits:

https://github.com/saltstack/salt/commit/5dd304276ba5745ec21fc1e6686a0b28da29e6fc

### Command Injection Via ext_pillar

Arbitrary shell commands could be executed on the master by an authenticated minion through options passed when requesting a pillar.

Ext pillar options have been restricted to only allow safe external pillars to be called when prompted by the minion.

This issue affects Salt versions from 0.14.0 to 0.15.0.

This issue was reported by Ronald Volgers.

#### Patch

The issue is fixed in Salt 0.15.1. Updated packages are available in the usual locations.

Specific commits:

https://github.com/saltstack/salt/commit/43d8c16bd26159d827d1a945c83ac28159ec5865

### 18.2.75 Salt 0.15.2 Release Notes

**release** 2013-05-29

### 18.2.76 Salt 0.15.3 Release Notes

**release** 2013-06-01

### 18.2.77 Salt 0.16.0 Release Notes

**release** 2013-07-01

The 0.16.0 release is an exciting one, with new features in master redundancy, and a new, powerful requisite.

#### Major Features

#### Multi-Master

This new capability allows for a minion to be actively connected to multiple salt masters at the same time. This allows for multiple masters to send out commands to minions and for minions to automatically reconnect to masters that have gone down. A tutorial is available to help get started here:

*Multi Master Tutorial*

#### Prereq, the New Requisite

The new *prereq* requisite is very powerful! It allows for states to execute based on a state that is expected to make changes in the future. This allows for a change on the system to be preempted by another execution. A good example is needing to shut down a service before modifying files associated with it, allowing, for instance, a webserver to be shut down allowing a load balancer to stop sending requests while server side code is updated. In this case, the prereq will only run if changes are expected to happen in the prerequired state, and the prerequired state will always run after the prereq state and only if the prereq state succeeds.

#### Peer System Improvements

The peer system has been revamped to make it more reliable, faster, and like the rest of Salt, async. The peer calls when an updated minion and master are used together will be much faster!

### Relative Includes

The ability to include an sls relative to the defined sls has been added, the new syntax id documented here:

*Includes*

### More State Output Options

The `state_output` option in the past only supported *full* and *terse*, 0.16.0 add the *mixed* and *changes* modes further refining how states are sent to users' eyes.

### Improved Windows Support

Support for Salt on Windows continues to improve. Software management on Windows has become more seamless with Linux/UNIX/BSD software management. Installed software is now recognized by the short names defined in the *repository SLS*. This makes it possible to run `salt '*' pkg.version firefox` and get back results from Windows and non-Windows minions alike.

When templating files on Windows, Salt will now correctly use Windows appropriate line endings. This makes it much easier to edit and consume files on Windows.

When using the cmd state the `shell` option now allows for specifying Windows Powershell as an alternate shell to execute cmd.run and cmd.script. This opens up Salt to all the power of Windows Powershell and its advanced Windows management capabilities.

Several fixes and optimizations were added for the Windows networking modules, especially when working with IPv6.

A system module was added that makes it easy to restart and shutdown Windows minions.

The Salt Minion will now look for its config file in `c:\salt\conf` by default. This means that it's no longer necessary to specify the `-c` option to specify the location of the config file when starting the Salt Minion on Windows in a terminal.

### Multiple Targets for pkg.removed, pkg.purged States

Both *`pkg.removed`* and *`pkg.purged`* now support the `pkgs` argument, which allow for multiple packages to be targeted in a single state. This, as in *`pkg.installed`*, helps speed up these states by reducing the number of times that the package management tools (apt, yum, etc.) need to be run.

### Random Times in Cron States

The temporal parameters in *`cron.present`* states (minute, hour, etc.) can now be randomized by using `random` instead of a specific value. For example, by using the `random` keyword in the `minute` parameter of a cron state, the same cron job can be pushed to hundreds or thousands of hosts, and they would each use a randomly-generated minute. This can be helpful when the cron job accesses a network resource, and it is not desirable for all hosts to run the job concurrently.

```
/path/to/cron/script:
  cron.present:
    - user: root
    - minute: random
    - hour: 2
```

Since Salt assumes a value of `*` for unspecified temporal parameters, adding a parameter to the state and setting it to `random` will change that value from `*` to a randomized numeric value. However, if that field in the cron entry on the minion already contains a numeric value, then using the `random` keyword will not modify it.

#### Confirmation Prompt on Key Acceptance

When accepting new keys with `salt-key -a minion-id` or `salt-key -A`, there is now a prompt that will show the affected keys and ask for confirmation before proceeding. This prompt can be bypassed using the `-y` or `--yes` command line argument, as with other `salt-key` commands.

#### Support for Setting Password Hashes on BSD Minions

FreeBSD, NetBSD, and OpenBSD all now support setting passwords in *`user.present`* states.

### 18.2.78 Salt 0.16.1 Release Notes

**release** 2013-07-29

### 18.2.79 Salt 0.16.2 Release Notes

**release** 2013-08-01

Version 0.16.2 is a bugfix release for *0.16.0*, and contains a number of fixes.

#### Windows

- Only allow Administrator's group and SYSTEM user access to C:\salt. This eliminates a race condition where a non-admin user could modify a template or managed file before it is executed by the minion (which is running as an elevated user), thus avoiding a potential escalation of privileges. (issue 6361)

#### Grains

- Fixed detection of `virtual` grain on OpenVZ hardware nodes
- Gracefully handle lsb_release data when it is enclosed in quotes
- LSB grains are now prefixed with `lsb_distrib_` instead of simply `lsb_`. The old naming is not preserved, so SLS may be affected.
- Improved grains detection on MacOS

#### Pillar

- Don't try to load *`git_pillar`* if not enabled in master config (issue 6052)
- Functions *`pillar.item`* and *`pillar.items`* added for parity with *`grains.item`*/*`grains.items`*. The old function `pillar.data` is preserved for backwards compatibility.
- Fixed minion traceback when Pillar SLS is malformed (issue 5910)

### Peer Publishing

- More gracefully handle improperly quoted publish commands (issue 5958)
- Fixed traceback when timeout specified via the CLI fo *publish.publish*, *publish.full_data* (issue 5959)
- Fixed unintended change in output of *publish.publish* (issue 5928)

### Minion

- Fixed salt-key usage in minionswarm script
- Quieted warning about **SALT_MINION_CONFIG** environment variable on minion startup and for CLI commands run via `salt-call` (issue 5956)
- Added minion config parameter *random_reauth_delay* to stagger re-auth attempts when the minion is waiting for the master to approve its public key. This helps prevent SYN flooding in larger environments.

### User/Group Management

- Implement previously-ignored `unique` option for *user.present* states in FreeBSD
- Report in state output when a *group.present* state attempts to use a gid in use by another group
- Fixed regression that prevents a *user.present* state to set the password hash to the system default (i.e. an unset password)
- Fixed multiple *group.present* states with the same group (issue 6439)

### File Management

- Fixed file.mkdir setting incorrect permissions (issue 6033)
- Fixed cleanup of source files for templates when `/tmp` is in file_roots (issue 6118)
- Fixed caching of zero-byte files when a non-empty file was previously cached at the same path
- Added HTTP authentication support to the cp module (issue 5641)
- Diffs are now suppressed when binary files are changed

### Package/Repository Management

- Fixed traceback when there is only one target for *pkg.latest* states
- Fixed regression in detection of virtual packages (apt)
- Limit number of pkg database refreshes to once per *state.sls*/*state.highstate*
- YUM: Allow 32-bit packages with arches other than i686 to be managed on 64-bit systems (issue 6299)
- Fixed incorrect reporting in pkgrepo.managed states (issue 5517)
- Fixed 32-bit binary package installs on 64-bit RHEL-based distros, and added proper support for 32-bit packages on 64-bit Debian-based distros (issue 6303)
- Fixed issue where requisites were inadvertently being put into YUM repo files (issue 6471)

### Service Management

- Fixed inaccurate reporting of results in *service.running* states when the service fails to start (issue 5894)
- Fixed handling of custom initscripts in RHEL-based distros so that they are immediately available, negating the need for a second state run to manage the service that the initscript controls

### Networking

- Function network.hwaddr renamed to *network.hw_addr* to match *network.ip_addrs* and *network.ip_addrs6*. All three functions also now work without the underscore in the name, as well.
- Fixed traceback in *bridge.show* when interface is not present (issue 6326)

### SSH

- Fixed incorrect result reporting for some *ssh_known_hosts.present* states
- Fixed inaccurate reporting when *ssh_auth.present* states are run with `test=True`, when rsa/dss is used for the `enc` param instead of ssh-rsa/ssh-dss (issue 5374)

### pip

- Properly handle `-f` lines in pip freeze output
- Fixed regression in pip.installed states with specifying a requirements file (issue 6003)
- Fixed use of `editable` argument in `pip.installed` states (issue 6025)
- Deprecated `runas` parameter in execution function calls, in favor of `user`

### MySQL

- Allow specification of *MySQL* connection arguments via the CLI, overriding/bypassing minion config params
- Allow *mysql_user.present* states to set a passwordless login (issue 5550)
- Fixed endless loop when *mysql.processlist* is run (issue 6297)

### PostgreSQL

- Fixed traceback in *postgres.user_list* (issue 6352)

### Miscellaneous

- Don't allow *npm states* to be used if *npm module* is not available
- Fixed *alternatives.install* states for which the target is a symlink (issue 6162)
- Fixed traceback in *sysbench module* (issue 6175)
- Fixed traceback in job cache
- Fixed tempfile cleanup for windows
- Fixed issue where SLS files using the *pydsl renderer* were not being run

- Fixed issue where returners were being passed incorrect information (issue 5518)
- Fixed traceback when numeric args are passed to *cmd.script* states
- Fixed bug causing *cp.get_dir* to return more directories than expected (issue 6048)
- Fixed traceback when *supervisord.running* states are run with `test=True` (issue 6053)
- Fixed tracebacks when Salt encounters problems running rbenv (issue 5888)
- Only make the *monit module* available if monit binary is present (issue 5871)
- Fixed incorrect behavior of *img.mount_image*
- Fixed traceback in *tomcat.deploy_war* in Windows
- Don't re-write /etc/fstab if mount fails
- Fixed tracebacks when Salt encounters problems running gem (issue 5886)
- Fixed incorrect behavior of *selinux.boolean* states (issue 5912)
- *RabbitMQ*: Quote passwords to avoid symbols being interpolated by the shell (issue 6338)
- Fixed tracebacks in *extfs.mkfs* and *extfs.tune* (issue 6462)
- Fixed a regression with the *module.run* state where the `m_name` and `m_fun` arguments were being ignored (issue 6464)

### 18.2.80 Salt 0.16.3 Release Notes

**release** 2013-08-09

Version 0.16.3 is another bugfix release for *0.16.0*. The changes include:

- Various documentation fixes
- Fix proc directory regression (issue 6502)
- Properly detect Linaro Linux (issue 6496)
- Fix regressions in *mount.mounted* (issue 6522, issue 6545)
- Skip malformed state requisites (issue 6521)
- Fix regression in gitfs from bad import
- Fix for watching prereq states (including recursive requisite error) (issue 6057)
- Fix mod_watch not overriding prereq (issue 6520)
- Don't allow functions which compile states to be called within states (issue 5623)
- Return error for malformed top.sls (issue 6544)
- Fix traceback in *mysql.query*
- Fix regression in binary package installation for 64-bit packages on Debian-based Linux distros (issue 6563)
- Fix traceback caused by running *cp.push* without having set *file_recv* in the master config file
- Fix scheduler configuration in pillar (issue 6201)

### 18.2.81 Salt 0.16.4 Release Notes

**release** 2013-09-07

Version 0.16.4 is another bugfix release for *0.16.0*, likely to be the last before 0.17.0 is released. The changes include:

- Multiple documentation improvements/additions
- Added the `osfinger` and `osarch` grains
- Properly handle 32-bit packages for debian32 on x86_64 (issue 6607)
- Fix regression in yum package installation in CentOS 5 (issue 6677)
- Fix bug in *`hg.latest`* state that would erroneously delete directories (issue 6661)
- Fix bug related to pid not existing for *`ps.top`* (issue 6679)
- Fix regression in *`MySQL returner`* (issue 6695)
- Fix IP addresses grains (`ipv4` and `ipv6`) to include all addresses (issue 6656)
- Fix regression preventing authenticated FTP (issue 6733)
- Fix setting password for windows users (issue 6824)
- Fix *`file.contains`* on values YAML parses as non-string (issue 6817)
- Fix *`file.get_gid`*, *`file.get_uid`*, and *`file.chown`* for broken symlinks (issue 6826)
- Fix comment for service reloads in service state (issue 6851)

### 18.2.82 Salt 0.17.0 Release Notes

**release** 2013-09-26

The 0.17.0 release is a very exciting release of Salt, this brings to Salt some very powerful new features and advances. The advances range from the state system to the test suite, covering new transport capabilities and making states easier and more powerful, to extending Salt Virt and much more!

The 0.17.0 release will also be the last release of Salt to follow the old 0.XX.X numbering system, the next release of Salt will change the numbering to be date based following this format:

<Year>.<Month>.<Minor>

So if the release happens in November of 2013 the number will be 13.11.0, the first bugfix release will be 13.11.1 and so forth.

#### Major Features

#### Halite

The new Halite web GUI is now available on PyPI. A great deal of work has been put into Halite to make it fully event driven and amazingly fast. The Halite UI can be started from within the Salt Master (after being installed from PyPI), or standalone, and does not require an external database to run. It is very lightweight!

This initial release of Halite is primarily the framework for the UI and the communication systems, making it easy to extend and build the UI up. It presently supports watching the event bus and firing commands over Salt.

At this time, Halite is not available as a package, but installation documentation is available at: http://docs.saltstack.com/topics/tutorials/halite.html

Halite is, like the rest of Salt, Open Source!

Much more will be coming in the future of Halite!

### Salt SSH

The new `salt-ssh` command has been added to Salt. This system allows for remote execution and states to be run over ssh. The benefit here being, that salt can run relying only on the ssh agent, rather than requiring a minion to be deployed.

The `salt-ssh` system runs states in a compatible way as Salt and states created and run with salt-ssh can be moved over to a standard salt deployment without modification.

Since this is the initial release of salt-ssh, there is plenty of room for improvement, but it is fully operational, not just a bootstrap tool.

### Rosters

Salt is designed to have the minions be aware of the master and the master does not need to be aware of the location of the minions. The new salt roster system was created and designed to facilitate listing the targets for salt-ssh.

The roster system, like most of Salt, is a plugin system, allowing for the list of systems to target to be derived from any pluggable backend. The rosters shipping with 0.17.0 are flat and scan. Flat is a file which is read in via the salt render system and the scan roster does simple network scanning to discover ssh servers.

### State Auto Order

This is a major change in how states are evaluated in Salt. State Auto Order is a new feature that makes states get evaluated and executed in the order in which they are defined in the sls file. This feature makes it very easy to see the finite order in which things will be executed, making Salt now, fully imperative AND fully declarative.

The requisite system still takes precedence over the order in which states are defined, so no existing states should break with this change. But this new feature can be turned off by setting `state_auto_order: False` in the master config, thus reverting to the old lexicographical order.

### state.sls Runner

The `state.sls` runner has been created to allow for a more powerful system for orchestrating state runs and function calls across the salt minions. This new system uses the state system for organizing executions.

This allows for states to be defined that are executed on the master to call states on minions via `salt-run state.sls`.

### Salt Thin

Salt Thin is an exciting new component of Salt, this is the ability to execute Salt routines without any transport mechanisms installed, it is a pure python subset of Salt.

Salt Thin does not have any networking capability, but can be dropped into any system with Python installed and then `salt-call` can be called directly. The Salt Thin system, is used by the `salt-ssh` command, but can still be used to just drop salt somewhere for easy use.

### Event Namespacing

Events have been updated to be much more flexible. The tags in events have all been namespaced allowing easier tracking of event names.

### Mercurial Fileserver Backend

The popular git fileserver backend has been joined by the mercurial fileserver backend, allowing the state tree to be managed entirely via mercurial.

### External Logging Handlers

The external logging handler system allows for Salt to directly hook into any external logging system. Currently supported are sentry and logstash.

### Jenkins Testing

The testing systems in Salt have been greatly enhanced, tests for salt are now executed, via jenkins.saltstack.com, across many supported platforms. Jenkins calls out to salt-cloud to create virtual machines on Rackspace, then the minion on the virtual machine checks into the master running on Jenkins where a state run is executed that sets up the minion to run tests and executes the test suite.

This now automates the sequence of running platform tests and allows for continuous destructive tests to be run.

### Salt Testing Project

The testing libraries for salt have been moved out of the main salt code base and into a standalone codebase. This has been done to ease the use of the testing systems being used in salt based projects other than Salt itself.

### StormPath External Authentication

The external auth system now supports the fantastic Stormpath cloud based authentication system.

### LXC Support

Extensive additions have been added to Salt for LXC support. This included the backend libs for managing LXC containers. Addition into the salt-virt system is still in the works.

### Mac OS X User/Group Support

Salt is now able to manage users and groups on Minions running Mac OS X. However, at this time user passwords cannot be managed.

### Django ORM External Pillar

Pillar data can now be derived from Django managed databases.

#### Fixes from RC to release

- Multiple documentation fixes
- Add multiple source files + templating for `file.append` (issue 6905)
- Support sysctl configuration files in systemd>=207 (issue 7351)
- Add `file.search` and `file.replace`
- Fix cross-calling execution functions in provider overrides
- Fix locale override for postgres (issue 4543)
- Fix Raspbian identification for service/pkg support (issue 7371)
- Fix `cp.push` file corruption (issue 6495)
- Fix ALT Linux password hash specification (issue 3474)
- Multiple salt-ssh-related fixes and improvements

### 18.2.83 Salt 0.17.1 Release Notes

**release** 2013-10-17

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**Note:** THIS RELEASE IS NOT COMPATIBLE WITH PREVIOUS VERSIONS. If you update your master to 0.17.1, you must update your minions as well. Sorry for the inconvenience -- this is a result of one of the security fixes listed below.

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The 0.17.1 release comes with a number of improvements to salt-ssh, many bugfixes, and a number of security updates.

Salt SSH has been improved to be faster, more featureful and more secure. Since the original release of Salt SSH was primarily a proof of concept, it has been very exciting to see its rapid adoption. We appreciate the willingness of security experts to review Salt SSH and help discover oversights and ensure that security issues only exist for such a tiny window of time.

#### SSH Enhancements

#### Shell Improvements

Improvements to Salt SSH's communication have been added that improve routine execution regardless of the target system's login shell.

#### Performance

Deployment of routines is now faster and takes fewer commands to execute.

#### Security Updates

Be advised that these security issues all apply to a small subset of Salt users and mostly apply to Salt SSH.

### Insufficient Argument Validation

This issue allowed for a user with limited privileges to embed executions inside of routines to execute routines that should be restricted. This applies to users using external auth or client ACL and opening up specific routines.

Be advised that these patches address the direct issue. Additional commits have been applied to help mitigate this issue from resurfacing.

### CVE

CVE-2013-4435

### Affected Versions

0.15.0 - 0.17.0

### Patches

https://github.com/saltstack/salt/commit/6d8ef68b605fd63c36bb8ed96122a75ad2e80269 https://github.com/saltstack/salt/commit/ebdef37b7e5d2b95a01d34b211c61c61da67e46a https://github.com/saltstack/salt/commit/7f190ff890e47cdd591d9d7cefa5126574660824 https://github.com/saltstack/salt/commit/8e5afe59cef6743fe5dbd510dcf463dbdfca1ced https://github.com/saltstack/salt/commit/aca78f314481082862e96d4f0c1b75fa382bb885 https://github.com/saltstack/salt/commit/6a9752cdb1e8df2c9505ea910434c79d132eb1e2 https://github.com/saltstack/salt/commit/b73677435ba54ecfc93c1c2d840a7f9ba6f53410 https://github.com/saltstack/salt/commit/07972eb0a6f985749a55d8d4a2e471596591c80d https://github.com/saltstack/salt/commit/1e3f197726aa13ac5c3f2416000089f477f489b5

### Found By

Feth Arezki, of Majerti

### MITM SSH attack in salt-ssh

SSH host keys were being accepted by default and not enforced on future SSH connections. These patches set SSH host key checking by default and can be overridden by passing the -i flag to *salt-ssh*.

### CVE

CVE-2013-4436

### Affected Versions

0.17.0

### Found By

Michael Scherer, Red Hat

### Insecure Usage of /tmp in salt-ssh

The initial release of salt-ssh used the /tmp directory in an insecure way. These patches not only secure usage of files under /tmp in salt-ssh, but also add checksum validation for all packages sent into the now secure locations on target systems.

### CVE

CVE-2013-4438

### Affected Versions

0.17.0

### Patches

https://github.com/saltstack/salt/commit/aa4bb77ef230758cad84381dde0ec660d2dc340a https://github.com/saltstack/salt/commit/8f92b6b2cb2e4ec3af8783eb6bf4ff06f5a352cf https://github.com/saltstack/salt/commit/c58e56811d5a50c908df0597a0ba0b643b45ebfd https://github.com/saltstack/salt/commit/0359db9b46e47614cff35a66ea6a6a76846885d2 https://github.com/saltstack/salt/commit/4348392860e0fd43701c331ac3e681cf1a8c17b0 https://github.com/saltstack/salt/commit/664d1a1cac05602fad2693f6f97092d98a72bf61 https://github.com/saltstack/salt/commit/bab92775a576e28ff9db262f32db9cf2375bba87 https://github.com/saltstack/salt/commit/c6d34f1acf64900a3c87a2d37618ff414e5a704e

### Found By

Michael Scherer, Red Hat

### YAML Calling Unsafe Loading Routine

It has been argued that this is not a valid security issue, as the YAML loading that was happening was only being called after an initial gateway filter in Salt has already safely loaded the YAML and would fail if non-safe routines were embedded. Nonetheless, the CVE was filed and patches applied.

### CVE

CVE-2013-4438

### Patches

https://github.com/saltstack/salt/commit/339b0a51befae6b6b218ebcb55daa9cd3329a1c5

#### Found By

Michael Scherer, Red Hat

### Failure to Drop Supplementary Group on Salt Master

If a salt master was started as a non-root user by the root user, root's groups would still be applied to the running process. This fix changes the process to have only the groups of the running user.

#### CVE

CVE not considered necessary by submitter.

#### Affected Versions

0.11.0 - 0.17.0

#### Patches

https://github.com/saltstack/salt/commit/b89fa9135822d029795ab1eecd68cce2d1ced715

#### Found By

Michael Scherer, Red Hat

### Failure to Validate Minions Posting Data

This issue allowed a minion to pose as another authorized minion when posting data such as the mine data. All minions now pass through the id challenge before posting such data.

#### CVE

CVE-2013-4439

#### Affected Versions

0.15.0 - 0.17.0

#### Patches

https://github.com/saltstack/salt/commit/7b850ff3d07ef6782888914ac4556c01e8a1c482 https://github.com/saltstack/salt/commit/151759b2a1e1c6ce29277aa81b054219147f80fd

### Found By

David Anderson

### Fix Reference

Version 0.17.1 is the first bugfix release for *0.17.0*. The changes include:

- Fix symbolic links in thin.tgz (issue 7482)
- Pass env through to file.patch state (issue 7452)
- Service provider fixes and reporting improvements (issue 7361)
- Add `--priv` option for specifying salt-ssh private key
- Fix salt-thin's salt-call on setuptools installations (issue 7516)
- Fix salt-ssh to support passwords with spaces (issue 7480)
- Fix regression in wildcard includes (issue 7455)
- Fix salt-call outputter regression (issue 7456)
- Fix custom returner support for startup states (issue 7540)
- Fix value handling in augeas (issue 7605)
- Fix regression in apt (issue 7624)
- Fix minion ID guessing to use `socket.getfqdn()` first (issue 7558)
- Add minion ID caching (issue 7558)
- Fix salt-key race condition (issue 7304)
- Add `--include-all` flag to salt-key (issue 7399)
- Fix custom grains in pillar (part of issue 5716, issue 6083)
- Fix race condition in salt-key (issue 7304)
- Fix regression in minion ID guessing, prioritize `socket.getfqdn()` (issue 7558)
- Cache minion ID on first guess (issue 7558)
- Allow trailing slash in `file.directory` state
- Fix reporting of file_roots in pillar return (issue 5449 and issue 5951)
- Remove pillar matching for mine.get (issue 7197)
- Sanitize args for multiple execution modules
- Fix yumpkg mod_repo functions to filter hidden args (issue 7656)
- Fix conflicting IDs in state includes (issue 7526)
- Fix mysql_grants.absent string formatting issue (issue 7827)
- Fix postgres.version so it won't return None (issue 7695)
- Fix for trailing slashes in mount.mounted state
- Fix rogue AttributErrors in the outputter system (issue 7845)
- Fix for incorrect ssh key encodings resulting in incorrect key added (issue 7718)

- Fix for pillar/grains naming regression in python renderer (issue 7693)
- Fix args/kwargs handling in the scheduler (issue 7422)
- Fix logfile handling for *file://*, *tcp://*, and *udp://* (issue 7754)
- Fix error handling in config file parsing (issue 6714)
- Fix RVM using sudo when running as non-root user (issue 2193)
- Fix client ACL and underlying logging bugs (issue 7706)
- Fix scheduler bug with returner (issue 7367)
- Fix user management bug related to default groups (issue 7690)
- Fix various salt-ssh bugs (issue 7528)
- Many various documentation fixes

### 18.2.84 Salt 0.17.2 Release Notes

**release** 2013-11-14

Version 0.17.2 is another bugfix release for *0.17.0*. The changes include:

- Add ability to delete key with grains.delval (issue 7872)
- Fix possible state compiler stack trace (issue 5767)
- Fix architecture regression in yumpkg (issue 7813)
- Use correct `ps` on Debian to prevent truncating (issue 5646)
- Fix grains targeting for new grains (issue 5737)
- Fix bug with merging in git_pillar (issue 6992)
- Fix print_jobs duplicate results
- Fix apt version specification for pkg.install
- Fix possible KeyError from ext_job_cache missing option
- Fix auto_order for `-names` states (issue 7649)
- Fix regression in new gitfs installs (directory not found error)
- Fix escape pipe issue on Windows for file.recurse (issue 7967)
- Fix fileclient in case of master restart (issue 7987)
- Try to output warning if CLI command malformed (issue 6538)
- Fix `--out=quiet` to actually be quiet (issue 8000)
- Fix for state.sls in salt-ssh (issue 7991)
- Fix for MySQL grants ordering issue (issue 5817)
- Fix traceback for certain missing CLI args (issue 8016)
- Add ability to disable lspci queries on master (issue 4906)
- Fail if sls defined in topfile does not exist (issue 5998)
- Add ability to downgrade MySQL grants (issue 6606)
- Fix ssh_auth.absent traceback (issue 8043)

- Add upstart detection for Debian/Raspbian (issue 8039)
- Fix ID-related issues (issue 8052, issue 8050, and others)
- Fix for jinja rendering issues (issue 8066 and issue 8079)
- Fix argument parsing in salt-ssh (issue 7928)
- Fix some GPU detection instances (issue 6945)
- Fix bug preventing includes from other environments in SLS files
- Fix for kwargs with dashes (issue 8102)
- Fix salt.utils.which for windows `.exe' (issue 7904)
- Fix apache.adduser without apachectl (issue 8123)
- Fix issue with evaluating `test` kwarg in states (issue 7788)
- Fix regression in `salt.client.Caller()` (issue 8078)
- Fix apt-key silent failure
- Fix bug where cmd.script would try to run even if caching failed (issue 7601)
- Fix apt `pkg.latest` regression (issue 8067)
- Fix for mine data not being updated (issue 8144)
- Fix for noarch packages in yum
- Fix a Xen detection edge case (issue 7839)
- Fix windows `__opts__` dictionary persistence (issue 7714)
- Fix version generation for when it's part of another git repo (issue 8090)
- Fix _handle_iorder stacktrace so that the real syntax error is shown (issue 8114 and issue 7905)
- Fix `git.latest` state when a commit SHA is used (issue 8163)
- Fix various small bugs in yumpkg.py (issue 8201)
- Fix for specifying identify file in git.latest (issue 8094)
- Fix for `--output-file` CLI arg (issue 8205)
- Add ability to specify shutdown time for system.shutdown (issue 7833)
- Fix for salt version using non-salt git repo info (issue 8266)
- Add additional hints at impact of `pkgrepo` states when `test=True` (issue 8247)
- Fix for salt-ssh files not being owned by root (issue 8216)
- Fix retry logic and error handling in fileserver (related to issue 7755)
- Fix file.replace with `test=True` (issue 8279)
- Add flag for limiting file traversal in fileserver (issue 6928)
- Fix for extra mine processes (issue 5729)
- Fix for unloading custom modules (issue 7691)
- Fix for salt-ssh opts (issue 8005 and issue 8271)
- Fix compound matcher for grains (issue 7944)
- Improve error reporting in ebuild module (related to issue 5393)

- Add `dir_mode` to `file.managed` (issue 7860)
- Improve traceroute support for FreeBSD and OS X (issue 4927)
- Fix for matching minions under syndics (issue 7671)
- Improve exception handling for missing ID (issue 8259)
- Fix grain mismatch for ScientificLinux (issue 8338)
- Add configuration option for minion_id_caching
- Fix open mode auth errors (issue 8402)

### 18.2.85 Salt 0.17.3 Release Notes

**release** 2013-12-08

**Note:** 0.17.3 had some regressions which were promptly fixed in the 0.17.4 release. Please use 0.17.4 instead.

Version 0.17.3 is another bugfix release for *0.17.0*. The changes include:

- Fix some jinja render errors (issue 8418)
- Fix `file.replace` state changing file ownership (issue 8399)
- Fix state ordering with the PyDSL renderer (issue 8446)
- Fix for new npm version (issue 8517)
- Fix for pip state requiring `name` even with requirements file (issue 8519)
- Fix yum logging to open terminals (issue 3855)
- Add sane maxrunning defaults for scheduler (issue 8563)
- Fix states duplicate key detection (issue 8053)
- Fix SUSE patch level reporting (issue 8428)
- Fix managed file creation umask (issue 8590)
- Fix logstash exception (issue 8635)
- Improve argument exception handling for salt command (issue 8016)
- Fix pecl success reporting (issue 8750)
- Fix launchctl module exceptions (issue 8759)
- Fix argument order in pw_user module
- Add warnings for failing grains (issue 8690)
- Fix hgfs problems caused by connections left open (issue 8811 and issue 8810)
- Add Debian iptables default for iptables-persistent package (issue 8889)
- Fix installation of packages with dots in pkg name (issue 8614)
- Fix noarch package installation on CentOS 6 (issue 8945)
- Fix portage_config.enforce_nice_config (issue 8252)
- Fix salt.util.copyfile umask usage (issue 8590)
- Fix rescheduling of failed jobs (issue 8941)

- Fix pkg on Amazon Linux (uses yumpkg5 now) (issue 8226)
- Fix conflicting options in postgres module (issue 8717)
- Fix ps modules for psutil >= 0.3.0 (issue 7432)
- Fix postgres module to return False on failure (issue 8778)
- Fix argument passing for args with pound signs (issue 8585)
- Fix pid of salt CLi command showing in status.pid output (issue 8720)
- Fix rvm to run gem as the correct user (issue 8951)
- Fix namespace issue in win_file module (issue 9060)
- Fix masterless state paths on windows (issue 9021)
- Fix timeout option in master config (issue 9040)

### 18.2.86 Salt 0.17.4 Release Notes

**release** 2013-12-10

Version 0.17.4 is another bugfix release for *0.17.0*. The changes include:

- Fix file.replace bug when replacement str is numeric (issue 9101)
- Fix regression in file.managed (issue 9131)
- Prevent traceback when job is None. (issue 9145)

### 18.2.87 Salt 0.17.5 Release Notes

**release** 2014-01-27

Version 0.17.5 is another bugfix release for *0.17.0*. The changes include:

- Fix `user.present` states with non-string fullname (issue 9085)
- Fix `virt.init` return value on failure (issue 6870)
- Fix reporting of `file.blockreplace` state when `test=True`
- Fix `network.interfaces` when used in cron (issue 7990)
- Fix bug in pkgrepo when switching to/from mirrorlist-based repo def (issue 9121)
- Fix infinite recursion when cache file is corrupted
- Add checking for rev and mirror/bare args in `git.latest` (issue 9107)
- Add `cmd.watch` alias (points to `cmd.wait`) (issue 8612)
- Fix stacktrace when prereq is not formed as a list (issue 8235)
- Fix stdin issue with lvdisplay command (issue 9128)
- Add pre-check function for range matcher (issue 9236)
- Add exception handling for psutil for processes that go missing (issue 9274)
- Allow `_in` requisites to match both on ID and name (issue 9061)
- Fix multiple client timeout issues (issue 7157 and issue 9302, probably others)
- Fix `ZMQError: Operation cannot be accomplished in current state` errors (issue 6306)

- Multiple optimization in minion auth routines
- Clarify logs for minion ID caching

### 18.2.88 Salt 0.6.0 release notes

The Salt remote execution manager has reached initial functionality! Salt is a management application which can be used to execute commands on remote sets of servers.

The whole idea behind Salt is to create a system where a group of servers can be remotely controlled from a single master, not only can commands be executed on remote systems, but salt can also be used to gather information about your server environment.

Unlike similar systems, like Func and MCollective, Salt is extremely simple to setup and use, the entire application is contained in a single package, and the master and minion daemons require no running dependencies in the way that Func requires Certmaster and MCollective requires activeMQ.

Salt also manages authentication and encryption. Rather than using SSL for encryption, salt manages encryption on a payload level, so the data sent across the network is encrypted with fast AES encryption, and authentication uses RSA keys. This means that Salt is fast, secure, and very efficient.

Messaging in Salt is executed with ZeroMQ, so the message passing interface is built into salt and does not require an external ZeroMQ server. This also adds speed to Salt since there is no additional bloat on the networking layer, and ZeroMQ has already proven itself as a very fast networking system.

The remote execution in Salt is ``Lazy Execution'', in that once the command is sent the requesting network connection is closed. This makes it easier to detach the execution from the calling process on the master, it also means that replies are cached, so that information gathered from historic commands can be queried in the future.

Salt also allows users to make execution modules in Python. Writers of these modules should also be pleased to know that they have access to the impressive information gathered from PuppetLabs' Facter application, making Salt module more flexible. In the future I hope to also allow Salt to group servers based on Facter information as well.

All in all Salt is fast, efficient, and clean, can be used from a simple command line client or through an API, uses message queue technology to make network execution extremely fast, and encryption is handled in a very fast and efficient manner. Salt is also VERY easy to use and VERY easy to extend.

You can find the source code for Salt on my GitHub page, I have also set up a few wiki pages explaining how to use and set up Salt. If you are using Arch Linux there is a package available in the Arch Linux AUR.

Salt 0.6.0 Source: https://cloud.github.com/downloads/saltstack/salt/salt-0.6.0.tar.gz

GitHub page: https://github.com/saltstack/salt

Wiki: https://github.com/saltstack/salt/wiki

Arch Linux Package: https://aur.archlinux.org/packages/salt-git/

I am very open to contributions, for instance I need packages for more Linux distributions as well as BSD packages and testers.

Give Salt a try, this is the initial release and is not a 1.0 quality release, but it has been working well for me! I am eager to get your feedback!

### 18.2.89 Salt 0.7.0 release notes

I am pleased to announce the release of Salt 0.7.0!

This release marks what is the first stable release of salt, 0.7.0 should be suitable for general use.

0.7.0 Brings the following new features to Salt:

- Integration with Facter data from puppet labs
- Allow for matching minions from the salt client via Facter information
- Minion job threading, many jobs can be executed from the master at once
- Preview of master clustering support - Still experimental
- Introduce new minion modules for stats, virtualization, service management and more
- Add extensive logging to the master and minion daemons
- Add sys.reload_functions for dynamic function reloading
- Greatly improve authentication
- Introduce the saltkey command for managing public keys
- Begin backend development preparatory to introducing butter
- Addition of man pages for the core commands
- Extended and cleaned configuration

0.7.0 Fixes the following major bugs:

- Fix crash in minions when matching failed
- Fix configuration file lookups for the local client
- Repair communication bugs in encryption
- Numerous fixes in the minion modules

The next release of Salt should see the following features:

- Stabilize the cluster support
- Introduce a remote client for salt command tiers
- salt-ftp system for distributed file copies
- Initial support for ``butter''

Coming up next is a higher level management framework for salt called Butter. I want salt to stay as a simple and effective communication framework, and allow for more complicated executions to be managed via Butter.

Right now Butter is being developed to act as a cloud controller using salt as the communication layer, but features like system monitoring and advanced configuration control (a puppet manager) are also in the pipe.

Special thanks to Joseph Hall for the status and network modules, and thanks to Matthias Teege for tracking down some configuration bugs!

Salt can be downloaded from the following locations;

Source Tarball:

https://cloud.github.com/downloads/saltstack/salt/salt-0.7.0.tar.gz

Arch Linux Package:

https://aur.archlinux.org/packages/salt-git/

Please enjoy the latest Salt release!

### 18.2.90 Salt 0.8.0 release notes

Salt 0.8.0 is ready for general consumption! The source tarball is available on GitHub for download:

https://cloud.github.com/downloads/saltstack/salt/salt-0.8.0.tar.gz

A lot of work has gone into salt since the last release just 2 weeks ago, and salt has improved a great deal. A swath of new features are here along with performance and threading improvements!

The main new features of salt 0.8.0 are:

Salt-cp

Cython minion modules

Dynamic returners

Faster return handling

Lowered required Python version to 2.6

Advanced minion threading

Configurable minion modules

#### Salt-cp

The salt-cp command introduces the ability to copy simple files via salt to targeted servers. Using salt-cp is very simple, just call salt-cp with a target specification, the source file(s) and where to copy the files on the minions. For instance:

# salt-cp '*' /etc/hosts /etc/hosts

Will copy the local /etc/hosts file to all of the minions.

Salt-cp is very young, in the future more advanced features will be added, and the functionality will much more closely resemble the cp command.

#### Cython minion modules

Cython is an amazing tool used to compile Python modules down to c. This is arguably the fastest way to run Python code, and since pyzmq requires cython, adding support to salt for cython adds no new dependencies.

Cython minion modules allow minion modules to be written in cython and therefore executed in compiled c. Simply write the salt module in cython and use the file extension ".pyx" and the minion module will be compiled when the minion is started. An example cython module is included in the main distribution called cytest.pyx:

https://github.com/saltstack/salt/blob/develop/salt/modules/cytest.pyx

#### Dynamic Returners

By default salt returns command data back to the salt master, but now salt can return command data to any system. This is enabled via the new returners modules feature for salt. The returners modules take the return data and sends it to a specific module. The returner modules work like minion modules, so any returner can be added to the minions.

This means that a custom data returner can be added to communicate the return data so anything from MySQL, Redis, MongoDB, and more!

There are 2 simple stock returners in the returners directory:

https://github.com/saltstack/salt/blob/develop/salt/returners

The documentation on writing returners will be added to the wiki shortly, and returners can be written in pure Python, or in cython.

#### Configurable Minion Modules

Minion modules may need to be configured, now the options passed to the minion configuration file can be accessed inside of the minion modules via the __opt__ dict.

Information on how to use this simple addition has been added to the wiki: *Writing modules*

The test module has an example of using the __opts__ dict, and how to set default options:

https://github.com/saltstack/salt/blob/develop/salt/modules/test.py

#### Advanced Minion Threading

In 0.7.0 the minion would block after receiving a command from the master, now the minion will spawn a thread or multiprocess. By default Python threads are used because for general use they have proved to be faster, but the minion can now be configured to use the Python multiprocessing module instead. Using multiprocessing will cause executions that are CPU bound or would otherwise exploit the negative aspects of the Python GIL to run faster and more reliably, but simple calls will still be faster with Python threading. The configuration option can be found in the minion configuration file:

https://github.com/saltstack/salt/blob/develop/conf/minion

#### Lowered Supported Python to 2.6

The requirement for Python 2.7 has been removed to support Python 2.6. I have received requests to take the minimum Python version back to 2.4, but unfortunately this will not be possible, since the ZeroMQ Python bindings do not support Python 2.4.

Salt 0.8.0 is a very major update, it also changes the network protocol slightly which makes communication with older salt daemons impossible, your master and minions need to be upgraded together!

I could use some help bringing salt to the people! Right now I only have packages for Arch Linux, Fedora 14 and Gentoo. We need packages for Debian and people willing to help test on more platforms. We also need help writing more minion modules and returner modules. If you want to contribute to salt please hop on the mailing list and send in patches, make a fork on GitHub and send in pull requests! If you want to help but are not sure where you can, please email me directly or post tot he mailing list!

I hope you enjoy salt, while it is not yet 1.0 salt is completely viable and usable!

-Thomas S. Hatch

### 18.2.91 Salt 0.8.7 release notes

It has been a month since salt 0.8.0, and it has been a long month! But Salt is still coming along strong. 0.8.7 has a lot of changes and a lot of updates. This update makes Salt's ZeroMQ back end better, strips Facter from the dependencies, and introduces interfaces to handle more capabilities.

Many of the major updates are in the background, but the changes should shine through to the surface. A number of the new features are still a little thin, but the back end to support expansion is in place.

I also recently gave a presentation to the Utah Python users group in Salt Lake City, the slides from this presentation are available here: https://cloud.github.com/downloads/saltstack/salt/Salt.pdf

The video from this presentation will be available shortly.

The major new features and changes in Salt 0.8.7 are:

- Revamp ZeroMQ topology on the master for better scalability
- State enforcement
- Dynamic state enforcement managers
- Extract the module loader into salt.loader
- Make Job ids more granular
- Replace Facter functionality with the new salt grains interface
- Support for "virtual" salt modules
- Introduce the salt-call command
- Better debugging for minion modules

The new ZeroMQ topology allows for better scalability, this will be required by the need to execute massive file transfers to multiple machines in parallel and state management. The new ZeroMQ topology is available in the aforementioned presentation.

0.8.7 introduces the capability to declare states, this is similar to the capabilities of Puppet. States in salt are declared via state data structures. This system is very young, but the core feature set is available. Salt states work around rendering files which represent Salt high data. More on the Salt state system will be documented in the near future.

The system for loading salt modules has been pulled out of the minion class to be a standalone module, this has enabled more dynamic loading of Salt modules and enables many of the updates in 0.8.7 –

https://github.com/saltstack/salt/blob/develop/salt/loader.py

Salt Job ids are now microsecond precise, this was needed to repair a race condition unveiled by the speed improvements in the new ZeroMQ topology.

The new grains interface replaces the functionality of Facter, the idea behind grains differs from Facter in that the grains are only used for static system data, dynamic data needs to be derived from a call to a salt module. This makes grains much faster to use, since the grains data is generated when the minion starts.

Virtual salt modules allows for a salt module to be presented as something other than its module name. The idea here is that based on information from the minion decisions about which module should be presented can be made. The best example is the pacman module. The pacman module will only load on Arch Linux minions, and will be called pkg. Similarly the yum module will be presented as pkg when the minion starts on a Fedora/RedHat system.

The new salt-call command allows for minion modules to be executed from the minion. This means that on the minion a salt module can be executed, this is a great tool for testing Salt modules. The salt-call command can also be used to view the grains data.

In previous releases when a minion module threw an exception very little data was returned to the master. Now the stack trace from the failure is returned making debugging of minion modules MUCH easier.

Salt is nearing the goal of 1.0, where the core feature set and capability is complete!

Salt 0.8.7 can be downloaded from GitHub here: https://cloud.github.com/downloads/saltstack/salt/salt-0.8.7.tar.gz

-Thomas S Hatch

### 18.2.92 Salt 0.8.8 release notes

Salt 0.8.8 is here! This release adds a great deal of code and some serious new features. The latest release can be downloaded here: https://cloud.github.com/downloads/saltstack/salt/salt-0.8.8.tar.gz

Improved Documentation has been set up for salt using sphinx thanks to the efforts of Seth House. This new documentation system will act as the back end to the salt website which is still under heavy development. The new sphinx documentation system has also been used to greatly clean up the salt manpages. The salt 7 manpage in particular now contains extensive information which was previously only in the wiki. The new documentation can be found at: http://docs.saltstack.com/ We still have a lot to add, and when the domain is set up I will post another announcement.

More additions have been made to the ZeroMQ setup, particularly in the realm of file transfers. Salt 0.8.8 introduces a built in, stateless, encrypted file server which allows salt minions to download files from the salt master using the same encryption system used for all other salt communications. The main motivation for the salt file server has been to facilitate the new salt state system.

Much of the salt code has been cleaned up and a new cleaner logging system has been introduced thanks to the efforts of Pedro Algarvio. These additions will allow for much more flexible logging to be executed by salt, and fixed a great deal of my poor spelling in the salt docstrings! Pedro Algarvio has also cleaned up the API, making it easier to embed salt into another application.

The biggest addition to salt found in 0.8.8 is the new state system. The salt module system has received a new front end which allows salt to be used as a configuration management system. The configuration management system allows for system configuration to be defined in data structures. The configuration management system, or as it is called in salt, the "salt state system" supports many of the features found in other configuration managers, but allows for system states to be written in a far simpler format, executes at blazing speeds, and operates via the salt minion matching system. The state system also operates within the normal scope of salt, and requires no additional configuration to use.

The salt state system can enforce the following states with many more to come: Packages Files Services Executing commands Hosts

The system used to define the salt states is based on a data structure, the data structure used to define the salt states has been made to be as easy to use as possible. The data structure is defined by default using a YAML file rendered via a Jinja template. This means that the state definition language supports all of the data structures that YAML supports, and all of the programming constructs and logic that Jinja supports. If the user does not like YAML or Jinja the states can be defined in yaml-mako, json-jinja, or json-mako. The system used to render the states is completely dynamic, and any rendering system can be added to the capabilities of Salt, this means that a rendering system that renders XML data in a cheetah template, or whatever you can imagine, can be easily added to the capabilities of salt.

The salt state system also supports isolated environments, as well as matching code from several environments to a single salt minion.

The feature base for Salt has grown quite a bit since my last serious documentation push. As we approach 0.9.0 the goals are becoming very clear, and the documentation needs a lot of work. The main goals for 0.9.0 are to further refine the state system, fix any bugs we find, get Salt running on as many platforms as we can, and get the documentation filled out. There is a lot more to come as Salt moves forward to encapsulate a much larger scope, while maintaining supreme usability and simplicity.

If you would like a more complete overview of Salt please watch the Salt presentation: Slides: https://cloud.github.com/downloads/saltstack/salt/Salt.pdf

-Thomas S Hatch

### 18.2.93 Salt 0.8.9 Release Notes

Salt 0.8.9 has finally arrived! Unfortunately this is much later than I had hoped to release 0.8.9, life has been very crazy over the last month. But despite challenges, Salt has moved forward!

This release, as expected, adds few new features and many refinements. One of the most exciting aspect of this release is that the development community for salt has grown a great deal and much of the code is from contributors.

Also, I have filled out the documentation a great deal. So information on States is properly documented, and much of the documentation that was out of date has been filled in.

### Download!

The Salt source can be downloaded from the salt GitHub site:

https://cloud.github.com/downloads/saltstack/salt/salt-0.8.9.tar.gz

Or from PyPI:

https://pypi.python.org/packages/source/s/salt/salt-0.8.9.tar.gz

Here s the md5sum:

7d5aca4633bc22f59045f59e82f43b56

For instructions on how to set up Salt please see the *Installation* instructions.

### New Features

### Salt Run

A big feature is the addition of Salt run, the `salt-run` command allows for master side execution modules to be made that gather specific information or execute custom routines from the master.

Documentation for salt-run can be found *here*

### Refined Outputters

One problem often complained about in salt was the fact that the output was so messy. Thanks to help from Jeff Schroeder a cleaner interface for the command output for the Salt CLI has been made. This new interface makes adding new printout formats easy and additions to the capabilities of minion modules makes it possible to set the printout mode or `outputter` for functions in minion modules.

### Cross Calling Salt Modules

Salt modules can now call each other, the `__salt__` dict has been added to the predefined references in minion modules. This new feature is documented in the *modules documentation*.

### Watch Option Added to Salt State System

Now in Salt states you can set the watch option, this will allow watch enabled states to change based on a change in the other defined states. This is similar to subscribe and notify statements in puppet.

### Root Dir Option

Travis Cline has added the ability to define the option `root_dir` which allows the salt minion to operate in a subdir. This is a strong move in supporting the minion running as an unprivileged user

### Config Files Defined in Variables

Thanks again to Travis Cline, the master and minion configuration file locations can be defined in environment variables now.

### New Modules

Quite a few new modules, states, returners, and runners have been made.

### New Minion Modules

#### apt

Support for apt-get has been added, this adds greatly improved Debian and Ubuntu support to Salt!

#### useradd and groupadd

Support for manipulating users and groups on Unix-like systems.

#### moosefs

Initial support for reporting on aspects of the distributed file system, MooseFS. For more information on MooseFS please see: http://www.moosefs.org

Thanks to Joseph Hall for his work on MooseFS support.

#### mount

Manage mounts and the fstab.

#### puppet

Execute puppet on remote systems.

#### shadow

Manipulate and manage the user password file.

#### ssh

Interact with ssh keys.

#### New States

#### user and group

Support for managing users and groups in Salt States.

#### mount

Enforce mounts and the fstab.

#### New Returners

#### mongo_return

Send the return information to a MongoDB server.

#### New Runners

#### manage

Display minions that are up or down.

### 18.2.94 Salt 0.9.0 Release Notes

**release** 2011-08-27

Salt 0.9.0 is here. This is an exciting release, 0.9.0 includes the new network topology features allowing peer salt commands and masters of masters via the syndic interface.

0.9.0 also introduces many more modules, improvements to the API and improvements to the ZeroMQ systems.

#### Download!

The Salt source can be downloaded from the salt GitHub site:

https://cloud.github.com/downloads/saltstack/salt/salt-0.9.0.tar.gz

Or from PyPI:

https://pypi.python.org/packages/source/s/salt/salt-0.9.0.tar.gz

Here is the md5sum:

9a925da04981e65a0f237f2e77ddab37

For instructions on how to set up Salt please see the *Installation* instructions.

### New Features

#### Salt Syndic

The new *Syndic interface* allows a master to be commanded via another higher level salt master. This is a powerful solution allowing a master control structure to exist, allowing salt to scale to much larger levels then before.

#### Peer Communication

0.9.0 introduces the capability for a minion to call a publication on the master and receive the return from another set of minions. This allows salt to act as a communication channel between minions and as a general infrastructure message bus.

Peer communication is turned off by default but can be enabled via the `peer` option in the master configuration file. Documentation on the new *Peer interface*.

#### Easily Extensible API

The minion and master classes have been redesigned to allow for specialized minion and master servers to be easily created. An example on how this is done for the master can be found in the `master.py` salt module:

https://github.com/saltstack/salt/blob/develop/salt/master.py

The `Master` class extends the `SMaster` class and set up the main master server.

The minion functions can now also be easily added to another application via the `SMinion` class, this class can be found in the `minion.py` module:

https://github.com/saltstack/salt/blob/develop/salt/minion.py

#### Cleaner Key Management

This release changes some of the key naming to allow for multiple master keys to be held based on the type of minion gathering the master key.

The -d option has also been added to the salt-key command allowing for easy removal of accepted public keys.

The --gen-keys option is now available as well for salt-key, this allows for a salt specific RSA key pair to be easily generated from the command line.

#### Improved 0MQ Master Workers

The 0MQ worker system has been further refined to be faster and more robust. This new system has been able to handle a much larger load than the previous setup. The new system uses the IPC protocol in 0MQ instead of TCP.

#### New Modules

Quite a few new modules have been made.

#### New Minion Modules

##### apache

Work directly with apache servers, great for managing balanced web servers

##### cron

Read out the contents of a systems crontabs

##### mdadm

Module to manage raid devices in Linux, appears as the `raid` module

##### mysql

Gather simple data from MySQL databases

##### ps

Extensive utilities for managing processes

##### publish

Used by the peer interface to allow minions to make publications

### 18.2.95 Salt 0.9.1 Release Notes

**release** 2011-08-29

### 18.2.96 Salt 0.9.2 Release Notes

**release** 2011-09-17

Salt 0.9.2 has arrived! 0.9.2 is primarily a bugfix release, the exciting component in 0.9.2 is greatly improved support for salt states. All of the salt states interfaces have been more thoroughly tested and the new salt-states git repo is growing with example of how to use states.

This release introduces salt states for early developers and testers to start helping us clean up the states interface and make it ready for the world!

0.9.2 also fixes a number of bugs found on Python 2.6.

#### Download!

The Salt source can be downloaded from the salt GitHub site:

https://cloud.github.com/downloads/saltstack/salt/salt-0.9.2.tar.gz

Or from PyPI:

https://pypi.python.org/packages/source/s/salt/salt-0.9.2.tar.gz

For instructions on how to set up Salt please see the *Installation* instructions.

#### New Features

#### Salt-Call Additions

The salt-call command has received an overhaul, it now hooks into the outputter system so command output looks clean, and the logging system has been hooked into salt-call, so the -l option allows the logging output from salt minion functions to be displayed.

The end result is that the salt-call command can execute the state system and return clean output:

```
# salt-call state.highstate
```

#### State System Fixes

The state system has been tested and better refined. As of this release the state system is ready for early testers to start playing with. If you are interested in working with the state system please check out the (still very small) salt-states GitHub repo:

https://github.com/saltstack/salt-states

This git repo is the active development branch for determining how a clean salt-state database should look and act. Since the salt state system is still very young a lot of help is still needed here. Please fork the salt-states repo and help us develop a truly large and scalable system for configuration management!

#### Notable Bug Fixes

#### Python 2.6 String Formatting

Python 2.6 does not support format strings without an index identifier, all of them have been repaired.

#### Cython Loading Disabled by Default

Cython loading requires a development tool chain to be installed on the minion, requiring this by default can cause problems for most Salt deployments. If Cython auto loading is desired it will need to be turned on in the minion config.

### 18.2.97 Salt 0.9.3 Release Notes

**release** 2011-11-05

Salt 0.9.3 is finally arrived. This is another big step forward for Salt, new features range from proper FreeBSD support to fixing issues seen when attaching a minion to a master over the Internet.

The biggest improvements in 0.9.3 though can be found in the state system, it has progressed from something ready for early testers to a system ready to compete with platforms such as Puppet and Chef. The backbone of the state system has been greatly refined and many new features are available.

### Download!

The Salt source can be downloaded from the salt GitHub site:

https://cloud.github.com/downloads/saltstack/salt/salt-0.9.3.tar.gz

Or from PyPI:

https://pypi.python.org/packages/source/s/salt/salt-0.9.3.tar.gz

For instructions on how to set up Salt please see the *Installation* instructions.

### New Features

### WAN Support

Recently more people have been testing Salt minions connecting to Salt Masters over the Internet. It was found that Minions would commonly loose their connection to the master when working over the internet. The minions can now detect if the connection has been lost and reconnect to the master, making WAN connections much more reliable.

### State System Fixes

Substantial testing has gone into the state system and it is ready for real world usage. A great deal has been added to the documentation for states and the modules and functions available to states have been cleanly documented.

A number of State System bugs have also been founds and repaired, the output from the state system has also been refined to be extremely clear and concise.

Error reporting has also been introduced, issues found in sls files will now be clearly reported when executing Salt States.

### Extend Declaration

The Salt States have also gained the `extend` declaration. This declaration allows for states to be cleanly modified in a post environment. Simply said, if there is an apache.sls file that declares the apache service, then another sls can include apache and then extend it:

```
include:
  - apache

extend:
  apache:
    service:
      - require:
        - pkg: mod_python
```

```
mod_python:
  pkg:
    - installed
```

The notable behavior with the extend functionality is that it literally extends or overwrites a declaration set up in another sls module. This means that Salt will behave as though the modifications were made directly to the apache sls. This ensures that the apache service in this example is directly tied to all requirements.

### Highstate Structure Specification

This release comes with a clear specification of the Highstate data structure that is used to declare Salt States. This specification explains everything that can be declared in the Salt SLS modules.

The specification is extremely simple, and illustrates how Salt has been able to fulfill the requirements of a central configuration manager within a simple and easy to understand format and specification.

### SheBang Renderer Switch

It came to our attention that having many renderers means that there may be a situation where more than one State Renderer should be available within a single State Tree.

The method chosen to accomplish this was something already familiar to developers and systems administrators, a SheBang. The Python State Renderer displays this new capability.

### Python State Renderer

Until now Salt States could only be declared in yaml or json using Jinja or Mako. A new, very powerful, renderer has been added, making it possible to write Salt States in pure Python:

```
#!py

def run():
    '''
    Install the python-mako package
    '''
    return {'include': ['python'],
            'python-mako': {'pkg': ['installed']}}
```

This renderer is used by making a run function that returns the Highstate data structure. Any capabilities of Python can be used in pure Python sls modules.

This example of a pure Python sls module is the same as this example in yaml:

```
include:
  - python

python-mako:
  pkg:
    - installed
```

### FreeBSD Support

Additional support has been added for FreeBSD, this is Salt's first branch out of the Linux world and proves the viability of Salt on non-Linux platforms.

Salt remote execution already worked on FreeBSD, and should work without issue on any Unix-like platform. But this support comes in the form of package management and user support, so Salt States also work on FreeBSD now.

The new freebsdpkg module provides package management support for FreeBSD and the new pw_user and pw_group provide user and group management.

### Module and State Additions

### Cron Support

Support for managing the system crontab has been added, declaring a cron state can be done easily:

```
date > /tmp/datestamp:
  cron:
    - present
    - user: fred
    - minute: 5
    - hour: 3
```

### File State Additions

The file state has been given a number of new features, primarily the directory, recurse, symlink, and absent functions.

**file.directory** Make sure that a directory exists and has the right permissions.

```
/srv/foo:
  file:
    - directory
    - user: root
    - group: root
    - mode: 1755
```

**file.symlink** Make a symlink.

```
/var/lib/www:
  file:
    - symlink
    - target: /srv/www
    - force: True
```

**file.recurse** The recurse state function will recursively download a directory on the master file server and place it on the minion. Any change in the files on the master will be pushed to the minion. The recurse function is very powerful and has been tested by pushing out the full Linux kernel source.

```
/opt/code:
  file:
    - recurse
    - source: salt://linux
```

**file.absent** Make sure that the file is not on the system, recursively deletes directories, files, and symlinks.

```
/etc/httpd/conf.d/somebogusfile.conf:
  file:
    - absent
```

### Sysctl Module and State

The sysctl module and state allows for sysctl components in the kernel to be managed easily. the sysctl module contains the following functions:

**sysctl.show** Return a list of sysctl parameters for this minion

**sysctl.get** Return a single sysctl parameter for this minion

**sysctl.assign** Assign a single sysctl parameter for this minion

**sysctl.persist** Assign and persist a simple sysctl parameter for this minion

The sysctl state allows for sysctl parameters to be assigned:

```
vm.swappiness:
  sysctl:
    - present
    - value: 20
```

### Kernel Module Management

A module for managing Linux kernel modules has been added. The new functions are as follows:

**kmod.available** Return a list of all available kernel modules

**kmod.check_available** Check to see if the specified kernel module is available

**kmod.lsmod** Return a dict containing information about currently loaded modules

**kmod.load** Load the specified kernel module

**kmod.remove** Unload the specified kernel module

The kmod state can enforce modules be either present or absent:

```
kvm_intel:
  kmod:
    - present
```

### Ssh Authorized Keys

The ssh_auth state can distribute ssh authorized keys out to minions. Ssh authorized keys can be present or absent.

```
AAAAB3NzaC1kc3MAAACBAL0sQ9fJ5bYTEyYvlRBsJdDOo49CNfhlWHWXQRqul6rwL4KIuPrhY7hBw0tV7UNC7J9IZRNO4iGod9C+C
 ↪xw6NtnQZVMcmZIre5Elrw3OKgxcDNomjYFNHuOYaQLBBMosyO++tJe1KTAr3A2zGj2xbWO9JhEzu8xvSdF8jRu0N5SRXPpzSyU
 ↪x75wolBDbVzeTlxWxgxhafj7P6Ncdv25Wz9wvc6ko/puww0b3rcLNqK+XCNJlsM/
 ↪7lB8Q26iK5mRZzNsGeGwGTyzNIMBekGYQ5MRdIcPv5dBIP/1M6fQDEsAXQ==:
  ssh_auth:
    - present
    - user: frank
    - enc: dsa
    - comment: 'Frank's key'
```

## 18.2.98 Salt 0.9.4 Release Notes

**release** 2011-11-27

Salt 0.9.4 has arrived. This is a critical update that repairs a number of key bugs found in 0.9.3. But this update is not without feature additions as well! 0.9.4 adds support for Gentoo portage to the pkg module and state system. Also there are 2 major new state additions, the failhard option and the ability to set up finite state ordering with the `order` option.

This release also sees our largest increase in community contributions. These contributors have and continue to be the life blood of the Salt project, and the team continues to grow. I want to put out a big thanks to our new and existing contributors.

### Download!

The Salt source can be downloaded from the salt GitHub site:

https://cloud.github.com/downloads/saltstack/salt/salt-0.9.4.tar.gz

Or from PyPI:

https://pypi.python.org/packages/source/s/salt/salt-0.9.4.tar.gz

For instructions on how to set up Salt please see the *Installation* instructions.

### New Features

### Failhard State Option

Normally, when a state fails Salt continues to execute the remainder of the defined states and will only refuse to execute states that require the failed state.

But the situation may exist, where you would want all state execution to stop if a single state execution fails. The capability to do this is called `failing hard`.

### State Level Failhard

A single state can have a failhard set, this means that if this individual state fails that all state execution will immediately stop. This is a great thing to do if there is a state that sets up a critical config file and setting a require for each state that reads the config would be cumbersome. A good example of this would be setting up a package manager early on:

```
/etc/yum.repos.d/company.repo:
  file:
    - managed
    - source: salt://company/yumrepo.conf
    - user: root
    - group: root
    - mode: 644
    - order: 1
    - failhard: True
```

In this situation, the yum repo is going to be configured before other states, and if it fails to lay down the config file, than no other states will be executed.

### Global Failhard

It may be desired to have failhard be applied to every state that is executed, if this is the case, then failhard can be set in the master configuration file. Setting failhard in the master configuration file will result in failing hard when any minion gathering states from the master have a state fail.

This is NOT the default behavior, normally Salt will only fail states that require a failed state.

Using the global failhard is generally not recommended, since it can result in states not being executed or even checked. It can also be confusing to see states failhard if an admin is not actively aware that the failhard has been set.

To use the global failhard set failhard: True in the master configuration

### Finite Ordering of State Execution

When creating salt sls files, it is often important to ensure that they run in a specific order. While states will always execute in the same order, that order is not necessarily defined the way you want it.

A few tools exist in Salt to set up the correct state ordering, these tools consist of requisite declarations and order options.

### The Order Option

Before using the order option, remember that the majority of state ordering should be done with requisite statements, and that a requisite statement will override an order option.

The order option is used by adding an order number to a state declaration with the option *order*:

```
vim:
  pkg:
    - installed
    - order: 1
```

By adding the order option to *1* this ensures that the vim package will be installed in tandem with any other state declaration set to the order *1*.

Any state declared without an order option will be executed after all states with order options are executed.

But this construct can only handle ordering states from the beginning. Sometimes you may want to send a state to the end of the line, to do this set the order to last:

```
vim:
  pkg:
    - installed
    - order: last
```

Substantial testing has gone into the state system and it is ready for real world usage. A great deal has been added to the documentation for states and the modules and functions available to states have been cleanly documented.

A number of State System bugs have also been founds and repaired, the output from the state system has also been refined to be extremely clear and concise.

Error reporting has also been introduced, issues found in sls files will now be clearly reported when executing Salt States.

#### Gentoo Support

Additional experimental support has been added for Gentoo. This is found in the contribution from Doug Renn, aka nestegg.

### 18.2.99 Salt 0.9.5 Release Notes

**release** 2012-01-15

Salt 0.9.5 is one of the largest steps forward in the development of Salt.

0.9.5 comes with many milestones, this release has seen the community of developers grow out to an international team of 46 code contributors and has many feature additions, feature enhancements, bug fixes and speed improvements.

**Warning**: Be sure to *read the upgrade instructions* about the switch to msgpack before upgrading!

#### Community

Nothing has proven to have more value to the development of Salt that the outstanding community that has been growing at such a great pace around Salt. This has proven not only that Salt has great value, but also the expandability of Salt is as exponential as I originally intended.

0.9.5 has received over 600 additional commits since 0.9.4 with a swath of new committers. The following individuals have contributed to the development of 0.9.5:

- Aaron Bull Schaefer
- Antti Kaihola
- Bas Tichelaar
- Brad Barden
- Brian Wagner
- Byron Clark
- Chris Scheller
- Christer Edwards
- Clint Savage
- Corey Quinn
- David Boucha
- Eivind Uggedal
- Eric Poelke
- Evan Borgstrom
- Jed Glazner

- Jeff Schroeder
- Jeffrey C. Ollie
- Jonas Buckner
- Kent Tenney
- Martin Schnabel
- Maxim Burgerhout
- Mitch Anderson
- Nathaniel Whiteinge
- Seth House
- Thomas S Hatch
- Thomas Schreiber
- Tor Hveem
- lzyeval
- syphernl

This makes 21 new developers since 0.9.4 was released!

To keep up with the growing community follow Salt on Ohloh (http://www.ohloh.net/p/salt), to join the Salt development community, fork Salt on GitHub, and get coding (https://github.com/saltstack/salt)!

### Major Features

#### SPEED! Pickle to msgpack

For a few months now we have been talking about moving away from Python pickles for network serialization, but a preferred serialization format had not yet been found. After an extensive performance testing period involving everything from JSON to protocol buffers, a clear winner emerged. Message Pack (http://msgpack.org/) proved to not only be the fastest and most compact, but also the most ``salt like''. Message Pack is simple, and the code involved is very small. The msgpack library for Python has been added directly to Salt.

This move introduces a few changes to Salt. First off, Salt is no longer a ``noarch'' package, since the msgpack lib is written in C. Salt 0.9.5 will also have compatibility issues with 0.9.4 with the default configuration.

We have gone through great lengths to avoid backwards compatibility issues with Salt, but changing the serialization medium was going to create issues regardless. Salt 0.9.5 is somewhat backwards compatible with earlier minions. A 0.9.5 master can command older minions, but only if the `serial` config value in the master is set to `pickle`. This will tell the master to publish messages in pickle format and will allow the master to receive messages in both msgpack and pickle formats.

Therefore **the suggested methods for upgrading** are either to just upgrade everything at once, or:

1. Upgrade the master to 0.9.5
2. Set `serial` to `pickle` in the master config
3. Upgrade the minions
4. Remove the `serial` option from the master config

Since pickles can be used as a security exploit the ability for a master to accept pickles from minions at all will be removed in a future release.

### C Bindings for YAML

All of the YAML rendering is now done with the YAML C bindings. This speeds up all of the sls files when running states.

### Experimental Windows Support

David Boucha has worked tirelessly to bring initial support to Salt for Microsoft Windows operating systems. Right now the Salt Minion can run as a native Windows service and accept commands.

In the weeks and months to come Windows will receive the full treatment and will have support for Salt States and more robust support for managing Windows systems. This is a big step forward for Salt to move entirely outside of the Unix world, and proves Salt is a viable cross platform solution. Big Thanks to Dave for his contribution here!

### Dynamic Module Distribution

Many Salt users have expressed the desire to have Salt distribute in-house modules, states, renderers, returners, and grains. This support has been added in a number of ways:

### Modules via States

Now when salt modules are deployed to a minion via the state system as a file, then the modules will be automatically loaded into the active running minion - no restart required - and into the active running state. So custom state modules can be deployed and used in the same state run.

### Modules via Module Environment Directories

Under the file_roots each environment can now have directories that are used to deploy large groups of modules. These directories sync modules at the beginning of a state run on the minion, or can be manually synced via the Salt module *salt.modules.saltutil.sync_all*.

The directories are named:

- `_modules`
- `_states`
- `_grains`
- `_renderers`
- `_returners`

The modules are pushed to their respective scopes on the minions.

### Module Reloading

Modules can now be reloaded without restarting the minion, this is done by calling the `salt.modules.sys.reload_modules` function.

But wait, there's more! Now when a salt module of any type is added via states the modules will be automatically reloaded, allowing for modules to be laid down with states and then immediately used.

Finally, all modules are reloaded when modules are dynamically distributed from the salt master.

### Enable / Disable Added to Service

A great deal of demand has existed for adding the capability to set services to be started at boot in the service module. This feature also comes with an overhaul of the service modules and initial systemd support.

This means that the *service state* can now accept `-enable: True` to make sure a service is enabled at boot, and `-enable: False` to make sure it is disabled.

### Compound Target

A new target type has been added to the lineup, the compound target. In previous versions the desired minions could only be targeted via a single specific target type, but now many target specifications can be declared.

These targets can also be separated by and/or operators, so certain properties can be used to omit a node:

```
salt -C 'webserv* and G@os:Debian or E@db.*' test.ping
```

will match all minions with ids starting with webserv via a glob and minions matching the `os:Debian` grain. Or minions that match the `db.*` regular expression.

### Node Groups

Often the convenience of having a predefined group of minions to execute targets on is desired. This can be accomplished with the new nodegroups feature. Nodegroups allow for predefined compound targets to be declared in the master configuration file:

```
nodegroups:
  group1: 'L@foo.domain.com,bar.domain.com,baz.domain.com and bl*.domain.com'
  group2: 'G@os:Debian and foo.domain.com'
```

And then used via the `-N` option:

```
salt -N group1 test.ping
```

### Minion Side Data Store

The data module introduces the initial approach into storing persistent data on the minions, specific to the minions. This allows for data to be stored on minions that can be accessed from the master or from the minion.

The Minion datastore is young, and will eventually provide an interface similar to a more mature key/value pair server.

### Major Grains Improvement

The Salt grains have been overhauled to include a massive amount of extra data. this includes hardware data, os data and salt specific data.

### Salt -Q is Useful Now

In the past the salt query system, which would display the data from recent executions would be displayed in pure Python, and it was unreadable.

0.9.5 has added the outputter system to the `-Q` option, thus enabling the salt query system to return readable output.

### Packaging Updates

Huge strides have been made in packaging Salt for distributions. These additions are thanks to our wonderful community where the work to set up packages has proceeded tirelessly.

### FreeBSD

Salt on FreeBSD? There a port for that:

http://svnweb.freebsd.org/ports/head/sysutils/py-salt/

This port was developed and added by Christer Edwards. This also marks the first time Salt has been included in an upstream packaging system!

### Fedora and Red Hat Enterprise

Salt packages have been prepared for inclusion in the Fedora Project and in EPEL for Red Hat Enterprise 5 and 6. These packages are the result of the efforts made by Clint Savage (herlo).

### Debian/Ubuntu

A team of many contributors have assisted in developing packages for Debian and Ubuntu. Salt is still actively seeking inclusion in upstream Debian and Ubuntu and the package data that has been prepared is being pushed through the needed channels for inclusion.

These packages have been prepared with the help of:

- Corey
- Aaron Toponce
- and`

### More to Come

We are actively seeking inclusion in more distributions. Primarily getting Salt into Gentoo, SUSE, OpenBSD, and preparing Solaris support are all turning into higher priorities.

### Refinement

Salt continues to be refined into a faster, more stable and more usable application. 0.9.5 comes with more debug logging, more bug fixes and more complete support.

### More Testing, More BugFixes

0.9.5 comes with more bugfixes due to more testing than any previous release. The growing community and the introduction a a dedicated QA environment have unearthed many issues that were hiding under the covers. This has further refined and cleaned the state interface, taking care of things from minor visual issues to repairing misleading data.

### Custom Exceptions

A custom exception module has been added to throw salt specific exceptions. This allows Salt to give much more granular error information.

### New Modules

#### data

The new data module manages a persistent datastore on the minion. Big thanks to bastichelaar for his help refining this module

#### freebsdkmod

FreeBSD kernel modules can now be managed in the same way Salt handles Linux kernel modules.

This module was contributed thanks to the efforts of Christer Edwards

#### gentoo_service

Support has been added for managing services in Gentoo. Now Gentoo services can be started, stopped, restarted, enabled, disabled, and viewed.

#### pip

The pip module introduces management for pip installed applications. Thanks goes to whitinge for the addition of the pip module

#### rh_service

The rh_service module enables Red Hat and Fedora specific service management. Now Red Hat like systems come with extensive management of the classic init system used by Red Hat

#### saltutil

The saltutil module has been added as a place to hold functions used in the maintenance and management of salt itself. Saltutil is used to salt the salt minion. The saltutil module is presently used only to sync extension modules from the master server.

#### systemd

Systemd support has been added to Salt, now systems using this next generation init system are supported on systems running systemd.

#### virtualenv

The virtualenv module has been added to allow salt to create virtual Python environments. Thanks goes to whitinge for the addition of the virtualenv module

#### win_disk

Support for gathering disk information on Microsoft Windows minions The windows modules come courtesy of Utah_Dave

#### win_service

The win_service module adds service support to Salt for Microsoft Windows services

#### win_useradd

Salt can now manage local users on Microsoft Windows Systems

#### yumpkg5

The yumpkg module introduces in 0.9.4 uses the yum API to interact with the yum package manager. Unfortunately, on Red Hat 5 systems salt does not have access to the yum API because the yum API is running under Python 2.4 and Salt needs to run under Python 2.6.

The yumpkg5 module bypasses this issue by shelling out to yum on systems where the yum API is not available.

### New States

#### mysql_database

The new mysql_database state adds the ability to systems running a mysql server to manage the existence of mysql databases.

The mysql states are thanks to syphernl

#### mysql_user

The mysql_user state enables mysql user management.

#### virtualenv

The virtualenv state can manage the state of Python virtual environments. Thanks to Whitinge for the virtualenv state

#### New Returners

#### cassandra_returner

A returner allowing Salt to send data to a cassandra server. Thanks to Byron Clark for contributing this returner

## 18.2.100 Salt 0.9.6 Release Notes

**release** 2012-01-21

Salt 0.9.6 is a release targeting a few bugs and changes. This is primarily targeting an issue found in the names declaration in the state system. But a few other bugs were also repaired, like missing support for grains in extmods.

Due to a conflict in distribution packaging msgpack will no longer be bundled with Salt, and is required as a dependency.

#### New Features

#### HTTP and ftp support in files.managed

Now under the source option in the file.managed state a HTTP or ftp address can be used instead of a file located on the salt master.

#### Allow Multiple Returners

Now the returner interface can define multiple returners, and will also return data back to the master, making the process less ambiguous.

#### Minion Memory Improvements

A number of modules have been taken out of the minion if the underlying systems required by said modules are not present on the minion system. A number of other modules need to be stripped out in this same way which should continue to make the minion more efficient.

#### Minions Can Locally Cache Return Data

A new option, cache_jobs, has been added to the minion to allow for all of the historically run jobs to cache on the minion, allowing for looking up historic returns. By default cache_jobs is set to False.

#### Pure Python Template Support For file.managed

Templates in the file.managed state can now be defined in a Python script. This script needs to have a run function that returns the string that needs to be in the named file.

### 18.2.101 Salt 0.9.7 Release Notes

**release** 2012-02-15

Salt 0.9.7 is here! The latest iteration of Salt brings more features and many fixes. This release is a great refinement over 0.9.6, adding many conveniences under the hood, as well as some features that make working with Salt much better.

A few highlights include the new Job system, refinements to the requisite system in states, the `mod_init` interface for states, external node classification, search path to managed files in the file state, and refinements and additions to dynamic module loading.

0.9.7 also introduces the long developed (and oft changed) unit test framework and the initial unit tests.

#### Major Features

#### Salt Jobs Interface

The new jobs interface makes the management of running executions much cleaner and more transparent. Building on the existing execution framework the jobs system allows clear introspection into the active running state of the running Salt interface.

The Jobs interface is centered in the new minion side proc system. The minions now store msgpack serialized files under `/var/cache/salt/proc`. These files keep track of the active state of processes on the minion.

#### Functions in the saltutil Module

A number of functions have been added to the saltutil module to manage and view the jobs:

`running` - Returns the data of all running jobs that are found in the proc directory.

`find_job` - Returns specific data about a certain job based on job id.

`signal_job` - Allows for a given jid to be sent a signal.

`term_job` - Sends a termination signal (`SIGTERM,15`) to the process controlling the specified job.

`kill_job` Sends a kill signal (`SIGKILL,9`) to the process controlling the specified job.

#### The jobs Runner

A convenience runner front end and reporting system has been added as well. The jobs runner contains functions to make viewing data easier and cleaner.

The jobs runner contains a number of functions...

#### active

The active function runs `saltutil.running` on all minions and formats the return data about all running jobs in a much more usable and compact format. The active function will also compare jobs that have returned and jobs that are still running, making it easier to see what systems have completed a job and what systems are still being waited on.

### lookup_jid

When jobs are executed the return data is sent back to the master and cached. By default is is cached for 24 hours, but this can be configured via the `keep_jobs` option in the master configuration.

Using the `lookup_jid` runner will display the same return data that the initial job invocation with the salt command would display.

### list_jobs

Before finding a historic job, it may be required to find the job id. `list_jobs` will parse the cached execution data and display all of the job data for jobs that have already, or partially returned.

### External Node Classification

Salt can now use external node classifiers like Cobbler's `cobbler-ext-nodes`.

Salt uses specific data from the external node classifier. In particular the classes value denotes which sls modules to run, and the environment value sets to another environment.

An external node classification can be set in the master configuration file via the `external_nodes` option: http://salt.readthedocs.org/en/latest/ref/configuration/master.html#external-nodes

External nodes are loaded in addition to the top files. If it is intended to only use external nodes, do not deploy any top files.

### State Mod Init System

An issue arose with the pkg state. Every time a package was run Salt would need to refresh the package database. This made systems with slower package metadata refresh speeds much slower to work with. To alleviate this issue the `mod_init` interface has been added to salt states.

The `mod_init` interface is a function that can be added to a state file. This function is called with the first state called. In the case of the pkg state, the `mod_init` function sets up a tag which makes the package database only refresh on the first attempt to install a package.

In a nutshell, the `mod_init` interface allows a state to run any command that only needs to be run once, or can be used to set up an environment for working with the state.

### Source File Search Path

The file state continues to be refined, adding speed and capabilities. This release adds the ability to pass a list to the source option. This list is then iterated over until the source file is found, and the first found file is used.

The new syntax looks like this:

```
/etc/httpd/conf/httpd.conf:
  file:
    - managed
    - source:
      - salt://httpd/httpd.conf
      - http://myserver/httpd.conf: md5=8c1fe119e6f1fd96bc06614473509bf1
```

The source option can take sources in the list from the salt file server as well as an arbitrary web source. If using an arbitrary web source the checksum needs to be passed as well for file verification.

#### Refinements to the Requisite System

A few discrepancies were still lingering in the requisite system, in particular, it was not possible to have a `require` and a `watch` requisite declared in the same state declaration.

This issue has been alleviated, as well as making the requisite system run more quickly.

#### Initial Unit Testing Framework

Because of the module system, and the need to test real scenarios, the development of a viable unit testing system has been difficult, but unit testing has finally arrived. Only a small amount of unit testing coverage has been developed, much more coverage will be in place soon.

A huge thanks goes out to those who have helped with unit testing, and the contributions that have been made to get us where we are. Without these contributions unit tests would still be in the dark.

#### Compound Targets Expanded

Originally only support for `and` and `or` were available in the compound target. 0.9.7 adds the capability to negate compound targets with `not`.

#### Nodegroups in the Top File

Previously the nodegroups defined in the master configuration file could not be used to match nodes for states. The nodegroups support has been expanded and the nodegroups defined in the master configuration can now be used to match minions in the top file.

### 18.2.102 Salt 0.9.8 Release Notes

**release** 2012-03-21

Salt 0.9.8 is a big step forward, with many additions and enhancements, as well as a number of precursors to advanced future developments.

This version of Salt adds much more power to the command line, making the old hard timeout issues a thing of the past and adds keyword argument support. These additions are also available in the salt client API, making the available API tools much more powerful.

The new pillar system allows for data to be stored on the master and assigned to minions in a granular way similar to the state system. It also allows flexibility for users who want to keep data out of their state tree similar to `external lookup' functionality in other tools.

A new way to extend requisites was added, the ``requisite in'' statement. This makes adding requires or watch statements to external state decs much easier.

Additions to requisites making them much more powerful have been added as well as improved error checking for sls files in the state system. A new provider system has been added to allow for redirecting what modules run in the background for individual states.

Support for OpenSUSE has been added and support for Solaris has begun serious development. Windows support has been significantly enhanced as well.

The matcher and target systems have received a great deal of attention. The default behavior of grain matching has changed slightly to reflect the rest of salt and the compound matcher system has been refined.

A number of impressive features with keyword arguments have been added to both the CLI and to the state system. This makes states much more powerful and flexible while maintaining the simple configuration everyone loves.

The new batch size capability allows for executions to be rolled through a group of targeted minions a percentage or specific number at a time. This was added to prevent the ``thundering herd'' problem when targeting large numbers of minions for things like service restarts or file downloads.

### Upgrade Considerations

#### Upgrade Issues

There was a previously missed oversight which could cause a newer minion to crash an older master. That oversight has been resolved so the version incompatibility issue will no longer occur. When upgrading to 0.9.8 make sure to upgrade the master first, followed by the minions.

#### Debian/Ubuntu Packages

The original Debian/Ubuntu packages were called salt and included all salt applications. New packages in the ppa are split by function. If an old salt package is installed then it should be manually removed and the new split packages need to be freshly installed.

On the master:

```
# apt-get purge salt
# apt-get install salt-{master,minion}
```

On the minions:

```
# apt-get purge salt
# apt-get install salt-minion
```

And on any Syndics:

```
# apt-get install salt-syndic
```

The official Salt PPA for Ubuntu is located at: https://launchpad.net/~saltstack/+archive/salt

### Major Features

#### Pillar

*Pillar* offers an interface to declare variable data on the master that is then assigned to the minions. The pillar data is made available to all modules, states, sls files etc. It is compiled on the master and is declared using the existing renderer system. This means that learning pillar should be fairly trivial to those already familiar with salt states.

### CLI Additions

The `salt` command has received a serious overhaul and is more powerful than ever. Data is returned to the terminal as it is received, and the salt command will now wait for all running minions to return data before stopping. This makes adding very large *--timeout* arguments completely unnecessary and gets rid of long running operations returning empty `{}` when the timeout is exceeded.

When calling salt via sudo, the user originally running salt is saved to the log for auditing purposes. This makes it easy to see who ran what by just looking through the minion logs.

The *salt-key* command gained the *-D* and *--delete-all* arguments for removing all keys. Be careful with this one!

### Running States Without a Master

The addition of running states without a salt-master has been added to 0.9.8. This feature allows for the unmodified salt state tree to be read locally from a minion. The result is that the UNMODIFIED state tree has just become portable, allowing minions to have a local copy of states or to manage states without a master entirely.

This is accomplished via the new file client interface in Salt that allows for the `salt://` URI to be redirected to custom interfaces. This means that there are now two interfaces for the salt file server, calling the master or looking in a local, minion defined `file_roots`.

This new feature can be used by modifying the minion config to point to a local `file_roots` and setting the `file_client` option to `local`.

### Keyword Arguments and States

State modules now accept the `**kwargs` argument. This results in all data in a sls file assigned to a state being made available to the state function.

This passes data in a transparent way back to the modules executing the logic. In particular, this allows adding arguments to the `pkg.install` module that enable more advanced and granular controls with respect to what the state is capable of.

An example of this along with the new debconf module for installing ldap client packages on Debian:

```
ldap-client-packages:
  pkg:
    - debconf: salt://debconf/ldap-client.ans
    - installed
    - names:
      - nslcd
      - libpam-ldapd
      - libnss-ldapd
```

### Keyword Arguments and the CLI

In the past it was required that all arguments be passed in the proper order to the *salt* and *salt-call* commands. As of 0.9.8, keyword arguments can be passed in the form of `kwarg=argument`.

```
# salt -G 'type:dev' git.clone \
    repository=https://github.com/saltstack/salt.git cwd=/tmp/salt user=jeff
```

### Matcher Refinements and Changes

A number of fixes and changes have been applied to the Matcher system. The most noteworthy is the change in the grain matcher. The grain matcher used to use a regular expression to match the passed data to a grain, but now defaults to a shell glob like the majority of match interfaces in Salt. A new option is available that still uses the old style regex matching to grain data called `grain-pcre`. To use regex matching in compound matches use the letter *P*.

For example, this would match any ArchLinux or Fedora minions:

```
# salt --grain-pcre 'os:(Arch:Fed).*' test.ping
```

And the associated compound matcher suitable for `top.sls` is *P*:

```
P@os:(Arch|Fed).*
```

**NOTE**: Changing the grains matcher from pcre to glob is backwards incompatible.

Support has been added for matching minions with Yahoo's range library. This is handled by passing range syntax with *-R* or *--range* arguments to salt.

More information at: https://github.com/ytoolshed/range/wiki/%22yamlfile%22-module-file-spec

### Requisite ``in''

A new means to updating requisite statements has been added to make adding watchers and requires to external states easier. Before 0.9.8 the only way to extend the states that were watched by a state outside of the sls was to use an extend statement:

```
include:
  - http
extend:
  apache:
    service:
      - watch:
        - pkg: tomcat

tomcat:
  pkg:
    - installed
```

But the new `Requisite in` statement allows for easier extends for requisites:

```
include:
  - http

tomcat:
  pkg:
    - installed
    - watch_in:
      - service: apache
```

Requisite in is part of the extend system, so still remember to always include the sls that is being extended!

### Providers

Salt predetermines what modules should be mapped to what uses based on the properties of a system. These determinations are generally made for modules that provide things like package and service management. The apt module maps to pkg on Debian and the yum module maps to pkg on Fedora for instance.

Sometimes in states, it may be necessary for a non-default module to be used for the desired functionality. For instance, an Arch Linux system may have been set up with systemd support. Instead of using the default service module detected for Arch Linux, the systemd module can be used:

```
http:
  service:
    - running
    - enable: True
    - provider: systemd
```

Default providers can also be defined in the minion config file:

```
providers:
  service: systemd
```

When default providers are passed in the minion config, then those providers will be applied to all functionality in Salt, this means that the functions called by the minion will use these modules, as well as states.

### Requisite Glob Matching

Requisites can now be defined with glob expansion. This means that if there are many requisites, they can be defined on a single line.

To watch all files in a directory:

```
http:
  service:
    - running
    - enable: True
    - watch:
      - file: /etc/http/conf.d/*
```

This example will watch all defined files that match the glob `/etc/http/conf.d/*`

### Batch Size

The new batch size option allows commands to be executed while maintaining that only so many hosts are executing the command at one time. This option can take a percentage or a finite number:

```
salt '*' -b 10 test.ping

salt -G 'os:RedHat' --batch-size 25% apache.signal restart
```

This will only run test.ping on 10 of the targeted minions at a time and then restart apache on 25% of the minions matching `os:RedHat` at a time and work through them all until the task is complete. This makes jobs like rolling web server restarts behind a load balancer or doing maintenance on BSD firewalls using carp much easier with salt.

### Module Updates

This is a list of notable, but non-exhaustive updates with new and existing modules.

Windows support has seen a flurry of support this release cycle. We've gained all new `file`, *network*, and *shadow* modules. Please note that these are still a work in progress.

For our ruby users, new *rvm* and *gem* modules have been added along with the *associated states*

The *virt* module gained basic Xen support.

The *yum* module gained Scientific Linux support.

The *pkg* module on Debian, Ubuntu, and derivatives force apt to run in a non-interactive mode. This prevents issues when package installation waits for confirmation.

A *pkg* module for OpenSUSE's zypper was added.

The *service* module on Ubuntu natively supports upstart.

A new *debconf* module was contributed by our community for more advanced control over deb package deployments on Debian based distributions.

The *mysql.user* state and *mysql* module gained a *password_hash* argument.

The *cmd* module and state gained a *shell* keyword argument for specifying a shell other than `/bin/sh` on Linux / Unix systems.

New *git* and *mercurial* modules have been added for fans of distributed version control.

### In Progress Development

### Master Side State Compiling

While we feel strongly that the advantages gained with minion side state compiling are very critical, it does prevent certain features that may be desired. 0.9.8 has support for initial master side state compiling, but many more components still need to be developed, it is hoped that these can be finished for 0.9.9.

The goal is that states can be compiled on both the master and the minion allowing for compilation to be split between master and minion. Why will this be great? It will allow storing sensitive data on the master and sending it to some minions without all minions having access to it. This will be good for handling ssl certificates on front-end web servers for instance.

### Solaris Support

Salt 0.9.8 sees the introduction of basic Solaris support. The daemon runs well, but grains and more of the modules need updating and testing.

### Windows Support

Salt states on windows are now much more viable thanks to contributions from our community! States for file, service, local user, and local group management are more fully fleshed out along with network and disk modules. Windows users can also now manage registry entries using the new ``reg'' module.

### 18.2.103 Salt 0.9.9 Release Notes

**release** 2012-04-27

0.9.9 is out and comes with some serious bug fixes and even more serious features. This release is the last major feature release before 1.0.0 and could be considered the 1.0.0 release candidate.

A few updates include more advanced kwargs support, the ability for salt states to more safely configure a running salt minion, better job directory management and the new state test interface.

Many new tests have been added as well, including the new minion swarm test that allows for easier testing of Salt working with large groups of minions. This means that if you have experienced stability issues with Salt before, particularly in larger deployments, that these bugs have been tested for, found, and killed.

#### Major Features

##### State Test Interface

Until 0.9.9 the only option when running states to see what was going to be changed was to print out the highstate with state.show_highstate and manually look it over. But now states can be run to discover what is going to be changed.

Passing the option `test=True` to many of the state functions will now cause the salt state system to only check for what is going to be changed and report on those changes.

```
salt '*' state.highstate test=True
```

Now states that would have made changes report them back in yellow.

##### State Syntax Update

A shorthand syntax has been added to sls files, and it will be the default syntax in documentation going forward. The old syntax is still fully supported and will not be deprecated, but it is recommended to move to the new syntax in the future. This change moves the state function up into the state name using a dot notation. This is in-line with how state functions are generally referred to as well:

The new way:

```
/etc/sudoers:
  file.present:
    - source: salt://sudo/sudoers
    - user: root
    - mode: 400
```

##### Use and Use_in Requisites

Two new requisite statements are available in 0.9.9. The use and use_in requisite and requisite-in allow for the transparent duplication of data between states. When a state ``uses'' another state it copies the other state's arguments as defaults. This was created in direct response to the new network state, and allows for many network interfaces to be configured in the same way easily. A simple example:

```
root_file:
  file.absent:
    - name: /tmp/nothing
```

```
    - user: root
    - mode: 644
    - group: root
    - use_in:
      - file: /etc/vimrc

fred_file:
  file.absent:
    - name: /tmp/nothing
    - user: fred
    - group: marketing
    - mode: 660

/files/marketing/district7.rst:
  file.present:
    - source: salt://marketing/district7.rst
    - template: jinja
    - use:
      - file: fred_file

/etc/vimrc:
  file.present:
    - source: salt://edit/vimrc
```

This makes the 2 lower state decs inherit the options from their respectively ``used'' state decs.

### Network State

The new network state allows for the configuration of network devices via salt states and the ip salt module. This addition has been given to the project by Jeff Hutchins and Bret Palsson from Jive Communications.

Currently the only network configuration backend available is for Red Hat based systems, like Red Hat Enterprise, CentOS, and Fedora.

### Exponential Jobs

Originally the jobs executed were stored on the master in the format: `<cachedir>/jobs/jid/{minion ids}` But this format restricted the number of jobs in the cache to the number of subdirectories allowed on the filesystem. Ext3 for instance limits subdirectories to 32000. To combat this the new format for 0.9.9 is: `<cachedir>/jobs/jid_hash[:2]/jid_hash[2:]/{minion ids}` So that now the number of maximum jobs that can be run before the cleanup cycle hits the job directory is substantially higher.

### ssh_auth Additions

The original ssh_auth state was limited to accepting only arguments to apply to a public key, and the key itself. This was restrictive due to the way the we learned that many people were using the state, so the key section has been expanded to accept options and arguments to the key that over ride arguments passed in the state. This gives substantial power to using ssh_auth with names:

```
sshkeys:
  ssh_auth:
    - present
    - user: backup
```

```
    - enc: ssh-dss
    - options:
      - option1="value1"
      - option2="value2 flag2"
    - comment: backup
    - names:
      -
↪AAAAB3NzaC1yc2EAAAABIwAAAQEAlyE26SMFFVY5YJvnL7AF5CRTPtAigSW1U887ASfBt6FDa7Qr1YdO5ochiLoz8aSiMKd5h4
↪SMjq2aycHI+abiVDn3sciQjsLsNW59t48Udivl2RjWG7Eo+LYiB17MKD5M40r5CP2K4B8nuL+r4oAZEHKOJUF3rzA20MZXHRQu
↪I4bz/l0UdGh18SpMB8zVnT3YF5nukQQ/ATspmhpU66s4ntMehULC+ljLvZL40ByNmF0TZc2sdSkA0111==
      -
↪AAAAB3NzaC1yc2EAAAABIwAAAQEAlyE26SMFFVY5YJvnL7AF5CRTPtAigSW1U887ASfBt6FDa7Qr1YdO5ochiLoz8aSiMKd5h4
↪SMjq2aycHI+abiVDn3sciQjsLsNW59t48Udivl2RjWG7Eo+LYiB17MKD5M40r5CP2K4B8nuL+r4oAZEHKOJUF3rzA20MZXHRQu
↪I4bz/l0UdGh18SpMB8zVnT3YF5nukQQ/ATspmhpU66s4ntMehULC+ljLvZL40ByNmF0TZc2sdSkA0222==
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      - ssh-rsa
↪AAAAB3NzaC1yc2EAAAABIwAAAQEAlyE26SMFFVY5YJvnL7AF5CRTPtAigSW1U887ASfBt6FDa7Qr1YdO5ochiLoz8aSiMKd5h4
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↪override
      - option3="value3" ssh-rsa
↪AAAAB3NzaC1yc2EAAAABIwAAAQEAlyE26SMFFVY5YJvnL7AF5CRTPtAigSW1U887ASfBt6FDa7Qr1YdO5ochiLoz8aSiMKd5h4
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↪I4bz/l0UdGh18SpMB8zVnT3YF5nukQQ/ATspmhpU66s4ntMehULC+ljLvZL40ByNmF0TZc2sdSkA0666==
```

### LocalClient Additions

To follow up the recent additions in 0.9.8 of additional kwargs support, 0.9.9 also adds the capability to send kwargs into commands via a dict. This addition to the LocalClient api can be used like so:

```
import salt.client

client = salt.client.LocalClient('/etc/salt/master')
ret = client.cmd('*', 'cmd.run', ['ls -l'], kwarg={'cwd': '/etc'})
```

This update has been added to all cmd methods in the LocalClient class.

### Better Self Salting

One problem faced with running Salt states, is that it has been difficult to manage the Salt minion via states, this is due to the fact that if the minion is called to restart while a state run is happening then the state run would be killed. 0.9.9 slightly changes the process scope of the state runs, so now when salt is executing states it can safely restart the salt-minion daemon.

In addition to daemonizing the state run, the apt module also daemonizes. This update makes it possible to cleanly update the salt-minion package on Debian/Ubuntu systems without leaving apt in an inconsistent state or killing

the active minion process mid-execution.

### Wildcards for SLS Modules

Now, when including sls modules in include statements or in the top file, shell globs can be used. This can greatly simplify listing matched sls modules in the top file and include statements:

```
base:
  '*':
    - files*
    - core*
```

```
include:
  - users.dev.*
  - apache.ser*
```

### External Pillar

Since the pillar data is just, data, it does not need to come expressly from the pillar interface. The external pillar system allows for hooks to be added making it possible to extract pillar data from any arbitrary external interface. The external pillar interface is configured via the `ext_pillar` option. Currently interfaces exist to gather external pillar data via hiera or via a shell command that sends yaml data to the terminal:

```
ext_pillar:
  - cmd_yaml: cat /etc/salt/ext.yaml
  - hiera: /etc/hirea.yaml
```

The initial external pillar interfaces and extra interfaces can be added to the file salt/pillar.py, it is planned to add more external pillar interfaces. If the need arises a new module loader interface will be created in the future to manage external pillar interfaces.

### Single State Executions

The new state.single function allows for single states to be cleanly executed. This is a great tool for setting up a small group of states on a system or for testing out the behavior of single states:

```
salt '*' state.single user.present name=wade uid=2000
```

The test interface functions here as well, so changes can also be tested against as:

```
salt '*' state.single user.present name=wade uid=2000 test=True
```

### New Tests

A few exciting new test interfaces have been added, the minion swarm allows not only testing of larger loads, but also allows users to see how Salt behaves with large groups of minions without having to create a large deployment.

### Minion Swarm

The minion swarm test system allows for large groups of minions to be tested against easily without requiring large numbers of servers or virtual machines. The minion swarm creates as many minions as a system can handle and roots them in the /tmp directory and connects them to a master.

The benefit here is that we were able to replicate issues that happen only when there are large numbers of minions. A number of elusive bugs which were causing stability issues in masters and minions have since been hunted down. Bugs that used to take careful watch by users over several days can now be reliably replicated in minutes, and fixed in minutes.

Using the swarm is easy, make sure a master is up for the swarm to connect to, and then use the minionswarm.py script in the tests directory to spin up as many minions as you want. Remember, this is a fork bomb, don't spin up more than your hardware can handle!

```
python minionswarm.py -m 20 --master salt-master
```

### Shell Tests

The new Shell testing system allows us to test the behavior of commands executed from a high level. This allows for the high level testing of salt runners and commands like salt-key.

### Client Tests

Tests have been added to test the aspects of the client APIs and ensure that the client calls work, and that they manage passed data, in a desirable way.

**See also**:

Legacy salt-cloud release docs

**See also**:

Legacy salt-api release docs

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